



*J*ournal
of the
*A*ustralian
*N*aval
*I*nstitute

Volume 22 Number four
November/December 1996



AUSTRALIAN NAVAL INSTITUTE INC

The Australian Naval Institute was formed and incorporate Australian Capital Territory in 1975. The main objects of the Institute are:

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

The Institute is self-supporting and non-profit-making. All publications of the Institute will stress that the authors express their own views and opinions are not necessarily those of the Department of Defence, the Chief of Naval Staff or the Institute. 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:

- *Regular Members.* Regular membership is open to members of the RAN, RANR, RNZN or RNZNVR and persons who having qualified for regular membership, subsequently leave the service.
- *Associate Members.* Associate membership is open to all other persons not qualified to be Regular Members, who profess an interest in the aims of the Institute.
- *Honorary Members.* Honorary membership is open to persons who have made a distinguished contribution to the Navy or the maritime profession, or by past service to the institute.

ACKNOWLEDGEMENTS

The Australian Naval Institute is grateful for the assistance provided by the corporations listed below. They are demonstrating their support for the aim of the Institute by being members of the "Friends of the Australian Naval Institute" coterie.

ADI Ltd
Blohm + Voss
CSC Australia
Jeumont Schneider Division
STN Atlas (Australia)
Ansett Australia
Scientific Management Associates

Rockwell Systems Australia
Stanilite Electronics
GEC Marconi
Westinghouse Electric
CelsiusTech
Thomson Sintra Pacific
Dawson Group

Journal of the Australian Naval Institute

ISSN 0312 — 5807

Volume 22 Number 4 November/December 1996

SPECIAL FEATURE

In *The Revolution in Military Affairs* Lieutenant Commander **Alan Hinge** asks whether the RMA actually exists and, if it does, what is it?

Also in this issue, some more of **Graham Wilson**'s little-known facts and historical oddities.

REGULARS

- 2** From the President
- 3** From the Editor
- 4** Illumination Rounds
- 8** Letters to the Editor
- 64** Book Review

FEATURE ARTICLES

- 10** Ocean Surveillance Systems
and Australia's Maritime Security

Malcolm R. Davis

- 13** The Offshore Patrol Craft
Project

Argos

- 15** Money, Guns and Women
Reflections on the RAN's Good
Working Relations Program

Lieutenant Benjamin Spurgin, RAN

- 17** The NOAA Corps, America's
Seventh Service

Graham Wilson

- 21** Was Price Right?

Officer Education at ADFA

Lieutenant Rick Leahy, RAN

Cover: The RAN's first vertical launch missile
firing - HMAS Anzac firing a VL Sea Sparrow
(LSPHOT Craig Duff, RAN)

- 26** ADF Command and Control —
Prisoners of our Thinking.

Lieutenant Colonel Keith Thomas

- 34** The Battle for Walcheren

Commander Richard Jackson, RNZN

- 38** Command and Control Warfare: Elec-
tronic Warfare Renamed or a Significant
Military Breakthrough?

Lieutenant Commander E A Powell, RAN

- 41** Crime as a Security Threat in the
21st Century

John Cicarelli

- 45** All Persons are to Repair on
Board: A Brief History of the Blue
Peter.

Graham Wilson

- 47** The Revolution in Military Affairs

*Lieutenant Commander Alan Hinge
RAN*

- 58** St Peter's Fleet: A Brief History
of the Papal Navy

Graham Wilson

- 62** The Swiss Navy?

Graham Wilson

Layout & typeset by  COMMUNICATIONS Stirling ACT
Phone 06 286 7477

From the President

The last few years have been ones in which the Australian Naval Institute has taken several significant strides forward. Of particular note the Journal has been built into a high quality publication and the Institute's relationships with its Friends have been developed. While there is no opportunity for anyone to rest upon their laurels, I believe that our priority in the immediate future must be to consolidate the ANI's position as the pre-eminent Australian and leading regional forum for discussion of issues relevant to the naval profession.



In that process the position of the Friends of the ANI is very important. Not only do they provide crucial backing for the Institute's activities, but they are significant contributors to the debate on many defence issues. The recent dinner for the Friends of the ANI held in the HMAS Harman Wardroom illustrated both these points well. A highlight of the evening was the address given by Mr Andrew Johnson, recently appointed Managing Director of Transfield Defence Industries, in which he outlined some of the challenges which face the company. While there will always be some differences in perspective, both the Royal Australian Navy and Transfield benefit, in many ways, from an informed debate on issues relevant to the defence of Australia. It is in this area, by providing a forum for objective consideration of these issues, that the Institute must play an important role.

Despite the progress which has been made in recent times, much work remains to be done. Members of Council have developed Draft Strategic and Business Plans, setting out the ANI's vision and missions. Of those three points stand out. Firstly, we must make every effort to maintain the high quality of the Journal. It, along with public orations, are at the moment the primary fora for discussion. The Journal is widely known. It is an excellent vehicle for expression of ideas by all in the defence community. Secondly we would like place the administration of the Institute on a more professional level, by employing a part-time office manager. Finally we must aim to broaden the appeal of the Institute. While there are a variety of ways of doing this, such as utilising the Internet, the most effective way is through our membership. The ANI relies on its members, not only to promote membership of the Institute and discussion of defence and maritime issues, but also to provide feedback to the Council on ways to improve our performance. All of these subjects and more will be opened up for consideration at the Annual General Meeting, which will take place in Legacy House, Geils Circuit, Deakin on 19 February 1997.

This edition of the Journal is the last in which Lieutenant Commander Alan Hinge will have significant input. Alan has made a very great contribution to the Institute through the Journal, and the high regard in which it is held is due in large part to his efforts. The range of subjects is a reflection of the depth of the maritime profession. Graeme Wilson's series of articles on smaller navies from various countries demonstrates the ubiquity of naval tradition, albeit sometimes in some unlikely corners of the globe. While history provides an important basis for our understanding, there are significant contemporary issues as well. Lieutenant Commanders Hinge and Power examine the Revolution in Military Affairs and Command and Control Warfare. I suspect that these aspects of warfare are not well understood by the naval community, at least at a conceptual level. In part this is because we are in some ways further advanced down the RMA path than other forms of warfare. But this advanced standing will be short lived if we do not appreciate the changes which are possible in the future: '... for in war the results are swift, harsh and measurable, and censure readily precedes understanding ...'. We must ensure that our understanding precedes the war, so that we remain at the cutting edge.

Chris Barrie

From the Editor

The *Journal of the Australian Naval Institute (JANI)* aims to be a vehicle for informed debate on matters of interest to the professional naval community. It covers a wide range of subjects, and has the flexibility to do so in a variety of formats.

In taking over responsibility for editing *JANI* I would like to acknowledge the work done to develop the journal by my predecessor, Lieutenant Commander Alan Hinge. His work has ensured that *JANI* is well recognised as a professional publication. During my tenure as editor I aim to build on that by expanding the number of people who make contributions to the journal.

There are certainly a large number of issues which deserve attention. The impact of the 1982 UN Convention on the Law of the Sea is an area which has yet to be fully appreciated, but which is likely to be fundamental to the conduct of naval operations in future. One commentator on naval strategy has written that navies have three types of roles; military, constabulary and diplomatic. As the importance of marine resources increases so will importance of the RAN's constabulary tasks. Although peacetime tasks are not considered to be force structure determinants, these constabulary tasks are likely to continue in any conflict in which the RAN is involved. The influence that these constabulary tasks have on the RAN's force structure is another subject which should be examined. The Revolution in Military Affairs is another subject entirely which needs to be explored.

There are many personnel issues which are important to the RAN today. Career structures are changing quite radically in some areas of the civilian workforce; is there a requirement for the RAN to re-examine the careers it offers? Is it possible to offer more flexible careers in the naval service? The degree to which Commercial Support Programs are taking over 'non-core' functions is an issue which needs to be monitored, as these innovations have wider implications than simply saving money.

The RAN's history is one area which requires a great deal more attention. While history is not a chart for the future, it constitutes invaluable corporate experience which should not be despised at any level of an organisation. Above all the RAN has a history of which its members, past and present, should be proud of: it is the foundation of the traditions and culture of the Senior Service. While they are subject to change, they should not be discarded without good reason.

Contributions can be in the form of letters to the editor or 'Illumination Rounds' - small pieces which can be published under a pseudonym, allowing the ideas to be judged on their own merits rather than on who wrote them. I believe that this can be of benefit to more senior as well as junior members. There are almost no limits to the subjects which can be raised. Ladies and Gentlemen, the floor is yours ...

Alastair Cooper

Lieutenant Alastair Cooper is a seaman officer and a graduate of the Australian Defence Force Academy, where he gained an honours degree in history. Previously an Officer of the Watch in HMAS Canberra, Lieutenant Cooper is currently the Research Officer for the RAN Maritime Studies Program. In 1998 he will undertake the PWO course and on completion will, hopefully, be posted to HMAS Sydney.

ILLUMINATION ROUNDS

FLASH!

Australia has been asked to contribute to coalition forces being raised for deployment to the Gulf. I understand the MINDEF has said that Australia is not able to offer any troops, however, he is willing to provide up to three levels of headquarters to control the overall coalition effort.

OFFENSIVE STRIKE CAPABILITIES - The Case for Ballistic Missiles

Australia's defence policy calls for an offensive strike capability. This is presently represented by the F111 aircraft and the submarine force. The latter is being replaced and upgraded with the *Collins* class. The former is likely to be without an adequate capability replacement around 2015.

There has been a case proposed for the fitting of Tomahawk to the *Collins* class to provide the offensive strike capability. There is an obvious flaw in this argument. The attraction of the F111 as a strike vehicle is its ability to deploy over long distances, at high speed; thus conferring flexibility of response. Whilst a conventional submarine can transit long distances, it cannot do this at high speed, and the ability to utilise the offensive strike capability will be limited by foresight, and pre-positioning. It could be argued that the range of the missile will partially offset this speed limitation, but this will rely upon accurate intelligence on the intended target point.

Given the costs involved in the acquisition and maintenance of high performance aircraft, and in the training and retention of aircrew, a case may be made for the replacement of the F111 strike capability by ballistic missile technology. Whilst this is against Government policy, and the UN Missile Technology Control Regime (MTCR), regional countries will increasingly view this technology as a means of acquiring an offensive capability without the costs attendant in the establishment of sophisticated air forces. Australia wishes to maintain a capability edge - perhaps it is time to start investing in ballistic missile technology, or at least commencing some anti-missile defence research.

Mr Spock

FOLLOW MY LEADER

You know, I sometimes wonder if there isn't some omnipotent force in the universe actively working against me in my almost religious attempt to avoid thinking too long or too deeply about the really important issues in life. Take leadership for example. Now

in my more lucid moments I admit that, as a naval officer, I should probably be devoting time each day to the earnest study of this most fundamental and enduring aspect of the profession of arms. But, as they say in the classics, it's a bit hard to contemplate the majesty of the whole forest when you are busy tripping over the roots of the trees. Anyway, there I was, minding my own business with the latest *Navy News* at lunchtime, when an article on the recent NEOC graduation caught my eye. In his congratulatory speech to the graduating class, CNS spoke about the need for our future leaders to display unassailable integrity and high morals, compassion, fairness, and dignity. "That sounds about right" I thought, and turned to the sports page to read the obligatory rugby article.

A few days later I received an advertising flier from some leadership and management guru's 'empower yourself' seminar which promised that for a mere two hundred dollars a day, I too could learn to rule the world. I did briefly contemplate trying to convince my boss that such a course was absolutely essential for a young officer and leader like myself, but I decided he was smart enough to see straight through me to the resume I am compiling for my eventual departure from the Navy. So I filed the piece of paper in the round file, and went back to whatever it was I was doing in the service of Queen and country.

Now it wasn't until the third of these para-leadership experiences that I started to wonder if someone wasn't trying to tell me something. There I was, surfing the books in the library (time-wasting cunningly disguised as research) when I came across a quote by a highly decorated U.S. Army Colonel. In his parting shot to a Service he was leaving in disgrace, he made the following observation on leadership:

'You have to realise that there are a lot of fine young leaders who are warriors even though they haven't been in war. But, if we take them and mould them into managers and remove those who are abrasive or tell the truth or drink too much beer, you wind up with a military that can't fight. That's what the Americans ended up with in Vietnam.'

My first reaction was to dismiss the good Colonel's warning as the musings of a disgruntled infantryman whose head had ventured above the parapet of one too many foxholes. I mean it's obvious that leadership is as central to the military profession in 1996 as it was in a South East Asian jungle thirty years ago, or indeed when Nelson strode the burning deck of *Victory*. Or is it? Certainly we spend a great deal of time talking about it, and sitting through lectures on

it, not to mention grovelling to get a superior PR5 score for it. But what is leadership really? I was somewhat perturbed to discover that I had only the vaguest notion of what the term means to me on a daily basis, so I resolved to investigate the matter further.

To this end, I broached the subject over a brew with my sailors, and they came up with some interesting ideas. One of them suggested that the captain of his football team has it because he was the most skilled (and presumably the most dull-witted) in the team, who didn't flinch when taking the ball up to opposition forwards intent on occasioning actual bodily harm in the name of a tackle. This I took to be an affirmation of physical courage as an aspect of leadership. Another sailor thought the Prime Minister has it because he stood up for what he believed in after the Port Arthur massacre by banning automatic weapons. This reminded me of CNS' comments about integrity and high morals. But perhaps the most illuminating comment came from one young sailor who, after initially claiming not to have any thoughts on the matter, finally said, 'I don't know, I guess it means that I would go to war with someone like that.'

I eventually came to a conclusion of my own — that leadership has little or nothing to do with the number of bands of gold you wear on your sleeves. Rank denotes authority, even command, but never leadership as a matter of course. And for those of us in the RAN, today, particularly the more junior among us who are going to inherit the Service in the years to come, leadership is probably a more difficult proposition than it ever was in the past. In a prolonged period of peace the likes of which we are currently enjoying, leadership at all levels is vital if we are going to navigate our way through the myriad dilemmas of restructuring, downsizing, retraining, MRU, CSP, ABM, NPS, TQM, ISS and so on. It might be an exciting time to be in the Navy, but it is also a treacherous and frightening time.

Perhaps I should retrieve the pamphlet on that leadership course after all.

Boadicea

A LETTER HOME...

(Nothing in this letter represents approved policy nor necessarily any intended change to policy. It presents one future which may be possible.)

At Sea
22 May 2012

Dear Grandad,

I received your thank you letter just before we sailed. It would be a lot easier if you connected your computer so we could e-mail each other. Unless there's

an emcon restriction in force I receive it the same day at sea and even if there is a restriction it gets stored for us until we can receive transmissions. I'm glad you had a good 72nd birthday and met up with some of your old Navy fogies - oops cronies! The pipe I gave you uses new technology which means you shouldn't have to "break it in" as you put it, but I can't check that as nobody smokes these days.

You asked whether I would write and tell you what I thought of life in the Navy. I suspect you seek an independent check on what you're being told in the Chief of Navy's Broadsheet you receive. I think that's a good publication to make sure everyone with past naval service is kept up to date with developments. It was reading your copies as a teenager that made me interested in joining and although I loved your salty stories I was never sure that they reflected the modern Navy. I was only nine when you retired in 1995 but Dad told me some years later that you were none too happy about some of the changes in mind. I recall he said you waxed lyncally about "radical nonsense" stemming from Glenn and the Naval Personnel Strategy 2010? I'm not sure what Glenn and that strategy were, but then I haven't done my stafftraining yet.

At the moment we are exercising with two Indonesian patrol vessels that are variants of the OPV I'm serving in - you will remember them being on the drawing board when you were in Navy Office. Tomorrow is the culmination of the exercise with a day of war-fighting 'real' exercises. These don't happen often and it's a really big thing and my adrenalin's flowing already at the prospect. Most of our training and exercises are done by simulation both ashore and onboard, with the Virtual Reality Trainer at the base being top-notch. We can practice a range of options in all sorts of conditions and link up with other crews in the trainers at other bases. We are assessed objectively by the training group, both individually and as a team, and have to be assessed as competent against performance indicators before we are allowed to go to sea.

It's pretty stiff if you don't make the grade because you have to have the sea experience to progress and besides everyone wants to go to sea because the job is so rewarding. One of our officers of the watch flunked it last patrol and was very disappointed but I hear he's doing better in his re-training. Getting a replacement for him wasn't a problem as the boss of the Integrated Ship Support Centre manages that and he has people bidding for sea duty. Of course the policy side of personnel and cross-stream postings are managed from Canberra but we all bid for jobs through our ISSC manager. Sometimes we are directed, but that doesn't happen often, and we understand when it does because that's part of our life.

Crewing arrangements are probably very different

from your time. With the level of regional engagement we are involved in (started increasing when you were in I think) our OPVs are clocking up about 300 sea-days a year, but we're only available for 150. There are two core crews for each ship - and more crew members are added on depending on the mission. At the moment we have Army aircrew onboard, 2 officers under training for mariner certification and some new coordinators who are gaining their sea-going certification in their appropriate skills. So we're carrying 38 at the moment. Everyone has to be certified at sea to be legally accountable for the duties of the position they fill. Basically we work about 220 days a year, 150 of which are sea service. Team and core mission training take a month a year and about 6 weeks is used for skill updates and continuation training. "Barrack stanchion" jobs, as you call them, are mostly done by contractors.

I suppose Coordinators came in after you left but they are the next management level under the Ship and Systems managers. We also have two Systechs, who are the only technicians onboard and experts in the systems, but they don't wear rank and their pay is pretty good. Coordinators and Systechs are people usually in the second phase of their careers. Coordinators receive substantial user/maintainer training and the Systechs get deep systems training - one of them came into the Navy from BHP three years ago. The CO is warfare specialist and, as you know, I became the Senior when I passed my warfare course last year. Most of the seaman are in their initial phase with a fixed term of 3 years. They commit, in their contract, for 220 days work a year (there are clauses removing this maximum in times of tension) most of which is sea-time. Afterwards they are selected, based on their performance, to go onto their first career phase which takes them to 10 years service. Because I wanted to do a degree first I waived my initial phase and went straight to the first phase, which is due to end in two years time. I am pretty hopeful that I will be selected for the second career phase which is for another 10 years. There are some good options in that phase with career breaks possible and of course you become eligible for career development to work in the policy and strategic levels of the organisation. The first posting in second phase is usually stafftraining. If I do get selected I'll have to decide whether to roll-over my bonus for completing first phase, or take it.

You asked about the organisational structure. Naval Component Headquarters sits within Defence Headquarters and looks after purely naval matters - Chief of Navy commands the Navy and is responsible for maritime advice and maintaining naval readiness. Operational matters are controlled by the Maritime Commander and he works from the Theatre Headquarters. Initial training is done within Defence organisations but class and continuation training is controlled by the Integrated Ship Support Centres who

are also responsible for operational standards. These centres also look after the personnel sides for their class of ship, including postings within the class. It's easy to keep in touch with the centres with our e-mail and video conferencing facilities. Normally it's only in the second phase that we can cross ship class streams. If I am selected I would like to go to one of the 'stretched' Anzacs as a warfare officer after my stafftraining. NCHQ looks after the cross-stream postings and the policy side of personnel. Navy's people strategy is up-dated every year and everybody gets a copy and a briefing session for major changes. It's all fairly stream-lined and I'm not sure what you meant about problems with jointery - perhaps you could expand on that in your next letter.

I must close as I have to go and supervise officer of the watch manoeuvres - lunchtime as always!

Your affectionate - and cheeky - grand-daughter

SOMETHING TO THINK ABOUT...

The advent of computers has led to much flatter management structures. It has also enabled the much wider dissemination of information, previously only available to higher levels of management. These processes are only likely to continue. In the civilian sector these changes can be accommodated much better than in military organisations because the command chain is less rigid and demanding. There is also less resistance to the delegation of authority. If the Navy is to continue to be an effective organisation, and if it is to take full advantage of the revolution (or evolution) in military affairs, then it must find a way to decentralise its decision making processes. If it does not it will become overly centralised and hierarchical, unable to effectively respond to the challenges which face it.

The challenge for the Navy is to find a way to decentralise and delegate authority, while still retaining an effective command structure. Although the ADF is changing its command and control arrangements, the more fundamental requirement is for a review of the current concept of military command and control.

Nostradamus

Mexican for beginners

You may wish to be aware of...

The chances are the Admiral will ask you about this

You will wish to be aware of

... and he is rumoured to have a bee in his bonnet about this one.

As you may be aware...

I should have told you about this; I probably did

tell you about it; I can't remember if I did or not; I just pray that you cannot remember either.

As you are already aware...

I did tell you about this - but I know damn well that you signed off the pack without reading my lucid and lengthy minute.

You ought to be aware...

I should have told you earlier...

Notwithstanding my earlier minute

My earlier minute was sent without consulting my boss; when he saw the pinks he went ballistic.

Thank you for the opportunity to comment ...

I have no idea why you want my views on this subject.

Although not directly addressed, may I comment...

(1) My branch has no conceivable interest in this subject, but my boss doesn't want people to start thinking there are limits to our interests, just in case.

Although not directly addressed, may I comment...

(2) You sneaky bastard, you thought that you'd get it through while I was out of town.

This is an interesting idea.

Lieutenant, you haven't been in Russell long enough to know that this hasn't a snow ball chance in hell

...courageous idea.

Deduct one point from your PR5 average.

...a novel idea

...silly.

...a potentially contentious idea

...very silly.

I am concerned that...

I don't think the Admiral will agree with this.

I am cautious that...

I know damn well he won't.

I agree with this proposal, but it is an issue on which we need tri-Service agreement.

I don't agree with this proposal - I am going to stall for time.

I agree with this proposal, but think we should gain Ministerial approval before proceeding.

I don't agree with this proposal - and I don't think you're going to be able to explain it.

Despite your usual delegation of such matters, I feel that this is a decision you will wish to take personally.

Have you realised that this is in the Defence Minister's own constituency?

You may wish to consider...

You obviously have not considered...

IN DEFENCE OF SUPPLY OFFICERS

How many times have you heard Supply Officers denigrated by their comrades in arms (Seaman Officers)? I have lost count - You're only a box packing, blanket counting member of the crooks, crocks and cripples.

Well never forget that you are a Naval Officer first and a Supply or Seaman specialist second!

A wise old Supply Officer once told me that in the Navy morale is built on four pillars and this is no more evident than at sea. These pillars are:

GOOD FOOD

WELL MAINTAINED PAY ACCOUNTS

REGULAR MAIL

HOT WATER

If any one of these is lacking then morale will be affected. If food is poor the sailors will grumble. If there pay is stuffed up they will complain. If the mail is not getting through they will be acid. And if you can not have a hot shower, albeit only 30 seconds worth, then morale will crumble. You will be amazed at the level of hassle these apparently minor things will cause, but it is all part of looking after the welfare of your men and women.

Supply Officers and their staff are responsible for all these areas. The Cooks and Stewards are responsible for the GOOD FOOD. The Writers are responsible for the WELL MAINTAINED PAY ACCOUNTS and the REGULAR MAIL. The Naval Stores personnel are responsible for the HOT WATER (the Stokers actually provide it but the Naval Stores personnel provide the spare parts which keep the system going).

So this means Supply Officers are responsible very much for the morale in a ship through their control of the 'Hotel Services'. In smaller vessels (ie Patrol Boats, SML's and Submarines) a junior Seaman Officer is allocated the duties of the Supply Officer and they run the Cooks, Stewards, and Naval Storeman. Generally Writers are not carried in these vessels so the junior Seaman Officer is the Correspondence Officer so they do the typing and control the mail.

When asked which they would prefer to do - Admin or Watches, the time on the bridge comes first. Whether you think Supply Officers jobs ashore can be done by civilian contractors or not there will always be role for Supply Officers at sea - otherwise the junior Seaman Officer will have to do and this takes them away from the primary role - which is driving the ship.

"There were the men who gave and took death in battle. There were the other men who shuffled papers and cooked beans and such, logistics support for the fighters. The Army could keep them separate. In a ship, they all went into battle together."



Letters to the Editor

Dear Sir,

May I follow up two of the lively historical articles that you have published in the last two editions of JANI?

Turning first to Russell Dority's article on the Night Surface Battles of the Solomons (Vol.22 No.2 May/July 96) may I express some trans-Tasman apoplexy? His account of the night surface battles ends with Tassafaronga on 30 November 1942, which he claims was "...the last defeat the Americans suffered...."

In fact throughout 1943, before the new Fifth Fleet had come up to strength or even trialed its new multi-carrier task forces, the main focus of the Pacific War was the dual advance by MacArthur and Halsey against Rabaul. In mid-1943, there were two more bloody night surface actions: off New Georgia: the Battle of Kula Gulf on 5 July when the USS *Helena* was sunk and then the Battle of Kolombangara on 13 July 1943.

After the Kula Gulf action, the New Zealand cruiser HMNZS *Leander* was hastily ordered to join RADM Ainsworth's cruiser-destroyer force to replace *Helena*; the whole force deployed to intercept yet another Japanese force in "the Slot". That night the Japanese force, led by the light cruiser *Jintsu*, inflicted a heavy toll on the allied force; torpedoing the heavy cruisers *Honolulu* and *St Louis*, as well as hitting *Leander* in the boiler room, but losing *Jintsu* in exchange. *Leander* was grievously damaged by a Long Lance torpedo, but her ship's company contained the damage in what became a model of damage control among for the Royal Navies. Her executive officer, incidentally was (then) Commander S W Roskill.

Later in 1943, as Dority indicates, American doctrine and training had improved so that subsequent battles in the Solomons were victories - Vella Lavella, 7 Au-

gust, and Empress Augusta Bay, 2 November. For the RNZN, the damage to *Leander* (which effectively knocked her out of the war) meant that our commitment to the campaign in the Solomons was limited to corvettes, minesweepers and AS motor launches, but our cruisers returned to the Pacific with the British Pacific Fleet in 1945.

In the latest issue (Vol.22 No.3 August/October 96) Graham Wilson's description of the Battle of the Komandorski Islands included a brief description of the Japanese invasion of the Aleutians in June 1942. What does not come out from the text is the fact this operation was an integral part of the Imperial Japanese Navy's Midway operation, since the air attacks and landings were intended to lure the US fleet out of Pearl Harbor and away from Midway. Because the US Navy codebreakers were reading sufficient of the Japanese naval code JN25, Admiral Nimitz was not deceived and sent only a small cruiser force north, while concentrating his main effort on the defence of Midway. In fact the Japanese diversion further unbalanced the Japanese fleet dispositions, since the two carriers the IJN sent to the Aleutians could have made the crucial difference in the carrier vs carrier battle off Midway.

One lighter point. I have been told that in the mid-twenties, when the US first looked at strengthening its Alaskan defences, the US Navy planned to build a submarine base at Dutch Harbor. The Officers' Mess was designed and largely prefabricated, before the decision was made to relocate the submarines at Pearl Harbor. The new building was simply diverted to the new site, so what is now the Officers' Club building at the Submarine Base at Pearl is structurally strong enough to cope with 12 feet of snow upon its roof!.

Richard Jackson, CMDR RNZN



Dear Sir,

Viking, in your August/October 1996 edition, questioned the need for HQAST. This subject deserves to be pursued with more vigour by all interested parties. He concludes his critique by asserting that the operational level of war is an invention that does not need to exist in the Australian context and that we don't need a matching operational level headquarters. This conclusion is rather odd because it is inconsistent with other parts of his article. The operational functions associated with the operational level of war (that is, the conduct of campaigns) do exist and are currently performed by existing strategic headquarters (HQADF) and the operational headquarters listed in his article. The question is not therefore whether we should have operational level head-

quarters, we already have several, but rather how should they be best structured, organised and equipped to maximise the efficient preparation and conduct of campaigns in which Australia might be engaged?

The body of his article raises some useful questions in this regard relating to the need for linking the need for HQAST to clear strategic guidance and operational concepts, the inherent differences between the services, the wisdom of creating another vulnerable C4I link in Canberra and the need for inbuilt redundancy, the need for flat rather than hierarchical management structures, and the need for balance between teeth and tail.

Bob Lowry



NOTICE OF ANNUAL GENERAL MEETING

**The Annual General Meeting of the Australian Naval
Institute will be held at 2000
on 19 February 1997**

at

**LEGACY HOUSE
33 Geils Court, Deakin ACT
Apologies to the Secretary,
Lieutenant Annette Nelson RAN
on
06 265 4673**

Ocean Surveillance Systems and Australia's Maritime Security

Malcolm R. Davis

"Now the reason the enlightened prince and the wise general conquer the enemy whenever they move and their achievements surpass those of ordinary men is foreknowledge. What is called 'foreknowledge' cannot be elicited from spirits, nor from gods, nor by analogy with past events, nor from calculations. It must be obtained from men who know the enemy situation" (Sun Tzu)

Throughout the history of warfare, the importance of accurate intelligence on an adversary's activities and intentions has been of prime importance. In perhaps the most recent example of this axiom, the Multinational Coalition would not have been nearly as effective during the 1991 Persian Gulf War, had not they had a superb intelligence and surveillance system in place in the months leading up to the opening of hostilities on January 17th 1991. With the development of the Jindalee Over the Horizon radar (JORN), Australia can detect aircraft and surface ships out to a distance of thousands of kilometres. However, JORN cannot show the movements of an adversary's submarines. This article proposes that Australia develop an effective Ocean Surveillance System based around fixed hydrophone arrays (similar to the US SOSUS system), Ocean Surveillance Vessels (OSVs) employing towed array sonars, and additional maritime patrol aircraft (MPA). Other sensor systems such as sonobuoy fields and a Rapidly Deployable Sonar System (RDSS) should also be developed. Furthermore, such an Ocean Surveillance System could be developed and operated jointly with regional allies such as the ASEAN states and New Zealand. Such an Ocean Surveillance System would fill in the gap in our strategic surveillance coverage - in detecting submarines at long range - and allow Australian defence planners the ability to ensure Australia's security is not challenged without foreknowledge.

Since the end of the Cold War, states in the Asia-Pacific region have begun modernising their military capabilities as the nature of the perceived threat changes, and uncertainty about the nature of the strategic environment grows. Increasingly, states in the Asia-Pacific region are becoming more interested in acquiring submarines - in most cases advanced diesel electric submarines (SSKs), but in the case of China and possibly India as well as Japan - nuclear powered submarines (SSNs). The growth in Chinese military capability - particularly in the emergence of its 'blue water' navy, and uncertainty about the US commitment to the region in the future is leading other states, including Japan, South Korea, Taiwan, and the

ASEAN states to modernise their military capabilities, emphasizing maritime forces and high tech airpower. Therefore there is a growing regional capability for conventional maritime operations, supported by advanced airpower capabilities.¹

Australia as a nation is particularly vulnerable to submarine warfare. Our economy is heavily reliant on overseas trade, the bulk of which travels via sea lanes of communication (SLOCs) through contested areas such as the South China Sea, and narrow Straits that are vulnerable to blockade by submarines. Our ports are vulnerable to submarine interdiction - either through mining operations or by an adversary employing submarines offensively against our naval surface combatants and commercial shipping in the approaches to our ports. Through employing a campaign of submarine warfare, an adversary can force a disproportionate response by Australia, even without firing torpedoes - the mere suspected presence of potentially hostile submarines lurking near Australian ports would create havoc with Australia's trading relationship with the outside world. Furthermore it is likely that if Australia does proceed with acquisition of Tomahawk cruise missiles for its Collins class SSKs, then potential adversaries will seek the same capabilities, leading to the submarine threat to Australia increasing to include the potential for stand-off cruise missile attacks against land targets.² Thus given these strategic vulnerabilities, and the growing submarine capability in the region, it is plausible to suggest that the submarine threat should increasingly occupy the minds of defence planners in the coming years. Yet the submarine is only effective when it remains undetected. If Australia can effectively detect submarines as they approach Australian territorial waters, an adversary cannot employ submarines as effectively against us in a crisis if such a detection capability did not exist.

Perhaps the first type of Ocean Surveillance technology that could be employed by Australia is the fixed seabed hydrophone array. The US currently employs this technology in its Sonar Surveillance System (SOSUS). The SOSUS network can detect submarines

at a distance of several thousand kilometres, and can localise the submarines position to within an 80 km radius at that distance.³ According to DA-94;

"The feasibility of fixed seabed acoustic arrays for wide area maritime surveillance will be investigated."⁴

Australia's experience with SOSUS technology has been gained as part of Project Flowerless which began in 1971 off the coast of Christmas Island and was concluded in 1978.⁵ This project saw the emplacement of a passive sonar array along the Java Trench linked to the island by 24km cables. Since the conclusion of Project Flowerless, research has continued into SOSUS technology by the Defence Science and Technology Organisation (DSTO). According to a DSTO spokesperson;

"In the Australian scenario, which gives precedence to protecting the sea-air gap and northern littoral approaches, fixed sea bed arrays could offer significant advantages in some areas, especially in the deep waters to our North West. These advantages include the ability to detect and classify submarines and surface ships with a high degree of certainty as these vessels cross the array."⁶

This positive view of the utility of SOSUS like arrays for the wide area surveillance of Australia's strategic approaches is supported by Professor Desmond Ball, one of Australia's leading strategic analysts;

"ASW arrays off the north-east and north-west of Australia would be of enormous value to the defence of Australia. However, the full potential of these ASW detection systems can only be realised by coordinating data from these fixed arrays, from towed arrays, and from airborne systems such as the Australian developed Barra system currently deployed on P-3c Orion long-range maritime patrol aircraft."⁷

However it has become widely accepted that passive ASW detection is becoming less and less effective as very quiet SSKs enter service. This is particularly the case in shallow water situations, where previous techniques and cold war technology just is no longer sufficient to counter the threat posed by post-cold war SSKs. The solution to the ultra-quiet SSK is seen to be Low Frequency Active (LFA) sonar and alternative signal processing strategies.⁸ There have been a number of trials with LFA sonar systems in warm tropical waters around Northern Australia. The results obtained to date indicate that useful detection ranges can be achieved. Research is focusing on a variety of bi-static and multi-static configurations, but for the purposes of a fixed hydrophone array, the actual LFA transmitter will be seabed mounted, and reception can be made via OSVs, sonobuoy fields or a separate fixed seabed array.⁹ However LFA suffers from some inaccuracy in pinpointing a submarines position. It is

highly likely that in an operational situation, the fixed seabed LFA array would detect an adversary's submarine at long range, track it, but in order to generate a fire control solution, a medium frequency sonar or non-acoustic detector would have to be employed. It is quite plausible for bottom mounted LFA arrays to be integrated with a weapon system such as the CAPTOR mine to allow wide area sea denial to an adversary's submarines in key focal regions.¹⁰ In this way, key maritime approaches could be defended 24 hours a day, seven days a week, with control of the ASW 'kill zone' maintained from a shore facility.

A second means of undertaking Ocean Surveillance to detect potentially hostile submarines is through the acquisition and deployment of Ocean Surveillance Vessels (OSVs) similar to the US Stalwart class T-AGOS vessels. The US Navy currently operate 14 of the vessels, which uses a AN/UQQ-2 Surface Towed Array Sonar array that is 1829 metres long and is deployed over the stern of the OSV. Data picked up from the array is transmitted via satellite to a shore monitoring station for processing and evaluation. The vessels are unarmed, have a crew complement of 30, and undertake 90 day patrols.¹¹

An Australian OSV capability could be acquired quite cheaply. The ship itself needs no real special capabilities beyond the necessary support equipment for the sonar system, although it would be prudent to construct the vessel to be modular in nature, so as to allow for the addition of perhaps a point air defence system if a crisis demanded it. Ideally, the vessels would be equipped to operate their own ASW helicopter equipped to carry both ASW and ASuW ordnance, thus allowing the OSV to operate independently of other RAN units. Australia has had some experience with towed array sonars including the ASTASS system and DSTO has done research with the slim line buoyant fibre array, known as Kariwara, which is now being developed further by GEC Marconi Systems, whilst Thomson Sintra Pacific are developing the Narama slim line array.¹²

Besides fixed seabed hydrophone arrays and OSVs, a range of other technologies exist for wide area ASW surveillance. One option may be to purchase additional maritime patrol aircraft beyond Australia's existing fleet 19 P-3C Orions, invest in the development of sonobuoy fields, and Rapidly Deployable Sonar Systems (RDSS) - in effect a air-droppable or ship deployable SOSUS array. The DSTO has undertaken substantial research into the latter two technologies, and it should be possible for Australia to deploy a RDSS within five years.

Thus in summary, a range of technologies exist - fixed seabed hydrophone arrays, Ocean Surveillance Vessels employing SURTASS sonars, additional maritime patrol aircraft, sonobuoy fields and the RDSS - which

could be effectively employed to fill the submarine detection gap in Australia's strategic surveillance capability. All of these technologies could be employed rapidly to increase Australia's long range submarine detection capability. Furthermore, an Ocean Surveillance System would also be most effective if it was employed in concert with JORN, signals intelligence, operations by ADF surveillance units, and intelligence from non-military or external sources. This concept is known as 'data fusion' and would gather together a wide variety of data sources from a variety of reconnaissance and surveillance platforms, and use advanced computer processing technology to develop a clear 'big picture' of military operations occurring around Australia's region of primary strategic interest.

An Ocean Surveillance System would be a strategic asset in much the same way that JORN is. Such an asset could play a significant role in Australia's new focus on defence policy for the Asia-Pacific region, rather than just a defence policy for the defence of the sea-air gap. In much the same way that JORN data is shared with Australia's allies in the region, data from an Ocean Surveillance System can also be shared with friendly regional states. This can act as a foundation for developing confidence building measures (CBMs), and key elements of the Ocean Surveillance System, such as the Ocean Surveillance Vessels, or additional Maritime Patrol Aircraft, could be operated with joint crews - perhaps under the Australia-New Zealand

CDR Agreement, or the Indonesia-Australia Agreement on Maintaining Security (AMS). There is a suggestion that Indonesia is interested in pursuing fixed seabed hydrophones as a solution for focal area and archipelagic surveillance.¹³ Joint development of such a system could benefit both Australia's and Indonesia's security interests as a result of closer defence cooperation and improved confidence building measures.

In conclusion, there is a valid strategic rationale for Australia, in cooperation with regional allies, pursuing development of a Ocean Surveillance System, as a means of strengthening the wide area surveillance capability of the ADF to also include submarine surveillance. At present, Australia lacks an effective strategic ASW detection capability. Its surface combatants, submarines and maritime patrol aircraft can provide area ASW capabilities within a specific region during a crisis, but RAN units are poorly positioned to provide on-going wide area surveillance over a prolonged or indefinite period. In effect, the RAN needs a 'JORN' style capability for strategic submarine detection, and a combination of seabed mounted LFA sonar arrays, Ocean Surveillance Vessels, extra Maritime Patrol Aircraft, sonobuoy fields and rapidly deployable sonar systems can provide Australia - and the region - with added foreknowledge of submarine movements. Such a capability can only improve the credibility of deterrence, enhance regional stability, and reduce the risk of conflict in the future.

NOTES

1 Desmond Ball, "The Post Cold War Maritime Strategic Environment in East Asia" in Dick Sherwood (ed.), *Maritime Power in the China Seas - Capabilities and Rationale*, Australian Defence Studies Centre, Canberra, 1994, pp. 15-23.

2 Ian McPhedran, "Cruise Missiles for Subs" in *The Canberra Times*, Friday, August 16th 1996, pp. 1-2.

3 Desmond Ball, *A Suitable Piece of Real Estate - American Installations in Australia*, Hale and Iremonger, Sydney, 1980, pg. 112.

4 Department of Defence, *Defending Australia - The 1994 Defence White Paper*, Australian Government Printing Office, Canberra, 1994, Section 5.16, pg. 40.

5 Ross Babbage, *A Coast too long - Defending Australia beyond the 1990s*, Allen & Unwin, Sydney, 1990, pp. 170-175.

6 Statement by Dr. Roger Creaser, Aeronautical and

Maritime Research Laboratory, Maritime Operations Division, Defence Science and Technology Organisation, 18th March 1996.

7 Ball, op cit., pg. 112.

8 Creaser, Op Cit.

9 Lt.Cmdr. Graeme Dunk, RAN, "Anti-Submarine Warfare" in Dick Sherwood, *Operational and Technological Developments in Maritime Warfare: Implications for the Western Pacific*, Canberra Papers on Strategy and Defence, no. 105, Strategic and Defence Studies Centre, Canberra, 1994, pp. 51-52.

10 Dunk, Op Cit., pg. 52.

11 Chris Bishop, *The Encyclopedia of World Sea Power*, Temple Press-Aerospace, London, 1988, pp. 196-197.

12 Creaser, Op Cit.

13 Dunk, Op Cit., pp. 55-56.



The OPC Project

By Argos

The OPC (Offshore Patrol Craft) project is almost unique in Australian naval history. Not since the abortive DDL in the 1970s has the RAN had a project for a warship which is to be both designed and built in Australia. Even then the DDL was the first major warship intended by for the RAN to be designed and built in Australia. While purists may not call the OPCs major warships, they will probably be the most significant capital acquisition the RAN makes in the next decade.

The OPCs will be the latest RAN patrol forces, following the *Fremantle* class patrol boats (FCPBs), the A Boats and during the Second World War the *Bathurst* class corvettes/minesweepers. Though they are intended to replace the FCPBs they do not sit very well in this company. None of the *Bathurst* class, A boats or FCPBs had or have such significant warfighting capabilities as the OPC will have. During the Second World War the *Bathurst* class had little or no capability against any serious form of determined attack: they provided escort against submarines and armed motor boats, transported troops and supplies, conducted minesweeping operations, and conducted the myriad other minor operations that engage a navy during conflict. That their losses were not greater was due to their being employed in low threat areas and because they were involved in tasks which, despite their importance, did not usually justify significant effort by enemy forces. (This should not be taken to mean that the corvettes during WW2 were never in danger, merely that the threats to them came from a different league to those which faced, for example, the USN carrier task groups.)

The OPCs are capable of all that their predecessors were (mine clearance operations excepted) and more. The designs thus far seem to be very well considered. The project has taken cognisance of the potential in automation, mission specific manning and presumably weapons/sensor fits, improved maintenance cycles and hence availability, and much much much more. Lessons learnt from the project management and design of the *Collins* and *Anzacs* has been assimilated. It does seem to be in many respects a model operation. But there are many questions unanswered. And like the project itself, which is already late in terms of replacing the FCPBs, these questions should have been answered before now. That being the case, there is no time like the present.

The OPCs are intended to be based in Darwin, along with the new hydrographic survey ships. Though no one has mentioned it so far, this seems suspiciously

like 'three ocean basing'. And there are lots of good reasons for the RAN to have a significant presence in Darwin. There are many questions which the Navy must think through first. Does Darwin have sufficient infrastructure to support massive increases in both the Navy and Army presence there? What are the costs in terms of operating more and larger ships from there? Everything must come by road or by sea. What are the strategic implications of this? What are the personnel costs? In many respects these personnel issues are the biggest of all. They are certainly the ones which will attract the most attention from the naval community, and they are the ones which are perceived to have received the least attention during the process of implementing the 'two ocean basing' policy. A final and reasonably valid question is whether the RAN is big enough to support three major bases. None of these questions seem to have been addressed, yet their impact on the OPC project, and through it the RAN, is substantial.

Another question which has been addressed to a small degree is how the OPCs will operate in peacetime. The RAN has substantial constabulary tasks related to the protection and enforcement of Australia's sovereign rights in its Exclusive Economic Zone (EEZ). The OPCs, will have a medium calibre gun, a naval combat data system, a helicopter, a surface to air missile system, and the accompanying communications, fire control and sensor systems. The crew who operate these will presumably need consistent continuation training in the procedure and tactics needed to operate them. How compatible will this military training requirement be with the constabulary tasks? Will there be a need to constantly visit the EAXA or WAXA or will the requisite support be provided in the NAXA as well? And how will these constabulary tasks be conducted in a time of conflict, for they will not cease just because a war is imminent?

The RAN's commitment to constabulary tasks, which currently garner the bulk of the FCPB fleet's seetime, is measured in seadays. Modelling of its performance suggests that the OPC will be many times more effective than a *Fremantle*. But this increased effectiveness cannot be measured in seadays. What measure can the RAN provide to demonstrate the improvement, or at least maintenance, of its commitment to constabulary tasks? Such a measure must be accepted by at least a majority of the various Government departments which have a stake in managing, monitoring and exploring Australia's EEZ. This in itself is a major undertaking and open to political and bureaucratic friction, in the same way that the OPC's con-

stabulary tasking will be subject to operation friction. (Friction is used in both cases in the sense that Clausewitz expressed.) If the RAN cannot fulfil its peacetime constabulary functions, this will lead to pressure for a coastguard which will. The RAN is already a small service and formation of a coastguard would certainly mean reduced funding and increased competition for scarce personnel and other resources. If there is a critical mass for the RAN, the RAN is probably at or near it and reductions below its current size would mean a greater than proportional loss in capabilities. In this sense the OPC project is very high risk for the RAN.

Another question worthy of consideration is what the RAN is going to do in the interim between the delivery of the OPCs and the end of life for the *Fremantles*. Even if 10-12 OPCs are built the last may not be in service till around 2010, by which time, presumably, all the FCPBs will have been retired.

The rationale for the OPC is based around the current axiom that peacetime requirements are not to be force structure determinants, the corollary of which is that all ADF assets must have a primarily military function. That this should be the main tenant of ADF planning is neither surprising nor contentious. However, the guiding rule for interpreting the old Queen's Regulations and Admiralty instructions is worth bearing in mind: the letter killeth, but the Spirit giveth life. Navies have significant peacetime responsibilities; constabulary and diplomatic functions which are in many cases unique to naval forces and are in addition and complementary to their military functions. In an era when these constabulary and diplomatic functions are taking on more importance, perhaps it would be wise for the RAN and the ADF to consider including them as force structure determinants. They would not have to be principal determinants, but to exclude them makes any study of force structure unnecessarily artificial: monocausal solutions are rarely satisfactory.

The significance of the OPC project to Australia's warship building industry is also considerable. The

OPC will fill the gap between the delivery of the last *Anzac* and the commencement of the first FFG replacement. If the OPC project is not successful then what are the implications for the major warship building industry which has been developed over the last decade? Are the FFG and *Anzac* upgrades sufficient to maintain the infrastructure, despite operation at reduced capacity, until another major project commences. Is this a force structure determinant?

The OPC project is very important for the RAN, Transfield and Australia. Consideration of the domestic implications, some of which have been set out above, is complicated enough. But there has been little consideration of these issues, perhaps because of concern over implications for the potential partnership with Malaysia to build a Joint Patrol Vessel (the OPV in a multi-national guise). The rationale being that Transfield's bid may be weakened if there is any perceived Australian vacillation over the project. This reasoning is probably spurious. If the Malaysians were seriously concerned about the Australia's commitment to the project, suppression of Australian discussion would most likely increase rather than allay their fears. Nor would it prevent the Malaysian Government from quickly working out in broad terms what the Australian concerns were. Surely our experience with and promotion of confidence building measures would suggest that some degree of transparency was desirable.

Even if Malaysia does not chose the Transfield bid and give life to the JPV, the RAN will still have a requirement to replace the FCPBs. The starting point for that process will surely be the OPC or some derivative of it. Thus Australia's commitment to an OPC must be quite firm. It is how we implement the OPC, and the implications it has, that need consideration, not whether we need one. The OPC has great potential for the RAN, the ADF and Australia. It would be a great shame and a big setback if it went the way of the DDL. The RAN must take a broad view of the OPC project. Excellence within the project is not enough.



'Money, Guns and Women'

Reflections On the RAN's Good Working Relations Program

Lieutenant Benjamin Spurgin RAN

This may seem a strange title for an article on the Navy's Good Working Relations (GWR) program, but it is my belief that there is a direct correlation between the treatment of women in the Service, government funding for naval operations and our readiness for combat. Overseas experience has demonstrated that a Navy which is out of step with a public that supports and demands gender-neutral equality and a non-sexist workplace will suffer both politically and financially. The commensurate toll in terms of combat readiness, where crews are required to fight as a harmonious team in trying circumstances, can only inhibit the mission of fighting and winning the war. The navies of the United States and Great Britain may be cases in point. In its aggressive GWR campaign, the RAN is setting a standard which is gaining an enviable reputation for fairness and equity in the workplace, whether that be in the corridors of Navy Office in Canberra or on the high seas.

While addressing the current RAN Staff College course at HMAS PENGUIN last month on issues relating to the Navy's GWR program, LCDR Chris Forbes (Staff Officer, Equal Employment Opportunity) and I were impressed by the positive attitude displayed by the students to the material being discussed. Similar positive reactions have come from other audiences of all ranks from both seagoing and shore-based billets. From a Directorate of Naval Personal Services (DNPS) perspective, the most encouraging response to topical issues such as the presence of women at sea, harassment, sexism, discrimination and workplace equity has been, 'so what is all the fuss about?' In other words, most people consider recent developments in policies relating to the living and working environment of all RAN personnel as reasonable and appropriate and in line with Australian community standards. Of course, there is ample room for improvement in an organisation whose corporate goal must be a zero tolerance of behaviour which inhibits any member's ability to perform at their best.

However, in contrast to our naval brethren from the United States Navy (USN) and Royal Navy (RN), the RAN may arguably be leading the field in the equal employment opportunity (EEO), social justice and workplace equity arenas.

I note, for example, the observations of a recently retired USN Captain in the United States Naval Insti-

tute *Journal Proceedings* who described the recent spate of sexual assaults and harassment cases in that service as a 'water torture, a non-stop sequence of painful embarrassments, each drop eroding the people's trust and our own confidence in the Navy.'¹ The commentator contended that the USN was failing to address the issue of sexism by band-aid disciplinary hearings and protracted legal investigations, instead of insisting on positive leadership and revised standards of behaviour throughout their Navy. Nor would the community, he argued, sustain a military that cannot treat its women equitably. He forecast a bleak future for a sexist service:

A Navy that is seen as sexist and held in disdain by the American people cannot hope for the understanding, backing and dollar support needed to buy the necessities of readiness. Nor can a sexist Navy hope to recruit or retain the best male and female talent: the youngsters of both genders abhor sexism. Sexism directly diminishes the two resources most vital to [operational] readiness: people and money.²

Nor has the USN's premier training institution for officers at Annapolis escaped the lash of public condemnation over its treatment of women. Under the banner headline, 'US Academy's trainee naval officers not all gentlemen,' the *Canberra Times* published a syndicated story from the *Washington Post* newspaper, which detailed a litany of sexist offences against women, culminating in the third-ranking midshipman in the Academy being thrown in the brig facing charges of sexual assault and intimidation of female subordinates.³ Such scandals have caused the superintendent of Annapolis, Admiral Charles Larson, to take the almost unprecedented step of ordering a seven day 'stand-down' at the Academy, confining its 4000 strong population to a period of enforced reflection on what has gone wrong. One senior staff member at Annapolis diagnosed the problem 'as a culture of hypocrisy.....that tolerated sexual harassment, favouritism and the covering up of problems.'

Such comments may not be over-stating the public perception of anti-female sentiments in the military, given the strong public backlash against the RAN after the allegations of harassment of Navy personnel in HMAS *Swan* were released by the Australian media in 1992.

But, the difference is, four years later, the RAN boasts a comprehensive education and training package on workplace equity for all members, and this is being incorporated into the EEO programs of other service and government organisations. It is now recognised that personnel cannot operate effectively in an oppressive work environment. Nor can our leaders focus on their military mission when their scarce human and financial resources are diverted to investigations and lengthy legal process.

Recent media reports on this issue in the RN have highlighted some very serious management challenges for that service. A BBC documentary focusing on the working lives of female sailors and officers serving at sea in the RN frigate HMS *Brilliant*, portrayed them as 'second-class citizens' onboard the vessel, a view which was heartily endorsed by those female personnel interviewed during the program. Whilst this documentary may not be indicative of the plight of the majority of women employed by the RN, it is nonetheless disturbing that such reports have uncovered serious allegations of sexism, harassment and in some cases, sexual assault. Just as disturbing as these allegations were, so too was the apparent lack of policy guidance in the RN to offer leaders clear direction on how to deal with such problems.

It is not my intention to criticise the efforts of the USN and RN handling of their workplace equity difficulties. Rather, by highlighting the personnel challenges being experienced by other services, Directorates responsible for developing gender-related policy such as DNPS can avoid some of the pitfalls encountered by those sharing our unique working environment. Lessons learned include the need to address the issue of sexism now, and not to content ourselves with platitudes about slow and incremental change in the behaviour of our current naval generation. As Captain Byron of the USN says, 'The Navy cannot afford to bleed in public for "another generation."'⁴

I feel confident that the RAN is currently on target in defining proper gender relations in the Service. We are focusing less on proscribing behaviour carrying disciplinary or criminal liability, and concentrating instead on the promotion of GWR as an essential management tool for personnel at every level. Experience has shown that the 'big stick' approach does not always work. Significant gains have been made through this program in improving the culture of our workplace, in particular those environments that were deemed as 'men only' a short time ago. The relative success of focusing on the dignity of the individual and accepting personal accountability for actions, rather than emphasising punishment for alleged offenders, is evidenced by the significant decline in serious complaints and the positive reactions to GWR lectures and facilitated sessions in the RAN during the last year.

Noting the progress made in the RAN in this area in recent times, there is no reason for complacency on our part. No organisation is immune from another HMAS *Swan*, 'Tailhook' or HMS *Brilliant*. The challenge remains for us to maintain our diligence and to continue to promote respect for the contributions of every serving member, without getting bogged down in costly and debilitating gender battles which achieve little more than tarnishing the Navy's public image.

¹ Captain John L. Byron, USN (Rtd.), 'End Sexism', USNI *Proceedings*, (February 1996) 27.

² *ibid.*, 28.

³ *The Canberra Times*, 11 May 1996

⁴ Byron, 'End Sexism', 29.

Lieutenant Spurgin is SO(Legal) in the Directorate of Naval Personal Services in Navy Office, Canberra



The NOAA Corps

America's Seventh Service

Graham Wilson

If asked to name America's uniformed services, doubtless most, if not all, readers would be able to rattle off Army, Navy, Air Force, Marines and Coast Guard. There are, however, two other uniformed Federal services, both with strong links to the sea and both little known, even in their own country. These two services are the Commissioned Corps of the United States Public Health Service (an organisation which began life as a hospital and nursing service for sailors and which to this day wears a naval style uniform and uses naval rank badges and titles), and, the subject of this article, the National Oceanic and Atmospheric Administration (NOAA) or, more precisely, the NOAA Commissioned Corps or NC.

Historical Background

The NOAA, which is an element of the US Department of Commerce, and the NOAA Corps trace their origins back to the Survey of the Coast which was established by President Thomas Jefferson in 1807. Prior to that time, navigation in American waters had been very much a hit and miss affair, mariners relying on a combination of outdated British, French and Spanish charts, local knowledge and a lot of luck. With the commerce of the young nation almost totally dependant on the sea, this situation was obviously not good enough and Jefferson set about rectifying the matter by establishing the Survey of the Coast and appointing an energetic and technically skilled Swiss immigrant named Ferdinand Rudolph

Hassler as the first Superintendent.

Hassler remained Superintendent until his death in 1843 and left behind a thriving organisation imbued with his own principles of accuracy, scientific standards and integrity. In the years leading up to the Civil War, the civilian surveyors of the Survey worked with seconded Army and Navy officers to chart America's coasts and waterways, produce topographic maps of the coastline and conduct a comprehensive program of triangulation. All Army officers and all but two of the Navy officers were withdrawn from what had now become known as the US Coast Survey at the outbreak of the war, the burden of carrying out hydrographic and topographic survey work in support of the Union Army and Navy falling on the civilian Coast Surveyors. These men and women (the Coast Survey was the first US Federal agency to hire

female professionals) served in all theatres of the war and were often in the front line or even forward of it carrying out mapping duties.

After the war, the Coast Survey went back to its job of making the nation's shores safe for mariners. The area of responsibility grew with the acquisition of Alaska in 1867 then, in 1871, a new law was passed requiring the Coast Survey to carry out geodetic surveys in the interior of the country. As a result of this, the service changed its name once again, this time to the United States Coast and Geodetic Survey (USC&GS). Shortly after the change of name, naval hydrographers returned to the Survey and remained there until the Spanish-American war when they were once more withdrawn, this time permanently.

All this time and right up until America's entry into the First World War, the USC&GS remained a civilian organisation, although officers and men wore uniforms virtually indistinguishable from those of the US Navy. With the entry of the US into the war, however, the USC&GS Commissioned Corps was established in order to protect officers of the Survey from running the risk of being shot as spies in the event of capture (presumably either some similar arrangement was made for non-commissioned employees of the Survey or the powers that be didn't particularly mind if they were shot!). The legislation establishing the Commissioned Officer Corps specified that the USC&GS was available to serve under the Navy or Army in time of war of specified national emergency in much the same way as the Coast Guard becomes part of the Navy in such circumstances. As a result of this, over half the commissioned officers of the Survey served with either the Army or Navy during the war, the Superintendent of the USC&GS himself serving as a colonel on the staff of General Pershing, Commander of the American Expeditionary Force in France.

At the end of the war, the USC&GS returned to its peacetime role as surveyor and map and chart maker to the nation. With the advent of the Second World War, once again over half of the commissioned officers served with the armed forces, while half of the civilian work force of the Survey also served in the armed forces. USC&GS officers served as topographic surveyors, hydrographers, artillery surveyors, amphibious engineers and beach masters in every theatre of the war. The Survey ship *Pathfinder* was taken

commissioned, under the same name, as a Navy ship. Admiral Chester Nimitz later stated that: "The road to Tokyo was paved with *Pathfinder* charts". Although she served during the war as USS *Pathfinder*, Nimitz always referred to her as a USC&GS ship as her officers and crew were all from the Survey and Nimitz knew exactly where the praise for her efforts and accomplishments was due.

Following the war, the officers of the Survey once again returned to their peace time pursuits. But this time there were some additional tasks and responsibilities. USC&GS surveyors spent over ten years in the Arctic wastes surveying sites for the Distant Early Warning (DEW) Line of radar outposts. Others carried out geodetic and geophysical surveys of rocket ranges, while others still carried out seismic monitoring of US nuclear tests. Finally, in 1959, responsibility for environmental studies were also passed to the Survey as the US government began to come to terms with the early effects of global environmental degradation.

In 1965, various scientific agencies, including the Coast and Geodetic Survey, were brought together under the umbrella of the newly formed Environmental Science Services Administration (ESSA) and the Commissioned Corps of the USC&GS was renamed the ESSA Corps, although the USC&GS itself continued to serve under that name. Finally, in 1970, the ESSA was renamed the National Oceanic and Atmospheric Administration, the USC&GS ceased to exist and the ESSA Corps was renamed the NOAA Corps, assets of the former USC&GS being transferred to the NOAA.

The NOAA

The NOAA, which is the largest agency of the US Department of Commerce, is administered by the Under Secretary of Commerce for Oceans and Atmosphere and consists of the following offices and services:

- Office of the Under Secretary and Administrator of the NOAA
- National Environmental Satellite, Data and Information Service (NESDIS)
- National Marine Fisheries Service (NMFS)
- National Ocean Service (NOS)
- Office of Oceanic and Atmospheric Research (OAR)
- National Weather Service (NWS)
- Office of NOAA Corps Operations

To staff these offices and services and to run operations, the NOAA employs 11,000 civil service personnel and about 370 commissioned officers. Of this total, approximately 700 civilians are employed, along with the 370 commissioned officers, by the Office of NOAA Corps Operations. NOAA operates a fleet of

24 vessels as well as 11 fixed wing aircraft and three helicopters in pursuit of its missions.

The NOAA Corps

The day to day running of survey and research operations is the responsibility of the NOAA Corps (NC), the smallest of the uniformed services of the United States. The NC consists of about 370 personnel, all officers and has its headquarters at Silver Springs, Maryland. Although a uniformed service, the NC is not an armed or military service and differs from the other services in that: there are no warrant officers or enlisted personnel in its ranks; officers serve under renewable term contracts; and officers of the Corps are covered by NOAA Corps Regulations rather than by the Uniform Code of Military Justice. On the other hand, officers of the Corps hold Federal commissions issued in the name of the President and Congress; are liable for transfer to the Department of Defence in time of war or specified national emergency; are entitled to unrestricted use of military on-base facilities such as post exchanges and commissaries; and are entitled to a number of Federal military benefits including veteran's benefits.

Organisation. Commanded by a Rear Admiral who is both Director of the Office of NOAA Corps Operations and Commandant of the NOAA Corps, NC is organised into Headquarters, which includes the Commissioned Personnel Centre; two fleet operations centres, the Pacific Marine Centre (PMC) located in Seattle, Washington and the Atlantic Marine Centre (AMC) located in Norfolk, Virginia; an aircraft operations centre (AOC) at MacDill Air Force Base in Tampa, Florida; and a Dive Office (NDO) in Seattle. Smaller bases are also located at Woods Hole, Maine; Pascagoula, Mississippi; Miami, Florida; La Jolla, California; and Honolulu, Hawaii. The two Fleet Operations Centres are each commanded by a Rear Admiral while the smaller bases are administered by Port Captains. Officers of the Corps are posted to all of these areas as well as to a multitude of other positions throughout the Continental United States, as well as Alaska and Hawaii and overseas locations (including Australia).

Recruitment and Training. Potential officers for the Corps are recruited from Marine Science and Engineering graduates of universities throughout the United States. A number of graduates of the United States Merchant Marine Academy are also commissioned into the NOAA Corps each year. On appointment to the Corps, new officers receive the rank of ensign and, regardless of prior training or experience, are sent to the NOAA Corps Officer Training Centre (OTC) which is responsible for providing newly commissioned officers with nautical skills, officer indoctrination and entry level, program-specific skills. The Centre also conducts formal refresher training for

officers returning to sea duty following a posting to a shore billet. OTC is located at Fort Eustis, the US Army's Transportation Centre and School near Newport News in Virginia. Among other skills taught at Fort Eustis, the US Army, which operates a fairly respectably sized fleet of sea-going vessels of various types, trains its own seamen there. While management and provision of training are the responsibility of the small OTC staff (NOAA Corps officers), the OTC itself utilises US Army curriculum, logistics and facilities from the maritime wing of the Transportation Centre and School on a cost recovery basis.

Fleet. Officers of the NOAA Corps command and navigate the Agency's fleet of 24 vessels, ranging from ocean going survey ships to small coastal vessels, which are responsible for hydrographic survey, oceanographic research and fisheries research. While always commanded by an officer of the NOAA Corps, NOAA ships are run by a combination of Corps Officers and civilian mariners. The latter includes licensed engineers and other members of the engine, deck and steward departments. Ship's crews, both NOAA Corps and civilian mariners, provide mission support to embarked scientists and technicians.

For oceanographic research, the NOAA currently operates the AGORs *Oceanographer*, *Surveyor*, *Discoverer* and *Malcolm Baldrige*. AGOR *Researcher* (which is scheduled to replace *Malcolm Baldrige*) is currently under construction while NOAA has taken possession of the former US Navy survey ship *Titan* which is being converted to AGOR and will be commissioned as *Ka'imimoana*. Hydrographic survey is carried out by *Mt Mitchell*, *Rainier* and *Fairweather*, while coastal survey is carried out by *McArthur*, *Davidson*, *Whiting*, *Rude*, *Heck*, *Pierce*, *Ferrell* and *Relentless*. Fisheries research is carried out by *Townsend Cromwell*, *Miller Freeman*, *John N. Cobb*, *David Starr Jordan*, *Oregon II*, *Chapman*, *Albatross IV*, *Murre II* and *Delaware II*.

Aircraft. The NOAA operates a small fleet of aircraft, consisting of 11 fixed wing aircraft and three helicopters, in support of its operations. The largest aircraft operated by NOAA are P-3 Orions (official designation WP-3D) which are largely used for hurricane prediction and research (anyone who would willingly fly an aircraft into the eye of a live hurricane, which is exactly what the NOAA "Hurricane Hunters" do, has to be certifiably insane!). NOAA aircraft are commanded and piloted by officers of the NOAA Corps. Aircraft operations are based out of the Aircraft Operations Centre (AOC) at MacDill Air Force Base in Florida. The aircraft support a wide variety of NOAA programs including hurricane prediction and research, aerial photogrammetry in support of coastal mapping and charting, aerial snow surveys and aerial support of marine mammal surveys.

In addition to research and monitoring activities critical to NOAA's mission, NOAA ships and aircraft provide immediate response to capabilities for unpredictable events such as the *Exxon Valdez* oil spill, the *QEII* grounding, the Persian Gulf environmental disaster, and hurricane damage assessment.

Dive Operations. The NOAA has the largest complement of divers of any non-Department of Defence Federal agency in the US. The NOAA Dive Operations Office (NDO), which is an element of the NOAA Corps, supervises over 300 full time divers and, as an internationally recognised training institute, has trained almost 2,000 divers since 1987.

NOAA divers are employed on environmental assessments, on-site observation, surveys, installation and retrieval of underwater equipment, evaluation of instrumentation, and inspection, maintenance and repair of ships. Since 1989, NDO has logged over 51,000 dives with a 99.98% accident-free rate (one can only wonder at the nature of accidents making up the 0.02% balance - a diver accidentally cutting his finger while cleaning his diving knife perhaps) and no fatalities.

Training is the responsibility of the NOAA Dive Centre (NDC) at Seattle and the NDC also carries out centralised management and maintenance of all NOAA diving equipment, as well as maintaining a pool of equipment to ensure rapid logistical support for short notice diving operations. The *NOAA Diving Manual* is the biggest selling item on the US Government Printing Office's book list and, as a result of the NDO's reputation, the US Coast Guard is considering having NOAA assume responsibility for Coast Guard diving training, a task which is currently carried out for the USCG by the US Navy.

NOAA Uniforms, Insignia and Flags. In keeping with its history, traditions and roles, uniforms of the NOAA Corps are very closely based on those of the US Navy. Officers wear US Navy winter blue, summer white and khaki uniforms as appropriate. Naval rank titles are used and rank lacing is exactly the same as for the USN, the only difference being the replacing of USN line or corps devices above the lace with the NOAA device consisting of a globe with a triangle superimposed. The globe and triangle motif is repeated on the cap badge where it replaces the United States shield over the crossed anchors. While it has not been possible to confirm whether or not non-NOAA Corps personnel employed on shipboard duties wear a uniform, this was certainly the case in the not so distant days of the USCG when crew members wore uniforms only distinguishable from those of the US Navy by the addition of a small globe and triangle device on the left cuff of the sailor's jumper or PO's reefer jacket.

All NOAA ships and shore establishments fly the NOAA flag which consists of a blue field on which is a white circle bearing a red triangle. This is the former insignia of the USC&GS, the triangle representing the triangulation methodology of geodetic survey. Superimposed over the triangle is the device of the NOAA, a circle with a white sea gull in full flight on it, the colour above the gull being dark blue and below light blue. This device, which represents the mission of the NOAA, was added to the triangle in 1970 when the USC&GS was absorbed into the new agency. As well as the NOAA flag, ships also fly a commissioning pennant with a white canton bearing seven red triangles and the main field in dark blue.

Conclusion

The NOAA Corps is the inheritor of almost 200 years of scientific effort. The Corps and its predecessors, the Survey of the Coast, the US Coast Survey, the US Coast & Geodetic Survey and the ESSA Corps, have played a vital role in the maritime life of the United

States in both peace and war. They continue to play this role. Although small, the Corps is an efficient and proficient uniformed service, going about its business with a quietness and professionalism which has ensured that they are little known in their own country, let alone the rest of the world.

Alas, the quiet professionalism of the NOAA Corps may have worked against it for President Clinton, apparently acting in ignorance and on incorrect advice and information, recently announced the intention to disband the NOAA Corps. This decision was apparently made under the impression that the Corps is a military service charged with the defence of the nation, along with the Army, Navy, Marines, Air Force and Coast Guard, rather than what it actually is, ie. a uniformed corps of commissioned scientist/sailors charged with ensuring safety of the sea lanes and sustainability of the marine environment. It is to be hoped that the president has since been advised of the nature of his mistake and that the decision to disband the NOAA Corps has been rescinded.



Rear Admiral J.E.N. Welch CB, Chief of Staff of the New Zealand Navy congratulates Sub Lieutenant Kelvin Wishart on being the 1996 recipient of the New Zealand Chapter of the ANI Prize for the officer who contributes the most to the Junior Officer Common Training (JOCT) Course. The prize, a pair of binoculars, was presented at the 1996 JOCT Graduation Parade at which Rear Admiral Welch was Reviewing Officer.

Sub Lieutenant Wishart is a Commissioned from the Ranks Marine Engineering Officer who will undertake training in HMAS CERBERUS in late 1996 before commencing studies at the Australian Maritime College, Launceston in January. Photo: RNZN.

Was Price Right?

Officer Education at ADFA

Lieutenant Rick Leahy, RAN

ADFA 'remains a 1980s decision based on a 1970s post Vietnam environment of some antipathy towards the military'

This paper will examine, briefly, some of the main assertions of the 1995 report by the Joint Standing Committee of Foreign Affairs, Defence and Trade entitled *Officer Education: The Military After Next* (known colloquially as the 'Price Report' after the Committee's Chairman when the Report was released, the Hon Roger Price MP Member for Chifley). In particular, I want to focus some attention on Recommendation 14 of the Report, which states that training of undergraduate officers at the Australian Defence Force Academy should cease.

I should state my background at the outset, lest I be accused of arguing from some disguised position of bias. I am a graduate of the Defence Academy. I joined the Navy as part of the first ADFA intake in 1986, graduating in 1988 and remaining to complete a First Class Honours degree in 1989. I am quite proud of the achievements of the Defence Academy, but I would happily admit that its training and education regime has many shortcomings.

However, my aim in putting this paper forward is to raise the level of awareness of what ADFA stands for, and to highlight some of the glaring distortions portrayed in the Price Report.

What was the Price Report?

The Price Report is the end result of a series of hearings to inquire into officer education in the Australian Defence Forces. Indeed, the Joint Committee sets out with the laudable aim of examining the requirements for officer education in the military after next. The report raises many useful and pertinent points. For instance, the Joint Committee emphasizes the need in the ADF for tertiary qualified officers so that we will be better able to cope with the increasing complexity of modern warfare, we will be able to better understand events of global significance and, so that we will have a demonstrated ability to comprehend and manage change.

The report also suggests that the military examines the possibility of introducing some form of lateral recruitment of officers - perhaps on shorter commissions; it recommends that we further investigate the accreditation of appropriate civilian training and coursework; it suggests that we move further along the road towards distance education; and, it proposes that we integrate the three separate single service staff

colleges into one tri-service staff college.

In this sense, the Price Report confirms many of the points that were raised in 1976 by Sir Leslie Martin, when he recommended the establishment of ADFA. The 'Martin Report' stated that:

We have no doubt that there is a genuine and increasing need in the services for officers who have followed appropriate courses of tertiary education ... Service officers of the future must be more than leaders of men schooled in the techniques and disciplines unique to their professions. They must be articulate and be able to communicate and collaborate with specialists at home and abroad, in fields such as foreign affairs, economics, industry, science, labour and finance. For their contributions to be effective, their knowledge and understanding of these matters must be at a level that will gain the respect and recognition of those with whom they will be dealing.²

Curiously, despite the fact that ADFA has been running effectively now for ten years, it still attracts a great deal of criticism. Critics from both within the services and the public attack and lambaste ADFA because it is too elite, too expensive, too military, not military enough, too academically oriented and not academic enough!

The Joint Committee stated their satisfaction with the quality of the ADFA graduates:

The Committee has been impressed by the officer cadets and junior officers whom it has met in the course of visits to the colleges, ADFA and other Defence establishments. Indeed junior officers have performed admirably in overseas peacekeeping missions and in other areas, all of which reflects positively on the training received.³

However, despite these remarks, the Committee also attacks ADFA and the undergraduate education scheme that it runs, from two directions:

Firstly, that it is too expensive and, in value for money terms, it does not provide an efficient means of training and educating a military officer.

Secondly, that ADFA cadets are not sufficiently well exposed to "community values", they are educated in an "insular environment", or as Roger Price MP prefers: ADFA is a "military nunnery".

I want to take each of these criticisms in turn, and see whether or not these sections of the Price Report are either fair or accurate.

Cost

The table below utilizes figures taken from the Price Report to provide costings on the various forms of officer entry into the ADF. Clearly, at \$308,000 per graduate, the total cost of educating an ADFA cadet is far more expensive than any other form of officer entry.

Cost Per Graduate	
<i>Australian Defence Force Academy</i>	\$308,000
<i>Royal Military College Duntroon</i>	\$128,155
<i>Royal Australian Naval College Creswell</i>	\$88,950
<i>RAAF College Point Cook</i>	\$18,896

However, if we take into account the relative length of each of these officer education/training courses, a different picture begins to emerge

Weekly Cost	Total Cost (per Graduate)
<i>Royal Australian Naval College Creswell</i>	
\$3706	\$88 950
<i>Australian Defence Force Academy</i>	
\$1974	\$308 000
<i>Royal Military College Duntroon</i>	
\$1643	\$128 155
<i>RAAF College Point Cook</i>	
\$1349	\$18 896

The perspective that this analysis provides, indicates that an ADFA education at \$1,974 per week is on par, in terms of weekly cost efficiency, with RMC (\$1,643) and the RAAF College (\$1,349), and it is certainly far cheaper on a weekly basis than the training provided at RANC (\$3,706).

If we now compare these costs, with the weekly graduate training costs of the ADF Staff Colleges, we begin to see that ADFA, in relative terms, is far more cost efficient than the majority of officer training establishments, and that it achieves this efficiency in spite of having to feed and accommodate its students on campus.

Weekly Cost	Total Cost (Per Graduate)
<i>Australian College of Defence and Strategic Studies</i>	
\$5718	\$297,350
<i>Queenscliff Army Command and Staff College</i>	
\$5309	\$276 073
<i>Royal Australian Navy Staff Course</i>	
\$4,929	\$28,155
<i>Joint Services Staff Course</i>	
\$ 4695	\$122,072
<i>RAAF Staff Course</i>	
\$4487	\$233 363

In my view, these sort of comparative figures are telling. They indicate that, although educating an officer over three years at ADFA is, in total terms, the most expensive avenue of educating officers; in relative terms, it is demonstrably less expensive than the training provided at HMAS *Creswell* - and much less than that provided by any of the staff colleges.

However, figures and statistics perhaps only tell part of the story. To replace the undergraduate education provided by ADFA, the Price Report recommended that a scholarship system be implemented to recruit sufficient officer candidates for the ADF, and to provide them with a tertiary level education at civilian universities prior to their military training. Once again, using the Report's figures, such a graduate would cost \$68,820. After specific Navy training this figure would amount to \$157,770. Clearly this is far cheaper than our current system for educating our future officers ... But does cheaper mean more efficient? Does cheaper mean that the scholarship system would provide better value for money? Perhaps most importantly, does cheaper mean better?

These are the important questions - the tough questions - to answer. Unfortunately, even if you read the Price Report from cover to cover, you will not find the answers.

The 'Military Nunnery'

The publicity surrounding the release of the Price Report tended somewhat to distort the discussion of the key points. The Chairman of the Committee, Roger Price MP did little to prevent this occurring when he described ADFA as a "military nunnery" at a Press Conference late in 1995. Consequently, a fair amount of emotive, and perhaps even misguided, discussion ensued over whether or not a military university could provide aspiring young officers of the ADF with either a military background or an academic education.

The report argued that:

the insular and institutionalized nature of officer development militates against proper integration and interaction with members of the community ... students at ADFA have virtually no opportunity to interact and exchange ideas with the non military community in a sustained and meaningful way.

This is nonsense. The Committee seems to have ignored or paid too little attention to the many other aspects of cadets' education and recreation during their time at ADFA. For instance, there is no discussion of the participation by cadets in local Canberra sporting competitions, the relationships and friendships they form with peers of their own age in the local area and those that they maintain from their home towns; the contact they have with their families, relatives and sponsor families; the interaction they have with other

students when they undertake language courses or other academic subjects at local Canberra campuses; their interaction with members of the public on field trips; and, of course, the not inconsiderable (7 weeks a year) time they spend on leave.

The Committee have provided no evidence at all to substantiate their claims. On this issue, as with many others, the Report simply provides comments such as: "the Committee believes ...", "the Committee is concerned ...", "In the Committee's view ...". In short, to describe the Academy as a 'military nunnery' is simply a red herring.

From a more cynical perspective, it certainly begs the question as to how Roger Price MP and other parliamentarians can criticise ADFA cadets for being too isolated from the 'real Australian Community' because they live an exclusive existence with all the attendant allowances that their peers are not receiving, when according to the *Australian* newspaper, the costs associated with running our parliament amount to \$600,000 per politician per year. This is without including the politicians' salaries or those of their staff.⁵ When you compare these figures with the average earnings of a household in any local electorate, and the dining and accommodation facilities at ADFA with those at Parliament House, it soon becomes clear who lives the more cloistered existence!

Perhaps what members of the Committee are really concerned about, but are not prepared to state openly, is the perceived elitism that ADFA engenders. Certainly, elitism is not a popular concept to an Australian society that is keen to prune its tall poppies. In this sort of environment a motto like ADFA's "To Lead. To Excel" is bound to cause suspicion.

The operation of ADFA certainly involves a most interesting paradigm - that of combining the military with academia. Can a "Balanced and Liberal tertiary education within a Military Environment" really exist?

Professor Alan Gilbert, a former ADFA lecturer, described this paradigm as a 'union of Athens and Sparta' in an address he gave at ADFA in 1995. He said:

We were not there to prepare people for the profession of arms. The military staff - our spartan colleagues - were well prepared to do that. We were there to try to ensure that the military defenders of Australia's freedom would understand what freedom was ...⁶

I think this is perhaps the most important issue when we come to discuss the concept behind ADFA - and indeed behind officer education more generally. In my view, there is a serious misunderstanding about what ADFA is about and why officers need tertiary

educations. This is clearly seen in the opposition to cadets undertaking honours degrees and in officers returning for post-graduate study. Too often, criticism is leveled by senior officers - both serving and retired - who do not have any tertiary qualifications at all.

ADFA, and a number of other universities for that matter, aim to offer what they describe as an education that is both balanced and liberal. Therefore the education that any young midshipman at ADFA receives should be balanced with respect to the depth and breadth of knowledge as well as balanced with respect to the combination of practical and theoretical training. If their education is liberal, it should be free of prejudice and it should encourage the students to be receptive to new ideas and reforms. It should encourage each cadet to question and explore personal and institutional 'norms', enabling them to meet the challenges of an evolving culture and society.

What this means for the Navy, Army or Air Force is that their ADFA graduates should be able to demonstrate good communication skills (both oral and written), some problem solving skills, a basic ability to think in strategic terms and to plan accordingly and finally, they should be able to utilize their critical and evaluative skills in their day to day work. A handout from the Defence Academy puts it in these terms:

The product of such an education is a graduate who is able to engage in critical thinking, who is intellectually agile, who is confident and is able and willing to continue life-long self-education.⁷ Perhaps instead of criticising the Defence Academy system on such baseless grounds as that which described it as a 'military nunnery', the Committee could have focused on the quite unique achievement in world terms that ADFA demonstrates. Nowhere else in the world, has the combination of military needs and university education been so successfully merged.

The scourge of the ANI Journal some years ago - Master Ned - writing about his time studying on campus at the University of NSW, could just as easily have been writing about one of the major benefits of ADFA. Master Ned wrote:

The university lecturers and students discovered, mayhap somewhat to their surprise, that the naval officer does not as a type possess six jack-booted legs, a tin helmet and a copy of *Mein Kampf* and that they are, on the contrary, normal Australians with a range of views as wide and varying as any average group of people. For their part, the naval officers were exposed to all streams of political opinion and background that are to be found at the average university; they were forced to justify their existence and choice of profession and they discovered the strengths and weaknesses of other beliefs and doctrines.⁸

The Joint Standing Committee of Foreign Affairs, Defence and Trade set out with the laudable aim of inquiring into officer education in the 'military after next.' The result of their work was the Price Report. This paper has examined the Committee's recommendations concerning undergraduate education provided at ADFA. I have attempted to focus some attention on the two serious flaws in the Report when it comes to discuss the Defence Academy.

Firstly, the Report mounts an argument on cost effectiveness or value for money grounds. The Report demonstrates that the total cost of educating a cadet through ADFA is higher than any other form of entry, but ignores some perhaps, more relevant, relative costs. Most importantly however, it fails to answer its own question of value for money officer education, by not comprehending the critical factors such as military ethos, customs and traditions, and camaraderie that ADFA engenders and that the proposed scholarship system could never hope to emulate.

Secondly, the Report labels ADFA as an "insular and institutionalized" environment without providing any evidence to substantiate such a claim. There was however, plenty of rhetoric. This was the fundamental reason why the Department of Defence would not support the major recommendations of the Price Report. In responding formally to the Parliament, Defence stated:

Defence does not support the adoption of the Committee's proposal to terminate undergraduate education at the Academy. The Report lacks substantive and sufficiently detailed reasoning to justify such a proposal ... The Committee's proposal is not based on any perceived military or academic deficiencies but on a perception.

So sadly, while there were some useful recommendations in the Report, the focus of its key suggestions will be disregarded. Price was wrong.

¹ Joint Standing Committee on Foreign Affairs, Defence and Trade *Officer Education: The Military After Next* (AGPS, 1995). [Hereinafter referred to as the Price Report.] p 161.

² *Journal of the Australian Naval Institute* February 1976, p 8.

³ Price Report p 151.

⁴ Price Report p 164

⁵ *The Australian* 26 June 1996.

⁶ Gilbert, Alan Barry Andrews Memorial Lecture 1995 p5.

⁷ *A Balanced and Liberal Education in a Military Environment* ADFA, 1996 p4.

⁸ *Journal of the Australian Naval Institute* August 1978, p49.

⁹ *Senate Hansard* 17 June 1996, p 1633.



BEST PRACTICE DEFENCE PROCUREMENT

An international conference on efficient and effective acquisition

26 - 27 November 1996

The conference will benchmark Australian performance against international trends. It will focus on industry problems posed by current acquisition strategies. The conference will cover:

- nine cross-national perspectives including UK, Singapore and the US
- program management
- dual technology
- legal issues
- contracting

The conference will be opened by the Minister for Defence Industry Science & Personnel, the Hon Bronwyn Bishop MP. International defence academics, practitioners and industry representatives will speak.

Register early. Seats are limited to 200.

Registration Fee: \$395 / ADF and Dept of Defence Personnel: \$350

For further information, contact:

Ms Cath Davis

Tel: 06 268 6252 / Fax: 06 268 8440

One centre of *excellence* for Naval Technology

Our product range includes . . .

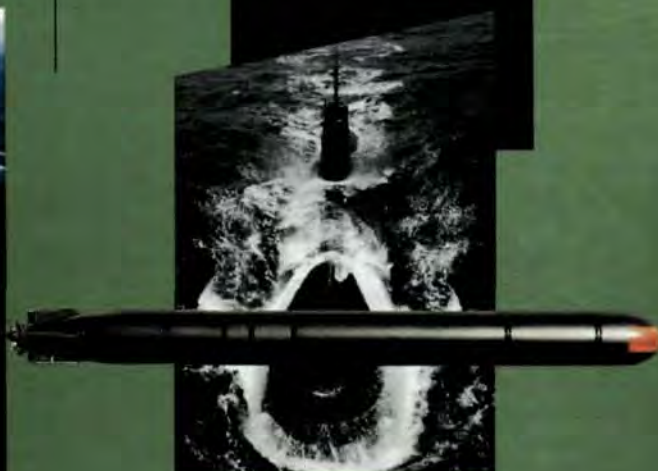
Combat
Systems for
Submarines,
Surface Ships
and MCMV's



Advanced technology low
frequency Active/Passive sonars



Future generation
submarine
heavyweight
torpedoes



Maritime
Simulators for
shiphandling,
sensor and
tactical training

Unmanned Aerial
Vehicles



STN ATLAS ELEKTRONIK

STN ATLAS (AUSTRALIA) Pty Limited

UNIT 6, 39 HERBERT STREET, ST LEONARDS NSW 2065 BOX 718 ARTARMON

PHONE (02) 437 4577 TELEFAX (02) 439 7576

ADF Command And Control —

Prisoners Of Our Thinking

Lieutenant Colonel Keith Thomas

I read with some sympathy and amusement a recent article by the *Viking* in the Journal of the Australian Naval Institute (JANI Vol 22 (3) Aug/Oct 96) entitled "The Gentle art of the Situated Appreciation." Sympathy, because command and control (C²) has proven to be an intractable problem and one that seems to be continually redefined and remodelled. Amusement, in a wry sense, because while I share the author's concern about sucking away resources from the sharp end, his comments about hundreds of millions of dollars being spent to build up another headquarters and the purported 'cast of hundreds' in the various extant headquarters is selective and off the mark.

Perhaps the paper was tongue in cheek and the "slight" exaggerations and emotive stance makes good reading. However, C² as a subject is too important to look at from only a parochial viewpoint. Noting the recent machinations surrounding the, not so recent announced revised ADF Command Arrangements that established the formation of a Joint operational level headquarters, HQAST, there are legitimate Service concerns. Yet, it would do an injustice this early in the life of HQAST, to perpetuate the notion that the C² arrangements suit an Army agenda, or that the existing environmental HQs are "modest" and able to meet the evolving ADF command needs.

C² suffers from a problem of identity. Symptomatic of the problem is the number of models proposed in literature (Mayk & Rubin, 1989) and the proliferation of acronyms coined to name it - eg. C², C³, C³I, C⁴I, and some other variants. C² is also an emotive subject and whenever it comes up it can, to borrow the CDF's words, generate more heat than light. Given, that like every other person in the ADF, I am an expert on C², I might just shadow-box my way over some issues that arise when considering C². The purpose of this paper is to engage in the debate over the emerging ADF command and control arrangements and to suggest another perspective that discovers a bit of timeless wisdom delivered by Walt Kelly in his line from "Pogo": "We have met the Enemy and He is Us."¹

Setting the Ground Rules

It is not my intent to 'red pen' the paper *The Gentle Art of the Situated Appreciation*, which makes some very sound points, is a good read and has also provoked a lot of interest. While, the author does not appear to be intent on misleading his audience - he/she seems to aim to be

provocative. For example, the analogy of planning a rerun of WWII or a major conventional land campaign at short notice as the purported basis for a permanent operational level headquarters is obviously incorrect. It is also subtly emotive and while it may appeal to the "non-land" group, it unnecessarily polarises the discussion to one that is based on environments - itself a flawed argument. For one, the argument seems to assume there is a maritime strategy for Australia - my spies tell me different. The issue in terms of strategy, may I submit, is not about the merits of the maritime strategy over continental strategy or vice versa. Rather, it is about defining a "combat strategy". More about this in a moment.

In terms of environment focussed positions, a discussion on C² based on environmental boundaries is self-defeating on at least two counts. First, if we could expand our horizons for a moment, it is worth noting that, future forces may well be determined by the scope of operations (global and regional) and by objectives such as punitive, isolating and security.² Such an idea is not exactly novel; it takes the concept of joint operations another logical step in terms of applying force to defined tasks. There is little benefit at this point in debating the respective ideas of Mahan and Corbett, or Trenchard and Douhet, or Clausewitz and Jomini. The reality is for joint operations, where neither Maritime, Air or Land strategies can be applied in isolation. In the complexity of the current environment and the inter-relationships between air, sea and land operations, the doctrine that we need is one of aggregated combat power, rather than single environment dogma. Anyhow, these are matters that are really out of my direct area of interest and also detract from the central issue of the paper - C².

Second, Winn Schwartau's book *Chaos on the Information Superhighway* is worth a read. Not to impress you with technology in the form of "hurricane weapons" (20 megawatts in a briefcase) and other weapons that can over-load a system with energy, or to raise the issue of whether the national economy is a national security asset. I mention the book rather to note, as Schwartau argues, that we cannot apply old solutions to new problems and that while we are gaining technology advantages we seem to be applying the technology in old ways. There is a need to challenge existing notions and the emerging arsenal ship concept is a case in point for Navy. The US Office of Net Assessments speak highly of the concept and suggest that the arsenal ship might replace the carrier as the capital ship of the future US Navy.³

Whether you subscribe to the notion of a revolution (or evolution) in military affairs or not, there is general agreement that we are experiencing fundamental change in this information age.⁴ These changes have been rapid and they clearly affect the tools of war (the emergence of precision guided weapons and the like) and they will in time impact on organisational and doctrinal thinking. Some examples of the latter kinds of change are evident in the emergence of joint operational concepts, non-linear warfare, knowledge warriors and cyber war, the latter two terms being used to describe future warfare in an information dominated environment. In Australia's case, we need to be aware of the likely future requirement for command and control and set about designing structures so that commanders can command, which if we need reminding, is after all essentially a human activity.⁵

Strategic Context for Revised C²

DA 94 explains that the global and regional changes that are making for a more complex and changeable strategic environment. It is not my purpose to trawl out DA 94 and other defence policy homilies to support my argument. The object is to get a clear picture of the target, which is command and control of ADF resources to achieve the fundamental responsibility - defence of Australia and its national interests. In that sense, our defence strategic situation is patently NOT as the Viking article in JANI suggests, to quote: "*the likely defence scenarios (are) 'few (and) limited' that require 'Only a relatively small repertoire of responses.'*" On the contrary, it is one of great complexity, where the conflict spectrum is greatly expanded and while there is a low probability of conventional conflict, the trend is towards low intensity conflict, with strategy most likely to be dominated by Liddell-Hart's indirect approach to achieve limited ends with limited means.⁶ For Australia, there is also an expanding definition of security. Our national security policies and subsequently force structures, must take into account wider security issues that will influence regional stability. That would suggest a reasonable capacity to also deal with complex operational level issues.

Operational Level Command

One also needs to question the assertion by Viking that the operational level headquarters "is...doctrinally driven and has not been convincingly demonstrated from operational level exercise experience over the last decade." To paraphrase the CDF's words we need command arrangements that can satisfy the central core of our defence strategy and that policy is self-reliance in the defence of Australia. We therefore need a command arrangement that can deal with the full gamut of possible strategic policy formulations through to command of operations. This is a big change for Australia and a collocation of existing "joint" (my emphasis, as this point is arguable) headquarters was flagged in DA 94. This headquarters will, in time, help define joint operational concepts, requirements and staff processes. From my perspective, the crime, if there is one, is in not

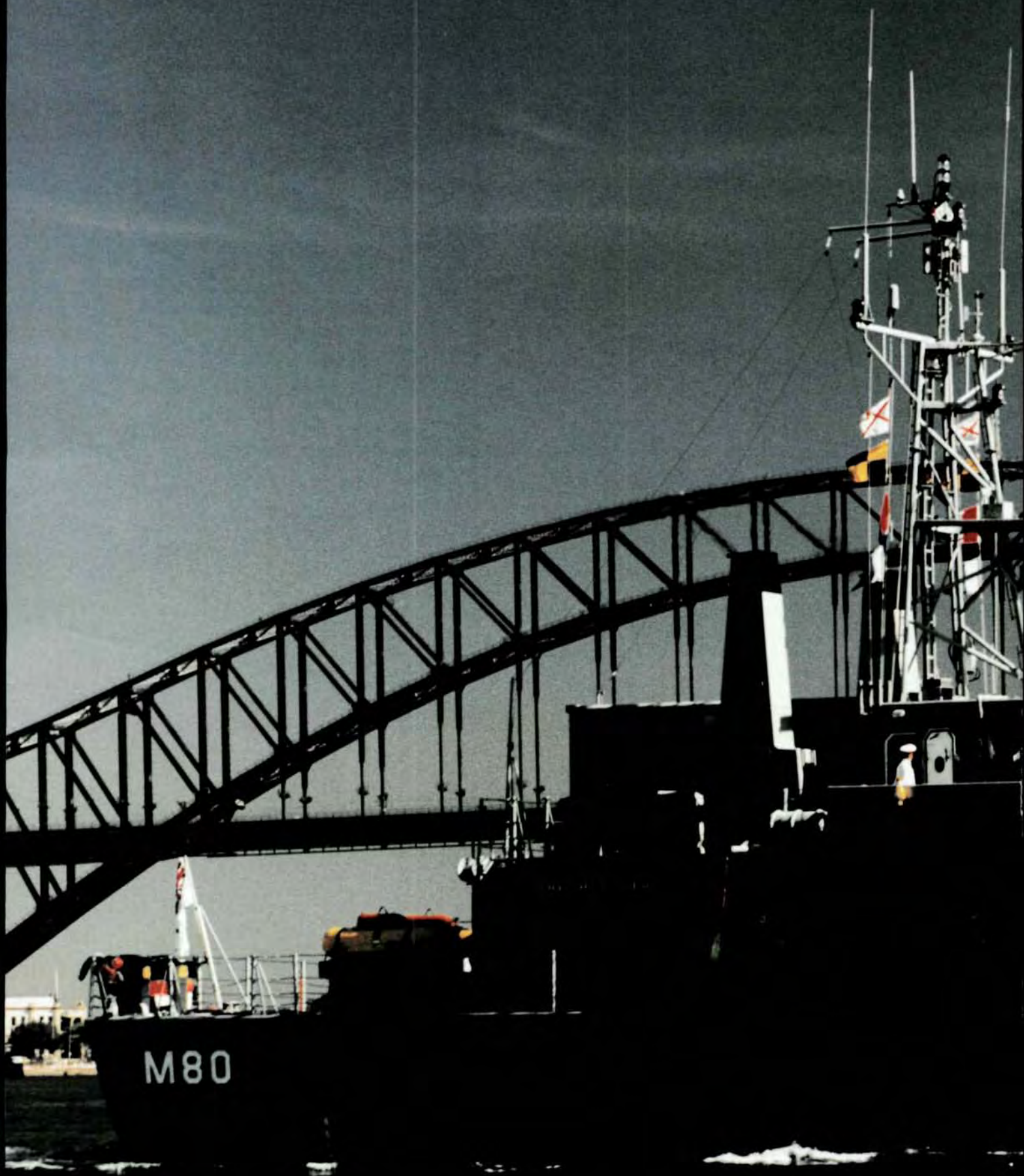
adequately resourcing the headquarters to achieve its essential role.

Secondly, there is ample evidence through the past Kangaroo series of exercises that the command arrangements have lacked unity of command and were not adequate for the full range of command and control activities we need for the future.⁸ The issue is also of not drawing the CDF (regardless of the colour of his or her uniform) into the nitty-gritty of warfighting, over disputes in priorities and resources allocation. In times of real need this would be a distraction from the strategic level functions. Moreover, I would also argue that the announced changes are consistent with a steady development in the C2 structures for the ADF beginning with the Tange reorganisation and later with the appointment of a CDF and formation of a HQADF, then the joint commands and NORCOM. Most recently, there has been the efforts to bring the intelligence structure into line with the command arrangements. This new evolution in command arrangements continues along a well established path.

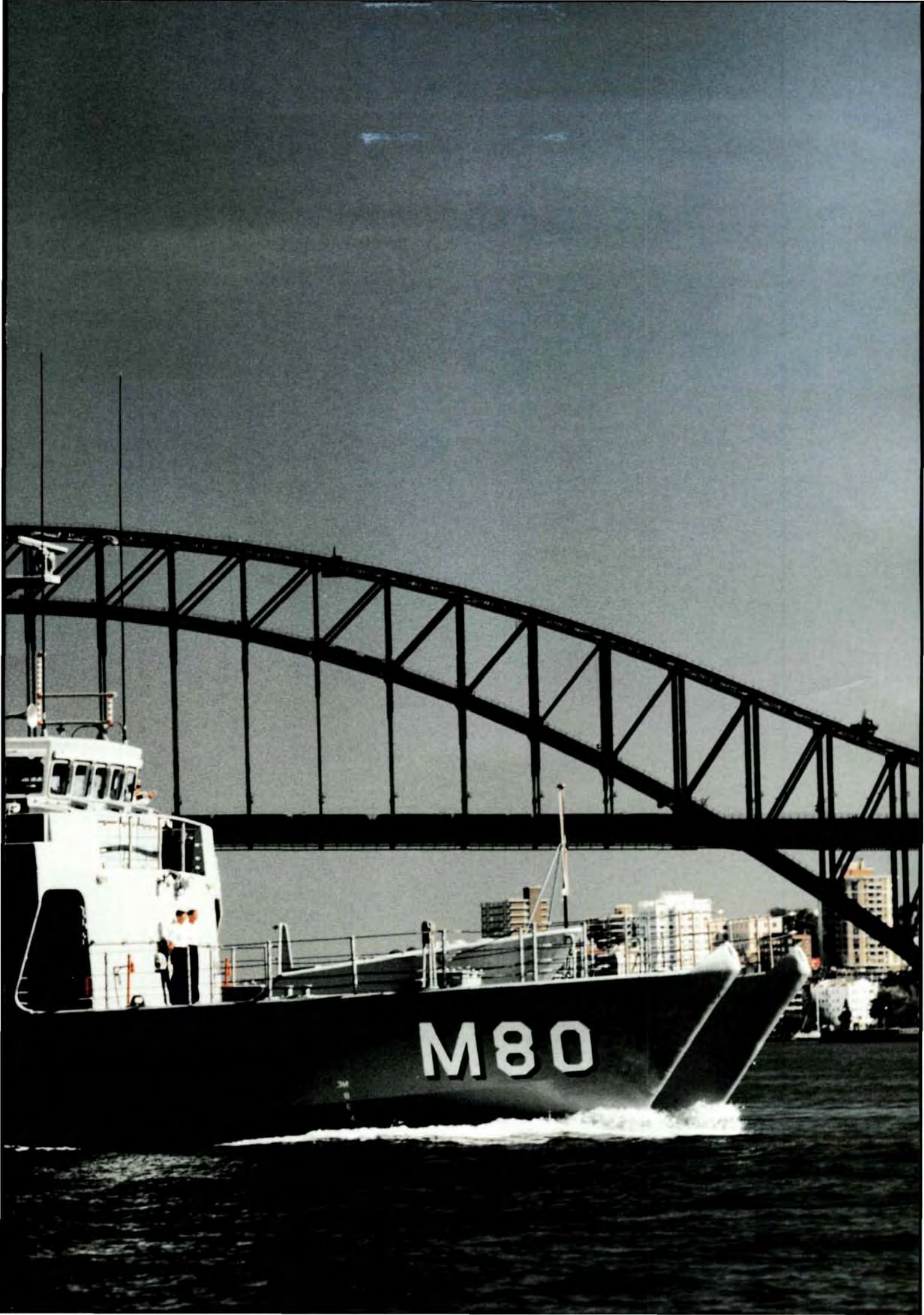
ADF Command Arrangements - A Fish Eye's View

It is about here, that I have a meeting of minds with Viking and other detractors of the emerging C2 arrangements. It is difficult to see the justification for, and the extent to which, unity of command and an economy of effort in command can be served by the current proposed command structure. This structure, being developed for the defence of Australia in short warning conflict, is, for one, very top heavy. The operational element (HQUEST) is very small and as currently proposed we have the situation of a two-star Commander Australian Strategic Theatre (COMAST), collocated with another 3 x two-star component commanders (and that does not include the Special Operations component). As well, for offshore operations, COMAST may end up commanding another two-star deployable commander (COMD 1 Div) and a one-star deployable maritime commander (COMFLOT). Looking upwards to the strategic level, there is the spectre of CDF (four-star), assisted by a three-star (VCDF) and a two-star in ACOPS and also 3 x three-star Service Chiefs, who are apparently "in-support" of COMAST.

If the aim is a more efficient command system and not just more command, then at face value the current set-up arguably fails to meet most reasonable criteria (economy, clarity and unity of command). Given the complicated wiring diagram that emerges with the current proposed command arrangements, it invites the thought: do the current arrangements only suit a short-term imperative? It is perhaps this ambiguity that reinforces the paranoia of conspiracy theorists. In my view, in the Australian defence strategic context we patently do not need more command structures. However, the central issue is not the formation of HQUEST; rather, I would argue that, if one took a critical and unfettered (a deliberate choice of word) look, there would rest around the continued relevance of the current environmental



HMAS *Rushcutter* (LSPHOT Steve Gurnett, RAN)



component level commands. One consideration is of course *the raise, train and maintain* function of Service assets. A reasonable function, but not entirely relevant to the command of ADF operational assets, nor I would argue, have alternative avenues to achieve this function been seriously explored. The current environmental structure is conservatively in the order of 750 personnel, not including a variety of support personnel (add perhaps another 300). The future HQAST is only a small increase, in relative terms, on these figures. Both command structures remaining are, I would argue, unaffordable in whatever strategic context.

Future Requirements

Whether we can really be self-reliant or not, the future is likely to see the emergence of a non-linear battlefield with no clear boundaries. In this context, the three doctrinal levels of command, in my view, remain a useful framework for developing processes regardless of the apparent merging levels of command. Given such a scenario and considering the possible impact of terrorism and so the need for rear area security, as well as possibility of offshore deployments, there could be as many as 25 AOs or operational level commands, each of which could be assigned to a Joint Task Force (JTF).⁹ Future conflict is likely also to see increasing rates of change, non-hierarchical flows of information and faster decision making loops.¹⁰ It may also see a synergistic combination of information warfare (IW) with bullets and tactics. I suspect, the challenge will be to provide accurate and timely information to combat elements, via a network of specialist information units and an effective C4I system. There will also be the need to draw on our wider national resources as part of the defence effort. That said, information can be useless because of its abundance. The issue is to give the commander access to the right information. With the information revolution we are facing scenarios of "control versus lack of control", where geographic boundaries are being lost and where national boundaries are being blurred. With all this change it seems odd that we can get hung-up on environmental boundaries.

In terms of leadership and future military organisations, literature on the RMA and other studies suggest different forms of leadership and organisations that are likely to be created around networks. These future organisations, are likely to be flatter in which distributed staff structures are augmented as required, with diffuse command authority, widely dispersed leaders and changed leader-to-led ratios.¹¹ Leaders, literature suggests, will be part of a learning organisation that requires new and expansive patterns of thinking.¹² Unprecedented demands are also anticipated on them, due to the diversity of operations, equipment sophistication, increased tempo of battle and the requirements of situational awareness.

Designing an C²-Friendly Organisation

Looking at the current C² staff structures, one could argue reasonably, that we are undertaking change without regard to the evolving strategic developments out-

lined above and that while we are gaining technology advantages, we are applying the technology in old ways. Tomorrow's military (and business) organisations must be flexible and the concept of a flexible force in the joint environment is becoming dominant. What is also apparent is that technology is available to support flexible organisations, in the form of shared data bases, interactive video and reconfigurable workstations. However, there is little known of how to design organisations with such features, scant knowledge of how decision makers will function in such dynamic organisations and little knowledge of how shared information and displays can best support changing coordination modes.¹³ Moreover, C³ organisations cannot be designed to be adaptive, without an understanding of the coordination requirements imposed on commanders within the organisation and how these coordination needs are supported via technology and training.

That said, a recent survey given to selected senior (US) military officers provide a further useful insight into other challenges in designing a suitable C² structure. The results indicated among other things, that:

- cultural differences (and interoperability difficulties) between the Services, including a lack of knowledge of the other Services were the major problems of joint operations, and
- when asked to design their own joint organisation, respondents proved quite traditional, preferring organisations with component commands, rather than integrated or other alternative forms of organisational structures.¹⁴

The suggestion of senior officers reverting to traditional hierarchical C² structures, illustrates the pervasiveness of 'organisational think'. Moreover, while places such as the US Army War College have recognised the need to develop officers for the future and so encourage creativity, experimentation, intellectual outreach and "informed non-conformity,"¹⁵ one wonders what chance these officers have of breaking "out of the box," after being so thoroughly socialised and institutionalised through the preceding 15-25 years.

A Possible C² Model

Short warning conflict will place significant demands on civil-military cooperation and in this context SR 93 pointed out the coordination arrangements for dealing with terrorism offer a useful (C²) model.¹⁶ Without going into the details of a counter terrorist (CT) C² structure, it is not about controlling mass Armies and essentially parallels the three doctrinal levels of command, with a national policy or strategic level of command, operational command (on-site during the contingency) and tactical command consisting of the full CT force and also the political-military command components. Importantly, the tactical and operational levels foreshadow a greatly widened span of command and of responsibility. This model would appear more than useful as a guide from emerging ADF C² arrangements, having been tested and refined by a very exacting process over a number of years.

Concluding Remarks

Is there anywhere a clear definition of what it is we are trying to do, with whom and to what ends? Emerging technology enables lateral and vertical information flows in a battlefield that is non-linear. As well, information networks suggest flattened hierarchical structures with distributed staff and shared common databases. The present emerging hierarchical structures seem an unnecessary constraint on command and supporting information flow. One does not get the impression that the current ADF structures closes with these and other emerging adaptive C² concepts. Rather, there appears to be a pervasive influence of legacy structures. We seem to be applying 21st century technology with 19th century thinking.

In this debate, if we are sidetracked over the relative merits of a maritime strategy over a continental one, in my view, we are missing the point. Worse still, we risk

polarising the debate on environment based issues, itself an arguable notion for future force structure. The CT command structure offers a simple model along which we might continue to refine ADF command structures. More fundamentally, a thorough consideration of the processes and implications of the defined levels of command is needed to guide the development of command structures for the future. In this paper, it may be sufficient to conclude by saying that a future ADF command structure could be decided by a continuing evolutionary process, where the central core for operational command remains COMAST. The present, in my view, unnecessary husk on the C² shell - the environmental commands - should in time fall away. Perhaps, drawing a long bow, in time there may be a further retraction of the core (operational level of command) into a cell within HQADF, working directly to VCDF or ACOPS in a fully networked and distributed structure.

- ¹ cited in Peter M. Senge, *The Fifth Discipline*, Random Books, 1992, page 54
- ² Carl Builder, *Looking in all the Wrong Places*, Armed Forces Journal International, May 1995, pages 38-39
- ³ Keith Bickel, OSD/NA, Military Systems paper: *Arsenal Ships*, 28 Feb 94
- ⁴ see writers such as Alvin and Heidi Toffler in *War and Anti-War*, 1995, Steven Metz and James Keivit, *The Revolution in Military Affairs and Conflict Short of War*, SSI Monograph, Jul 94, and Carl Builder, *Looking in all the Wrong Places*, AFJI, May 1995
- ⁵ Ross Pigeau and Carol McCann, *Putting Command Back into Command and Control: The Human Perspective*, paper presented at the C2 Conference, Congress Centre, Ottawa, CA, 26 Sep 95
- ⁶ Jacob Kipp, Ft Leavenworth, KS, Book Review in *European Security*, Vol 5, No 1, Spring 1996, page 173
- ⁷ DA 94, page 37
- ⁸ Keynote address by General Baker to the RAAFSC Course 54/96
- ⁹ JTF - (Navy - 7 JTFs: 4 x surface, 2 x sub, 1 x avn; Army - 7 JTFs as per Army 21 regions include rear area security; AF - 7 JTFs: 2 x strike, 3 x interdiction, 1 x recon, 1 x transport); plus DSD, DIO, Met and Communications, Civil Mobilization; these JTFs were defined arbitrarily in a discussion with Mike Price of FDA and serve only as a vehicle to debating concepts.
- ¹⁰ P F Leahy, The Revolution in Military Affairs and the Australian Army, *Journal of the Royal United Services Institute*, 16(1), Nov 1995, page 19
- ¹¹ Dr Tom Welch, of the Office of Net Assessments, US Office of the Secretary of Defense, at the Revolution in Military Affairs Conference, ADSC, Canberra 27-28 February 1996
- ¹² J.J. Tritten, RMA, *Paradigm Shifts and Doctrine*, Centre for Naval Warfare Studies, Newport Paper Number Nine, Dec 95, page 22
- ¹³ Daniel Serfaty, APTIMA Inc, research notes presented on Adaptive Architectures for C2, Research and Technology Symposium, Naval Post Graduate School, Monterey CA, 25-28 June 1996
- ¹⁴ Kishore Sengupta and Michael Berigan both from the Naval Postgraduate School, and Daniel Serfaty, APTIMA Inc, research on Adaptive Architectures for C2 (A2C2) Organisations, Research and Technology Symposium, Monterey CA, 25-28 June 1996
- ¹⁵ RA Chilcoat, The "Fourth" Army War College: Preparing Strategic Leaders for the Next Century, *Parameters*, Vol XXV (4), Winter 1995/96, page 13
- ¹⁶ SR 93, page 43

The Author:

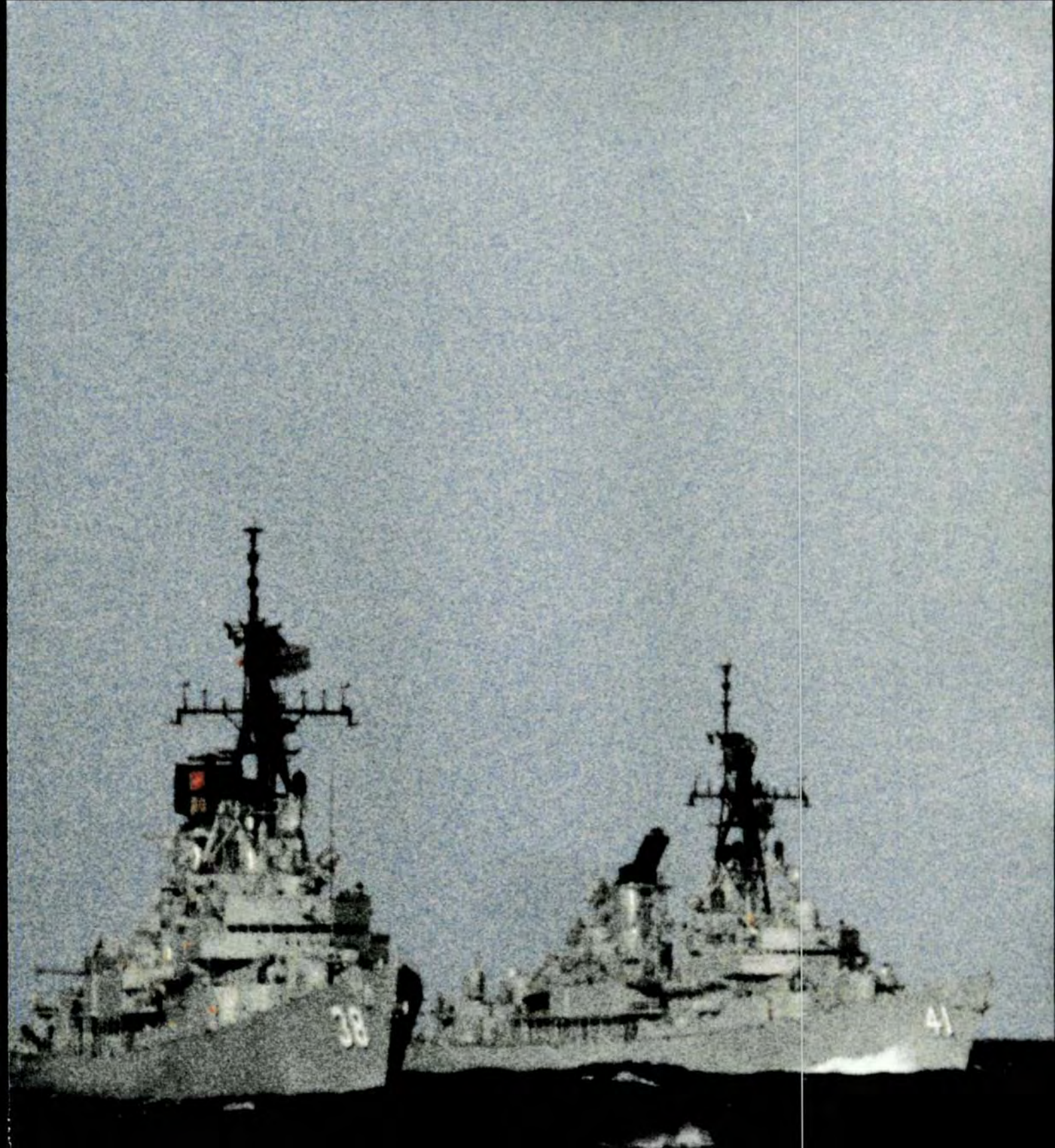
LTCOL Keith Thomas is a graduate of both RMC and JSSC. As well as a BA in Military Studies, he completed the Master's program in Strategic Studies from the Strategic and Defence Studies Centre at the ANU. He also holds a Graduate Diploma in Information Systems and a Masters in Business Administration.

LTCOL Thomas has served in various Signals units of the Australian Army as well as postings in the Defence Signals Directorate and SASR. In December 1995 he was posted to the Directorate of Army Research and Analysis in support of the Army 21 study. In January 1996 he became a visiting military fellow at the Australian Defence Studies Centre (ADSC). In this capacity he coordinated an international conference on the Revolution in Military Affairs (RMA) and is currently editing and also writing two chapters in a soon to be published book on the RMA.

While a visiting fellow at the ADSC, LTCOL Thomas was seconded onto a tri-service team responsible to support the revised ADF Command arrangements recently announced by the CDF. He is shortly to take up a posting as Deputy Director at the Army's Centre for Command Studies at Queenscliff, Victoria. LTCOL Thomas was awarded the Bravery Medal in 1976.



HMA Ships *Torrens*, *Perth* and *Brisbane* and HMNZS *Canterbury* during the Fleet Concentration Period 2/96



The Battle for Walcheren — 1944

Commander Richard Jackson RNZN

In these days of joint operations, lessons can be learned from the experience of our predecessors in past naval and military operation. Richard Jackson tells the story of the 1944 Walcheren landing through the recollections of a Kiwi who was there.

David Dodson is typical of the many hundreds of young New Zealanders and Australians who volunteered for naval service in the Second World War and wound up half a world away, commanding one of His Majesty's Ships. Both Australia and New Zealand, like other members of the Commonwealth, contributed men to the war at sea - recognizing that their own shipbuilding industries could not gear up to produce sufficient ships of the quality or quantity needed. And the Admiralty recognised that men, especially officers, were going to be in short supply as the Royal Navy expanded to meet the myriad demands of war across the seven seas. In Australia "...the fastest way for the RAN to help the war effort was to provide trained manpower for British equipment" So it was for New Zealand too, and David Dodson was one of over 4 000 Kiwis who left Auckland as ratings to serve in RN ships. By 1944 David Dodson was a Lieutenant and in command of LCT 959.

When the Allies broke out of Normandy and raced for the Rhine, it was clear that the logistic demands of the armies could no longer be maintained across the beaches and the "Mulberry" harbour at Arromanches. General Eisenhower, Supreme Allied Commander, ordered Field Marshal Montgomery, commanding the 21st Army Group, to take and open the port of Antwerp.

Antwerp fell to the Canadian First Army on 4 September, but Montgomery then diverted his effort to the "heroic but tragically wasteful" airborne operation at Arnhem in an attempt to cross the Rhine through Holland. When Montgomery was jolted by Eisenhower to give top priority to the opening of the approaches to Antwerp, it was too late. The German 15th Army, after retreating in front of the Canadians from the Pas de Calais had used the month of the Arnhem battle to fortify the Scheldt estuary and deny the Allies sea access to Antwerp.

A German Order of the Day summed up the strategic value of the Scheldt for the defenders:

The defence of the approaches to Antwerp represents a task which is decisive for the future conduct of the war, after over-running the Scheldt fortifications, the British would finally be in a position to land great masses of material in a large and completely protected harbour. With that material, they might be able to deliver a death blow

to the North German Plateau and to Berlin. For this reason, we must hold the Scheldt to the end. The German people are watching us. In this hour, the fortifications along the Scheldt occupy a role which is decisive for the future of our people

Lieutenant Dodson remembers from his briefings:

The left bank was heavily fortified in an area which would come to be known as the Breskins Pocket. The islands of Walcheren and South Beveland, and the South Beveland causeway, were occupied by some of Germany's best troops. The great dikes were honeycombed with gun positions...protected by up to feet of concrete...The main defences of Walcheren were concentrated upon Westcappelle, made up of some 30 coastal and field batteries [with] guns of 75mm to 220mm, supported by an elaborate network of concrete strong points. The water approaches to the island were mined and planted with all sorts of underwater devices. The centre of the island was mined and planted with posts connected with barbed wire to prevent air landings.

The battle for the Scheldt began on 3 October 1944 when 243 RAF Lancasters bombed and breached the great sea dikes on Walcheren; the North Sea flooded the low Iying island. The Canadian Army spent all of October eliminating the Breskins Pocket and, in a series of river crossings, invading and taking South Beveland.

Dodson's LCT was part of Force T which, in conjunction with 84 Group RAF, had been planning the assault on Walcheren since 1 October. He recalls: 'The proposed attack looked as foolhardy as the one on Dieppe [1942]... surprise would be out of the question. The one thing that would govern things was the weather, on a fine day in November it was normally foggy and on a rough day there were more problems at sea on such a treacherous coast.'

On 1 November the 126 assorted craft of Force T, including Dodson's LCT, sailed from Ostend. They were joined by the battleship *HMS Warspite* (in the last major operations of her outstanding career) and two 15-inch gunned monitors. Among the craft were 40 assault landing craft carrying 41 Commando, 35 LCTs carrying the main body of three Royal Marine Commandos and 10th Inter-Allied Commando (making up 4 Special Service Brigade) supported by 25

gun and rocket armed landing craft, 12 smoke laying landing craft, four carrying specialist parties, six landing craft for casualty clearing and one fitted out as a hospital ship.

Dodson's LCT 959 was loaded with supplies. 'I thought I was the only New Zealander to take part...I later found three other LCTs had New Zealand Commanding Officers: LCTs 471, 532 and 980. And another New Zealand officer there, Lt. H.M. Nees ... was in charge of the 150th HDML Group.'

The weather was bad and the preliminary air bombardment had to be canceled. 'There would be no air observation and it was unlikely there would be any close air support,' Dodson recalls. 'Only the urgency of the situation could justify the risk [we] were taking'. At 8.20 am, *Warspite* opened fire... H Hour had been set as 9.45 am and about that time the first assault craft approached the beaches. With the support craft all firing their guns and the return fire from the shore, the whole sea area erupted in a mass of foam and spray...In those first moments it seemed as if the landing craft must be overwhelmed.'

But the German gunners were concentrating on the support craft (some armed with 17pdr. heavy anti-tank guns), and the first assault craft landed their troops relatively unscathed. The heavy bombardment ships were achieving results too. HMS *Roberts* scored two hits on the Westcappelle battery, *Warspite* quietened the one at Domberg and a heavy battery to the south ran out of ammunition. 'At that moment,' Dodson recalls, 'as if from nowhere, RAF Typhoons suddenly swooped out of the clouds, plastering gun batteries with rockets and cannon shells'.

By noon, the commandos had taken the battery at Westcappelle and by dusk other troops had reached the town. The landing looked to be secure, but the seas were getting up. '25% of the landing craft had been sunk, about the same number were so badly damaged they could not take any further part in the landing and only about 150 wounded had been able to be brought off shore. But a few landing craft were still trying to get additional supplies ashore and some support craft were still in action off the beach. The seas were getting too rough for anything to land; we made two attempts to land our supplies, but we were finally waved off and returned to Ostend.'

The gale blew for three more days. By the third day the weather had improved a little, although with the wind still near gale force. Things were desperate on the island, with ammunition and medical supplies urgently needed and no fresh water for the troops. Three craft were asked to attempt to land some supplies, among them Dodson's LCT. 'Our three craft sailed with an escort and took three hours to get to the island, with a gale force tail wind. The first craft to attempt a landing was picked up by a wave and smashed broadside on up against the dike wall. [The troops ashore] might have been able to save something out of its

load of food and medical supplies. The second craft was loaded with jerry cans of fresh water and a bulldozer. All it needed to do was get close enough to the beach for the bulldozer to drop off the end of the door. LCT 959 was loaded with 24 amphibious tracked vehicles called Weasels, each packed with as much ammunition as could be got into them. We were able to get into the beach and unload the Weasels onto the sloping dike wall. I was about to pull out when a doctor came down the wall and asked us if we could take some of the worst wounded off with us, as they badly needed proper hospital care. We ended up with 70 stretcher cases, 280 prisoners and about 200 walking wounded and survivors from other landing craft.

'The trip back to Ostend was an absolute nightmare. The craft now had a head wind and it was getting dark. Each wave hit the flat bow door and spray swept the whole length of the craft. The doctor tried to keep his wounded covered with canvas and blankets. We reduced speed to make it more comfortable, but even so it shuddered with every wave and all were wet through. What had taken three hours now took about ten and it was early morning before we made it back to Ostend. But only one of the badly wounded men died that night and all the others were taken off to hospitals at Ostend.' Dodson met the Doctor, Captain G.D. Scarrow RAMC, many years later during a holiday in England. 'We had afternoon tea with him and his wife; he remembered writing a report of the landing (it was reprinted in a book *The Eighty Five Days* about the Walcheren landings). Talking over the day that we first met, we realized we were then both only 23.'

As the weather cleared, normal resupply resumed and Walcheren was cleared of the enemy in a few more days, but there was a lot of work to be done before the river was safe for shipping. Nearly 200 minesweepers were involved in clearing the channels. LCT 959 was based at Breskens and ran a ferry service for working parties along the shipping channel. On November 26 three small coasters sailed into Antwerp and two days later, Dodson watched the first convoy of 18 Liberty ships come up the Sheldt to Antwerp. When the Germans launched the Ardennes Offensive in December, all the supplies and replacement equipment for the Allied armies came through Antwerp, the port had been opened just in time.

Bibliography

- Dodson, David; private correspondence, December 1995.
- Elliot, Peter; *Allied Minesweeping in World War 2*, 1979; Patrick Stephens, Cambridge.
- Edwards, Commander Kenneth; *Operation Neptune*, 1946; Collins, London.
- Lund, Paul and Ludlam, Harry; *The War of the Landing Craft*, 1976 (Extract kindly supplied by D Dodson).
- Roskill, Captain S. W.; *The War at Sea*, Vol III, part II, 1961; HMSO, London.
- Stevens D (Ed). *The Royal Australian Navy in World War II*, 1996; Allen and Unwin, NSW.



Guard Commander and Guard at the commissioning ceremony of HMAS Anzac (POPHOT Scott Connolly, RAN)



Command And Control Warfare:

Electronic Warfare Renamed or a Significant Military Breakthrough?

Lieutenant Commander E.A. Power, RAN

Command and Control Warfare is the integrated use of Operations Security, Military Deception, Psychological Operations, Electronic Warfare and Physical Destruction, mutually supported by intelligence to deny information to influence, degrade, or destroy adversary Command and Control capabilities and to protect friendly Command and Control against such actions.

—US DOD Definition

As a result of the lessons learnt from Desert Storm and other conflicts, the US Joint Chiefs of Staff (JCS) reviewed and then implemented a strategy called Command and Control Warfare (C²W). The term 'strategy' will be debated by opponents and proponents of C²W from now until the next significant change in military thinking but, for now, the US have implemented C²W as a strategy. The JCS requires C²W to be an integral part of operations, in both exercises and real world operations. The Joint Command and Control Warfare Centre (JC²WC - spoken JQUICK) has been designated as the JCS Executive Agency for C²W. I will explain its functions later.

C²W is the military application of the much broader strategy of Information Warfare (IW). IW can be defined as actions taken to preserve the integrity of one's own (national) information systems from exploitation, corruption, or destruction while at the same time exploiting, corrupting or destroying an adversary's information systems and in the process achieving an information advantage in the application of force. The aim of IW is Information Dominance.

Is C²W merely EW renamed? An interesting question put to many a JC²WC briefer. I believe the answer is an emphatic NO. C²W, in the US model, is the integration of five elements - Operations Security (OPSEC), Electronic Warfare (EW), Military Deception, Psychological Operations (PSYOP) and physical destruction. C²W provides the commander with a methodology, of permitting a coordinated attack on an adversary using all the elements.

How does IW and C²W fit into the Commanders quiver? The hierarchical explanation is as follows: IW is the national or Strategic level of consideration, C²W is the Joint Task Force (JTF) or operational level of planning, and the elements are at the tactical or implementation level. The CJTF headquarters staff coordinate the consolidated efforts of the tactical unit's fighting prowess. Put simply, IW - National level,

C²W - Military application. To some, this is too simply put. However, I believe IW and C²W are evolving strategies and we must have a starting point, application of the principles and then, after experience, redefining of principles.

Having set the stage of IW and C²W, I will attempt to explain what the JC²WC does for a living. In fact, in this short article, it would be remiss of me to leave you with the impression that the only thing the Centre does is support the CINC or JTF in Operations. There is much more but I will concentrate on what I am involved with, and the other functions can be explained at a later time, if anyone is interested. The centre supports the CINC or CJTF by providing a ready source of assistance in coordinating the elements of C²W. How? Good question.

The JC²WC is organised on an operational support team philosophy. The Centre has two Divisions, Operations East and Operations West. Each Division has a number of US CINCs allocated for which there is a Support Team. The CINC's C²W philosophy will determine what happens next. Each CINC has a different philosophy on how he (still, there are no female CINCs yet) might conduct an operation within his area of responsibility. Working with the CINC's nominated C²W Officer and experts from each of the elements also assigned to the CINC? The JC²WC Support Team will write or rewrite Operations Plans or Operations Orders C²W Annexes or Appendices. Now, that is a very long winded way of explaining a simple function. The JC²WC personnel work on the Commander's staff, not at the tactical level. Who said the pen is mightier than the sword? The JC²WC, in concert with the CINC's C²W Officer, coordinates the combined efforts of the elements by writing, with expert assistance, the C²W Annexes or Appendices.

As well as drafting/coordinating C²W Annexes or Appendices, the JC²WC provides the following: modelling support for target (especially C²W) nomination and some mission planning, Order of

Battle Deconfliction through Battle Damage Assessment processing, coordination of the Combined/Joint Restricted Frequency List, and theatre EW reprogramming coordination. To accomplish this, members of the JC²WC CINC Support Teams deploy with the JTF Headquarters. JC²WC is established as the centre of excellence and continuity for an area of operations, and has on record the CINC's requirements and objectives, which have been converted into OPLAN appendices, country studies, etc.

What does all this mean to the warfighter? The C²W Cell within the JTF HQ should comprise representatives from INTEL, OPS, PLANS and COMMS, along with representatives (or at least points of contact) from the Component Commands, supporting Agencies and specialists from the five elements. The Cell can either meet as a group or the C²W Officer can coordinate through telephone conferencing. The output from the Cell is then provided to the Commander as an integrated plan. A major aim of the C²W Cell is to provide the Commander with a C²W decision matrix, the outcome of which is an INTEL GAIN/LOSS decision. For example if a Command Post has been identified as a critical node, it will be processed through the decision matrix by each of the elements. The immediate and long term impact of each element's actions against the node are assessed. An intel gain/loss decision is made that shows the Commander the benefit of either destroying or not destroying the node. This coordinated effort forces or allows the Commander to consider all the options.

How would IW/C²W benefit Australia and the ADF? I will not talk to the benefit of IW to Australia, but I can mention a few benefits for the ADF if some form of C²W strategy is implemented. C²W is a force multiplier, not a force replacement, strategy. In times of restructuring or right sizing or down sizing (pick your terminology), anything that can provide a cheap but workable measure of enhancing a Commander's ability to overcome an adversary must be investigated.

Secondly, interoperability with our Allies (it is diffi-

cult not to generalise in a short article, but here goes), all of whom appear to be going to a similar strategy as the US. I can hear people dismissing this statement, and I couldn't blame you, but I do ask for some leniency. I have attended meetings and courses with our Allies and, they report, that some form of C²W is being implemented within their areas.

Thirdly, C²W involves the integration of current not new capabilities. And, by the way, C²W is not a measure whereby current capabilities can be cut. If you cut capability, you lose a piece of the C²W jigsaw puzzle, and the synergistic effect is lost. Australia does not have all of the US C²W elements in its military inventory. Nor does it need them. The mix of elements to be implemented in a C²W strategy is based on what you have; what you traditionally used in your prosecution of the aim. We (the ADF) may coordinate EW, Security (to include all the SECs), Military Deception, Physical Destruction and Intelligence as elements of an ADF C²W strategy. The end result is to provide the Commander, and therefore the warfighter, an advantage. If this can be done by reorganising and re-naming his current planning cell, then so be it.

In all of this, I have mentioned Intelligence twice. In the opening quotation and again as a possible element in an ADF C²W strategy. This is very deliberate. Intelligence, in the US model, underpins the whole strategy. C²W does not replace current intelligence, nor does the JC²WC produce its own intelligence product. We all should agree that there is no need for yet another database. Only current, national databases should be used. If the database proves to be wrong or out of date, get it fixed by the originator, don't build your own. And, by the way, experience shows that, if you ask the right questions, you will get the data you need to prosecute your task.

In summary, IW is the strategic level strategy to keep your own information safe, while attempting to disrupt an adversary's systems; C²W is the military application of IW and the coordination of specific elements to enhance a Commander's ability to fight; and the ADF would benefit from the implementation of some form of C²W.

The Author

LCDR Power is a long-standing member of the ANI and has served as a councillor. He is currently on exchange in the United States and is posted to the Joint Command and Control Warfare Center, at Kelly Air Force Base, San Antonio, Texas.





And we thought submariners weren't afraid of anything! HMAS *Onslow* under way on Sydney Harbour (LSPHOT Steve Gurnett, RAN)

Crime as a Security Threat in the 21st Century

John Ciccarelli

Crime has become a major influence in the national and international security environment. Nowhere is this better highlighted than in President Clinton's address to the 50th Anniversary meeting of the United Nations in which he identified international criminality as one of the paramount *security* concerns of the post Cold War world.¹ This concern was also shared by President Boris Yeltsin who has stated that crime has become the *number one* problem facing Russia. Therefore, our current conceptions and definitions of, and solutions to the problems associated with organised crime require reexamination. Additionally, the roles of those involved in the struggle against crime, as well as the societal resources that must be marshalled must consequently expand to include previously untouched areas. For as we face a diverse, sophisticated and vastly more powerful criminal threat than ever before, it becomes apparent that 'crime ain't just for cops anymore.' Navies, Armies and Air Forces are all likely to find increased roles in the war against crime. Consequently, service people will have to concern themselves with the *theory* of crime.

A theoretical examination of crime and security helps us understand the larger forces at work, and how we must adapt to meet the new requirements caused by these forces. Theory also allows us to examine our conceptions and definitions of the world, for often our conceptions of reality play a large role in *shaping* that reality. I shall begin by looking at some of the changes that have precipitated a new global security paradigm.

As we prepare to enter a new century, the changes in the global environment are staggering. The explosion of technology, the ease of international travel, the tremendous access to information along with a myriad of other factors, have combined to create a world in which the individual has unprecedented freedoms and opportunities. Additionally, with the end of the Cold War, and its resultant shift from bi-polar power politics, traditional concepts of security and the interactions that constitute the international order are being questioned. The capacity of military power to influence events is also in question, for although the use of force will always be an option, the complex social, political, and economic interdependence between states, coupled with the unparalleled destructiveness of modern warfare, makes the use of force a much more complicated and costly process than ever be-

fore. Concurrently, notions that the state is the ultimate provider of security to its citizens are being challenged, for as political theorist Ken Waltz observes, 'to countless millions of people in the world, it is their own state, not 'the enemy' that is the primary security threat'.² Even in liberal democracies, the state has begun to lose its place as the guarantor of individual security, as illustrated by the explosion of the private security industry. Thus, as the individual becomes simultaneously both empowered and under protected, our concepts of security are changing.

With the fall of the Soviet Union, one of the last barriers to unfettered international capitalism was removed. This increasingly globalised marketplace has changed the structure of the international financial community, and their respective economies and governments. The economies of the world are increasingly interdependent, with the fate of one linked to the fate of many. This interdependence, however, may not prove to be the panacea to international conflict that many have hoped. Samuel Huntington observes that economics is 'probably the most important source of power, and in a world in which military conflict between major states is unlikely, economic power will be increasingly important in determining the primacy or subordination of states'.³

Thus, if we assume that most criminal enterprise is inherently economic in nature, then the threat posed by crime takes on new dimensions in this increasingly economically-focused world. The havoc that criminal enterprise plays on national economies is spreading, and criminal groups have little regard for national boundaries or loyalties. As states begin to lose sovereignty over their citizens, and as the individual attains more autonomy, we may see the capabilities of the state decrease while criminal capabilities grow rapidly.

Indeed, in this climate of expanding opportunities and decreasing governmental authority, one of the greatest capabilities possessed by criminals is the ability to operate outside the constraints of laws and governments. As Phil Williams has noted 'Since criminal groups are used to operating outside the rules, norms and laws of domestic jurisdictions... they are sovereignty free rather than sovereignty bound and use this freedom and flexibility to engage in activities that are difficult for states to regulate'.⁴ However, if the state also attempts to operate outside the law to level the

playing field, they then endanger the credibility of their own laws and institutions, and abandon any moral advantage that they previously held. In the end, this conspires to keep the state reactive, the initiative being with the criminals. Criminals are not systemically bound, and have freedom of movement, especially across borders where domestic enforcement efforts become virtually ineffective. Thus, as James Rosenau points out, sovereignty-free actors have many advantages over sovereignty-bound ones, and are able to 'obfuscate even elude, the jurisdiction' of them.⁵

This freedom of movement highlights a concept which I call the 'deterrent vacuum'. In order for crime to flourish it must be allowed to develop in relative safety. Often, effective domestic law enforcement is not a solution to criminal organisations, but merely a repellent. Criminals will seek areas of the least deterrent to their activities, and as air seeks to fill a vacuum, crime also gravitates towards areas of increased opportunity, decreased risk and lack of centralised control and enforcement. As Graham Turbiville of the U.S. Army Foreign Military Studies Office writes, 'in environments where state institutions have been rendered ineffective by sweeping political and economic change, war, internal challenges or other factors, criminal enterprise has been quick to fill vacuums or seize opportunities.'⁶ This 'deterrent vacuum' encompasses many variables from weak and corrupted structures, jurisdictional gaps and 'weak states' to social or political instability and conflict on the local, national, and international levels. The anarchy caused by these criminal groups is also what they desire: a place where the state has little ability to influence their activities.

It is no coincidence that the centres of narcotics trafficking; South America, the Golden Triangle and Central Asia are also areas in which governments are weak and anarchic conditions reign. As Alison Jamieson notes, '(p)olitical instability is a major factor in the growth of the illicit drugs trade and is one of the biggest obstacles to combating it.'⁷ Thus, crime has moved between the gaps of our societies; filtering into the uncontrolled spaces between nations, sliding between jurisdictional cracks and moving into the vacuum left in the wake of social and political turmoil. Consequently, criminals have used these gaps to harbour and build their organisations, and have now acquired formidable capabilities which can challenge even the power of the state.

Concepts

One of the key concepts behind the idea of crime as a security threat comes from an expanded understanding of the definitions of both crime and security. In the past, our conceptions of security generally focused on the sovereign state, and the power machinations that influenced the rise and fall of these bodies. However, the ongoing radical changes in the global envi-

ronment have created new paradigms in security thinking. The state is losing its place as the focal point of the security discussion, as individuals and non-state actors become increasingly important and powerful in both national and international affairs. This is illustrated by the emergence of multinational corporations, non-governmental organisations, and populist movements, all of which have gained a larger role on the world stage and are increasingly able to influence governments and events.

But these past definitions of security, especially those which primarily focused on the politico-military dimension of security, also fail to account for a new generation of threats. Many of these threats are not derived from the nation-state, and are beyond the scope of any one nation to deal with them. As with such problems as overpopulation, depletion of natural resources, widespread famine and epidemics, crime also defies the abilities of single states to address them. Crime crosses 'traditional' economic and political boundaries, and presents a threat in which conventional solutions to national security problems are ineffective.

It is against this background that we must examine our conceptions of crime. To begin, crime has always been seen as a local or national problem. We speak of Australian crime, American crime and Russian crime but never conceive of it in a global sense. However, as the concept of the 'deterrent vacuum' and the explosion of international criminality show, crime is seeking the abundant opportunities of the international environment. Consequently, our domestic conceptions of crime and our unilateral responses to that crime only serve to increase the severity of this security threat. National borders do not constrict illegal activities, but often serve only to constrain law enforcement operations, thus becoming the de facto ally of criminal groups. For as Phil Williams and Stephen Black observe, 'this is perhaps most obvious in relation to the growing convergence between security and crime, a convergence which is particularly evident in the rise of highly sophisticated transnational criminal organisations engaged in the trafficking of drugs, weapons technologies and people across national borders'.⁸

Additionally, as the armed capabilities of these groups, and their willingness to resort to violence to attain their goals grows, the distinctions between war and crime are beginning to blur. As historian Martin van Creveld notes, 'once the monopoly of armed force, long claimed by the state, is wrested out of its hand, existing distinctions between war and crime will break down much as is already the case today in Lebanon, Sri Lanka, El Salvador, Peru, or Colombia. Often, crime will be disguised as war, whereas in other cases war itself will be treated as if waging it were a crime.'⁹ This is exemplified by the criminal anarchy

that was Somalia, which defied the best of conventional military solutions. Indeed, as in the former Soviet Union, crime has become so powerful a force as to threaten the stability of that state and its institutions.¹⁰ Thus, crime now inhabits a grey area in the security debate, crossing the lines between social, economic, political and traditional criminological issues. The 'deterrent vacuum' keeps criminal activity on the periphery of our understanding; inhabiting a shady underworld which is difficult to see or comprehend, but that is increasingly becoming a major influence on our lives and security.

Models

Historically, the division between crime, which was construed as a domestic concern, and 'major' threats to the national security, which were the domain of the politico-military security apparatus, was well defined. We can conceive of the threat spectrum to a state as an abstract schematic; a threat/capability continuum, covering the range from minor crime to a major military threat, epitomised by complete destruction in a nuclear attack (Figure 1). At opposing ends of this continuum, and comprising the sum total of the state's capability to physically counter these threats, are local and national police forces and the various state organs that comprise the 'national security apparatus'. This serves to delineate traditional areas of interest and responsibility, eventuating in organisational charters and military mission statements.

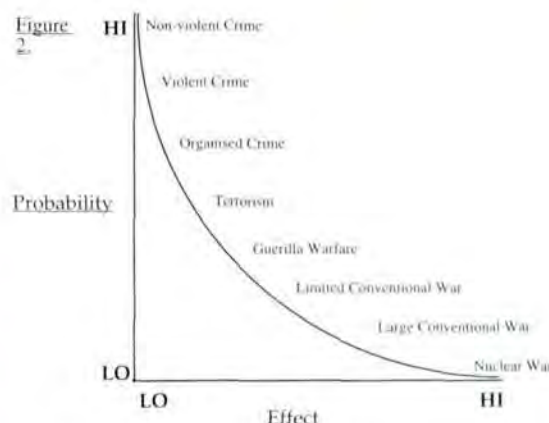
Figure 1.



If we examine this continuum under the traditional conceptions of crime and security, it presents us with a tidy spectrum that is consistent with the existing roles of these state organs. Crime is in the domestic affairs sphere and is handled by the police, whilst larger-scale security threats are handled by the state's 'national security apparatus', which includes the military, intelligence services and other state organs. Consequently, if we graph this continuum on a probability/effect scale, we see that although crime is very likely, it presents a minor threat to the national security. The unlikely nature of a nuclear attack is contrasted by the dire consequences of its occurrence (Figure 2).

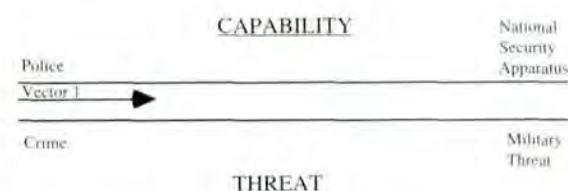
For the limited conceptions of both crime and security that have prevailed in the past, this is an accurate, if somewhat simplistic, illustration of a national se-

curity spectrum. This spectrum was often used in Cold War security thinking and theory, under the rubric of the 'sliding scale of probability'. However, with the end of the Cold War and the emergence of new transnational threats, the accuracy of this scale is suspect, particularly in relation to the current relative influence of these security threats.



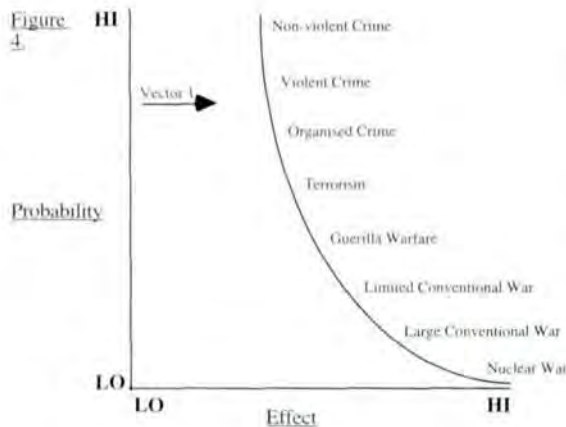
What these changes in the nature of crime show is that criminal capabilities have moved up the threat continuum towards the traditional concerns of the national security apparatus (Figure 3; Vector 1). Consequently, this presents problems for our traditional model, as police forces must either move 'up' towards a more military capability, or military forces must move 'down' towards more of a policing role, in order to deal with this 'gray area' in the continuum. Indeed, as Graham Turbiville writes, there are many 'new or reinvigorated centres of inter ethnic conflict, insurgency and various forms of regional and international terrorism (that) have acquired an organised crime content that blurs distinctions between military and law enforcement problems in many regions of the globe.'¹¹

Figure 3.



Additionally, if we recognise the full extent of the threat posed by crime, even non-violent crime such as petty theft and 'white collar crime', this spectrum becomes skewed. For example, if the petty theft is taking place to finance a drug habit, and thus supporting a large narcotics organisation, the character of the threat changes significantly. Although 'white collar crime' is often seen as 'victimless' and deserving of a lower policing priority than violent crime, the financial and national security implications can be staggering, as Nick Leeson can well attest. These

factors, combined with the exponential growth in criminal capabilities, have shifted the threat/probability curve outward, representing the increased threat presented by criminal activity (Figure 4).



The growing international nature of organised criminal operations shifts the curve outward as well. International crime increases national vulnerability to negative foreign influences, as evidenced by the use of criminal elements as intelligence gathering or operational assets by some intelligence services. Furthermore, the adoption of crime by many terrorist or insurgent groups has begun to further blur the lines between war and crime. As Martin van Creveld writes about many of these 'national liberation movements', '(s)ome had to resort to bank-robbing or drug dealing, causing the distinction between war and crime to become blurred.'¹² This convergence of crime and warfare promises to change our understanding of each of these concepts, as well as our conceptions of security. Thus, outside of the simple context of the criminal act itself, crime delves deep into the most basic security concerns of citizens, and presents a much more immediate threat than many national or international events.

Conclusion

Organised, international crime is an obvious subject of concern for those interested in emerging security issues. Traditionally, the three services have concerned themselves with 'Big S' security concerns; those that directly influence the welfare and security of the nation as a whole. However, the threat posed by organ-

ised crime to the nation-state is considerable and growing. The potential of criminals to corrupt or destabilise governments, weaken the global economy or to traffic in nuclear weapons or other technologies of mass destruction is emerging as a vital concern of states.

However, our previous conceptions of criminality, coupled with states that saw little use for international cooperative law enforcement efforts, have allowed the criminal threat to develop into a *hydra*. Criminologist Louise Shelley states that 'long term neglect of this problem means that the world now faces highly developed criminal organisations that undermine the rule of law, international security and the world economy and which, if they are allowed to continue unimpeded, could threaten the concept of the nation-state.'¹³ So where does this leave us? The models that we have examined point to the systemic durability of crime, a durability that defies the ability of any one nation to influence that system. As such, unilateral government efforts to cut off this hydra's heads will inevitably result in failure. Existing law enforcement efforts and resources, already severely strained, will prove no match for a rapidly growing and evolving criminal milieu. It is only through a critical reexamination of the global crime situation, a reinforcing of the capabilities and resources that we bring to bear against it, and politically disinterested efforts among nations to combat international crime and the anarchy that feeds it that we will begin to find solutions. But mostly we need the ability to think laterally, to conceive of new ways to address problems, and to break out of the mindsets and structures that serve only to constrain us. Criminals have seized upon the new opportunities, technologies and capabilities of our global village and have used them to significantly advance their fortunes. It is time for us to do the same.

¹ 'Clinton Proposes New U.N. Agenda For The 21st Century', *USIS Wireless File*, 23 October 1995.

² K. Waltz, *Man, the State and War*, (Columbia University Press, New York, 1959) pg. 232

³ S. Huntington, 'Why International Primacy Matters', in *International Security*, Vol. 17, No. 4, Spring 1993.

⁴ P. Williams, 'Transnational Criminal Organisations and International Security', in *Survival*, Vol. 36, No. 1, Spring 1994, pg. 100 & 110.

⁵ J. Rosenau, *Turbulence in World Politics*, (Princeton University Press, Princeton NJ, 1990) p.251

(Notes continued page 46)

The author

John Ciccarelli was invited to prepare this paper for the Australian Naval Institute while serving as a Visiting Fellow at the Australian Defence Studies Centre in 1996. He has served in a variety of positions as both an infantry and aviation officer in the US Army, and will be leaving the service to accept a position as is a Special Agent with the US Drug Enforcement Administration. He holds a Bachelors Degree in Politics from the University of Washington and Masters Degree in Defence Studies from the University of New South Wales. His current research involves narcotics trafficking as a security threat, as well as work in other areas involved with crime, intelligence and national security.

All Persons are to Repair on Board

A BRIEF HISTORY OF "THE BLUE PETER"

Graham Wilson

One of the most well known, if not the most well known, of maritime signalling flags is Flag Papa or P, the famous Blue Peter.

I first learned of this flag and its meaning as a very small boy. I remember spending wintry Victorian afternoons watching on television a British-made juvenile adventure series entitled "The Blue Peter". I remember very little about the show except that it related the adventures of young English boy who joined the Merchant Navy in the era of Queen Victoria. What I do remember vividly, however, is the opening credits which featured a blue and white flag (black and white actually given the technology of the time but the colours were explained to me) fluttering in the breeze. My father explained to me the meaning and significance of the flag and the title of the show and for ever after I would experience a small thrill whenever I saw the blue and white flag flying from the mast of a merchant ship, knowing that the ship and its crew and possibly passengers were soon to depart for places unknown.

I never gave any thought, however, as to the story behind the name of the flag itself. That is, until quite recently. A short while ago I was reading a very, very old collection of nautical anecdotes (dating from the first quarter of the last century in fact) when I came across some obscure references to a recall flag which had apparently been in use for many, many years and which sounded very like Flag PAPA. This got me to thinking and then searching as to when and how the "Blue Peter" got its name.

According to the Piercy Anecdotes, published in 1821 by two English Benedictine monks, the Piercy brothers Reuben and Sholto, in 1756 Admiral Sir Edward Hawk used a flag "blue pierced with white to recall his boats and crew when they were ashore". This is the earliest reference I have been able to discover of a blue and white flag being used as a recall signal. The brothers Piercy also recorded that in 1759 Admiral Boscawen used the same signal of a flag "blue pierced with white" to signal "that any vessels captured were to be returned to my ship" - obviously another form of recall.

Later still, in 1780, Admiral Rodney when assuming command in the West Indies issued the following Fleet Order: "For all Officers to repair on their ships when

the Commander in Chief shall hoist a blue flag pierced in white at the main top gallant masthead and fire a gun. No boat is to go on shore again until this signal has been annulled." A later reference in an 1879 article in the Nautical Magazine records that a naval signal book of 1790 lists the blue and white flag, number 19, as a flag of recall.

The Naval Chronicle of February 1803 records that: 'HMS *Courageux* is lying in the Hamoaze under sealed orders with "Blue Peter" flying at the foretopgallant masthead for all to repair on board'. The next year, the Chronicle recorded that on HMS *Diadem*: 'Commodore has hoisted "Blue Peter" for the convoy to weigh anchor and leave the moorings to join him off the Eddystone'.

So much for the Royal Navy, what about the Merchant Navy? Jack Broome, in his excellent book on the history of naval signalling entitled *Make Another Signal*, records that in 1817 Captain Frederick Marryat when he compiled his code of signals for the Merchant Service included the blue and white flag as the recall signal. The flag had in fact apparently been used earlier as a recall signal for the Merchant Service. An article in the January 1962 edition of *Sea Breezes* mentions that in 1793, when large numbers of merchant ships gathered in the Downs to await convoy departure, passengers often lived ashore until the time came for boarding. The blue flag pierced with white was the signal of recall to all persons on shore.

The Brothers Piercy reported an even earlier instance, a tragic one, dating from 1734. The anecdote deals with a vessel lying in the Downs which made "the usual recall to her passengers to repair on board". Unfortunately, the seas were extremely rough and shortly after the passengers repairing on board, the ship was driven on shore "with much loss of life". The recall signal is recorded as having been a "blue and white flag in (the ship's) rigging". This was almost certainly the Blue Peter.

This introduction explains some of the background to the history of the Blue Peter. But what about the name? There are a number of theories about the origins of the name "Blue Peter". The first of these refers to the earliest references to the general recall signal as being "blue pierced white". According to this theory "Blue Peter" is a corruption of "Blue Pierced".

Another theory, possibly more believable, revolves around the fact that early Royal Navy signal books referred to recall flags as "Repeaters" and the blue recall flag was known as the "Blue Repeater". This is certainly a convincing theory. More obscure and tenuous is the theory that "Blue Peter" refers to Admiral Sir Peter Parker who, when Commander in Chief, Portsmouth in 1793, used as a "repeater" flag the "blue pierced with white" to recall ships and boats to the Hard. Maybe.

Two other theories advanced are that "Peter" is a corruption of the French verb "partir", to leave, or that "Peter" actually refers to an old English word for a cloak-bag or portmanteau used for "carrying away" when going on a journey.

That is as far as my research has taken me and I think it is far enough. Whether the name of the flag comes from "Blue Pierced White", or "Blue Repeater", or "Blue partir", or even "Blue (Admiral Sir) Peter (Parker)", there can be no doubt that it is one of the best known signalling flags in the world. Also one of

the oldest and most romantic. So long as merchant ships ply the world's seas, the Blue Peter will continue to be flown to enjoin that "all persons are to repair on board".

Bibliography

Admiralty 1964, *Admiralty Manual of Seamanship*, Volume 1, Her Majesty's Stationery Office, London.

Anonymous 1879, "The Blue Peter", *Nautical Magazine*, July, pp. 64-65.

Broome, Captain Jack 1973, *Make Another Signal*, Futura Publications, London.

Percival-Kaye, George 1962, "Some Signal Flags", *Sea Breezes*, vol. 33, p. 72.

Piercy, Brothers Reuben and Sholto, O.S.B. 1821, *Piercy Anecdotes*, London.



(continued from p.44)

⁶ G. Turbiville, 'The Organised Crime Dimension of Regional Conflict and 'Operations Other Than War', *Special Warfare*, April 1994, pg. 6

⁷ Additionally she observes, 'In the last 20 years the drug producing countries of Latin America and of Southern Asia have all experienced one of the following- coup d'etat, revolution, tribal tensions, violent ethnic and/or religious protest, invasion, intensive guerilla warfare.' See A. Jamieson, *Global Drug Trafficking, Conflict Studies* 234, (Research Institute for the Study of Conflict and Terrorism, London, 1990) p.4

⁸ P. Williams and S. Black, 'Transnational Threats: Drug Trafficking and Weapons Proliferation', *Contemporary Security Policy*, Vol. 15, No. 1, April 1994.

⁹ M. van Creveld, *The Transformation of War*, (The Free Press, New York, 1991) pg. 59

¹⁰ As a former head of the KGB noted in 1991, '(o)ur bureaucrats, police, procurators, judges, even the KGB were merging with the underground world. It was a critical change in the development of crime in our country.' See J. Matlock, Russia Rotten, *The Australian*, August 18, 1995, p.9

¹¹ G. Turbiville, 'Operations Other Than War: Organised Crime Dimension', *Military Review*, Vol. 74, No. 1, January 1994, pg. 36

¹² M. van Creveld, *Ibid*.

¹³ L. Shelley, 'Transnational Organised Crime: An Imminent Threat to the Nation-State?', in *Journal of International Affairs*, Vol. 48, No. 2, Winter 1995, pg. 464-5

The Revolution in Military Affairs

Some Opportunities and Risks

Lieutenant Commander Alan Hinge RAN

This is the first part of a two part series on the RMA, or Revolution in Military Affairs. In Part One, Lieutenant Commander Alan Hinge RAN examines what the RMA is supposed to be, decides whether or not it actually exists and points out what the attendant military opportunities and risks are. In Part Two, Commander Richard Jackson RNZN looks at the implications of the RMA for navies in particular.

The term *Revolution in Military Affairs* may well have become the hottest military 'buzzword' of the 1990s. Optimists see the RMA as the technologically driven key to quick, clean victory involving minimal loss of blood and treasure. On the other hand, some cynics suggest that we have heard this kind of starry eyed, false prophesying before and the RMA is just another invention pushed by a new generation of 'whiz kids' and armchair strategists to keep themselves in work. As usual, the truth about 'the RMA' probably lies somewhere in between these extreme views.

The RMA debate is about whether or not modern military forces are experiencing a genuine revolution in the way wars/conflicts are fought or can be fought. And this debate seems to be dominated by people in (or closely associated with) the Armies and Air Forces of the 'Western World'. Relatively little attention seems to be paid to the RMA by navy people. While there are some shining navy *lights* in the RMA debate overseas - like Admiral Bill Owens, the US Vice Chairman of the Joint Chiefs of Staff - it is necessary for naval personnel to be better informed about the salient issues discussed and the claims made by their counterparts in the other Services.

In an environment of increasing financial austerity, professional naval personnel should aim to take full advantage of current developments in technology, organisation and doctrine. But it is also their job to be fully aware of the risks, vulnerabilities, costs and limitations that often go hand in hand with the exciting opportunities provided by new developments. Consequently, the aim of this article is to point out areas of opportunity, vulnerability and risk in the 'Information Age'. It also aims to demonstrate that technological innovation is *still* only one factor - often the *least important* factor - underpinning a Revolution in Military Affairs. To achieve these aims it is important to first understand just what a RMA is and what it is not; what it can do and what it can't do. Therefore,

after looking at some common definitions of an RMA, we will examine an 'archetypal' RMA (Blitzkrieg 1939-41) and trace some details of how and why it occurred. We can then look at a recent conflict - the Gulf War - to see if it bears the true stamp of a RMA and also get an idea of the conspicuous risks and vulnerabilities that accompany modern 'information age' capabilities; capabilities which were so impressively displayed in that conflict. Finally, we will make some general observations on risks, vulnerabilities and opportunities of the Information Age as we enter the new millennium. (In Part Two of this series, Commander Richard Jackson, RNZN, will consider 'navy specific' aspects of the RMA).

Complexity and Compromise

One of the paradoxes of human conflict is that capabilities making one stronger in a particular dimension of warfare can also weaken one in other dimensions. Increased sophistication can lead to increased coordination, complexity and compromise. In the 'Information Age' we can rightly expect continued improvement in communications and targeting capabilities, as well as real time display of battlefield information, however, the very complexity and specialisation of the systems needed to achieve these things can multiply the possibilities of delays and disconnects. For example, while we were treated to an impressive display of technology during the Gulf War we should remember it took six months of intensive military build up to put the '100 hour War' together. And even then, the 'friction of war' was not eliminated. In fact, former US Defence Secretary Les Aspin alluded to some of the side effects of sophistication when he pointed out that:

....Operation Desert Storm demonstrated that tactical communications are still plagued by incompatibilities and technical limitations. At CENTCOM corps and wing levels, a significant portion of the war was conducted over commercial telephone lines because of the volume and

compatibility limitations of the military communications system...Communications were worse in the field...multiservice strike packages were difficult or impossible to assemble because various aircraft communicated in different ways over secure voice channels'.¹

From the other end of the US command and control spectrum came the comment of a US Army major responsible for setting up communications networks for the ground operation. He warned that, 'In Saudi Arabia we had the luxury of time, and were able to develop the system as we went along. In the next conflict this may not be possible'.²

What is an RMA?

Popular definitions of just what constitutes a revolution in military affairs range from narrowly technocratic kinds to those of the very broad 'paradigm shift' in warfare variety. An example of the former definition suggests that an RMA is the result of the *integration* of four new and emerging warfare areas - Precision strike, Information Warfare, Dominating Manoeuvre and Space Warfare.³ This kind of interpretation is inherent in Vice Admiral Bill Owens' description of the RMA essentially resulting from a 'system of systems' synergy. An example of a definition at the broader end of the scale is that an RMA occurs when incorporation of new technologies into military systems combines with innovative operational concepts and organisational adaptations to fundamentally alter the conduct and character of military operations. Depending on which definition you take up, the number of RMAs can vary from a couple in the last 700 or so years to a dozen or more.

Revolutions in Military Affairs involve *recognition* over a relatively brief period, that the character of conflict has dramatically changed, and radical changes in military doctrine and organisation are needed. Consequently, the acid test of whether an RMA has occurred is the nature and extent of its effect on its victim and 'spectator' nations or parties. If, in order to prevail, or perhaps even to survive, they have no choice but to quickly copy and adapt to new war fighting technologies, practices and organisation, then they have experienced the impact of a revolution in military affairs.

Despite the term (RMA) originating in the USSR during the Cold War, most definitions of RMA have tended to become technologically oriented, Western constructs. Krepinevich, for example, suggests that '... all the military revolutions of the last two centuries are in a real sense spinoffs from the Industrial and Scientific Revolutions that have been central, defining processes of modern Western history'.⁴ As our examination of the origins and development of Blitzkrieg will suggest, there may be something to

this argument.

THE 'CLASSIC' RMA:

BLITZKRIEG 1939-41

A Revolution in Military Affairs implies synergy deriving from comprehensive changes in a number of areas. These changes usually do not happen overnight and frequently stem from the experience of abject defeat and/or the need to find solutions to overarching strategic problems. In fact, the *Blitzkrieg* or Lightning War can arguably trace its roots as far back as the Napoleonic Wars, but certainly to the Franco-Prussian War of 1870 and decades of painstaking work by the Prussian (later German) General Staff.

Blitzkrieg was the end product of a long process of systematic and not so systematic development and integration of tactics and technologies which was started by the Prussians after their devastating defeat at Jena in 1806. Essentially, Napoleon confronted his enemies on land with a quantum leap in the French Army's ability to mobilise, manoeuvre and mass at decisive points. This combination of superior capabilities largely stemmed from effects of the Industrial, Scientific and French Revolutions and, combined with the Napoleon's operational creativity, these revolutions gave the means to develop and *sustain* mass, highly motivated, conscript armies supported by a much more productive, centrally directed war economy - *A Nation in Arms* which was completely different to military organisations that had gone before. Among other things, Napoleon succeeded in developing several large, relatively self contained, mission oriented units or Corps that completely shattered other European armies that continued to use the set piece, defensive tactics which characterised 18th Century warfare. Other nations were left with no choice but to *copy* the way the French organised and fought, and historically this is the true test that an RMA has occurred. Napoleon basically put the technological, doctrinal and organisational 'legs' of the RMA 'triad' together for his time.

After Jena, the shell shocked Prussians began a long process of remodelling their forces, tactics, doctrine and organisation - their very view of war. Scharnhorst and Gneisenau put in place the foundations of what was to become the Prussian Great General Staff, and theorists like Clausewitz attempted to codify what had been learned in the Napoleonic Wars. However, it was Helmuth Von Moltke the Elder, Chief of the Prussian Great General Staff, who was to draw a new generation of technological, doctrinal and organisational developments together in the right balance and combination.

The overarching strategic problem for Prussia (as it was for Germany) as a central European power was

to be able to defeat enemies on at least two fronts. The usual solution was seen to lie in quickly defeating the toughest enemy on one front while holding the other front until it could be reinforced, stabilised and then assaulted. The key to successful operations was seen to be the *Kesselschlacht* or planned battle of encirclement and annihilation which involved *dispersed*, strategic outflanking manoeuvres. This broad solution dominated developments from the 1850s and led to a focus on speed, mass and shock involving maximum use of available technology, mass mobilisation of reserves and widespread use of railways. In fact, Moltke and his staff carefully developed and integrated the use of several key technological developments that included the telegraph, railroads and major improvements in the effectiveness of artillery and small arms. By 1865 the Prussians had developed superior systems to mobilise, manoeuvre and then mass. This led to victory over the Austrians in 1866 and devastation of the French in 1870.

Besides establishing far more efficient organisational processes, like the improved reserve service and mobilisation systems, and coupling these processes with the widespread use of an array of new technologies, important doctrinal changes were made and integrated with these advances. For example, the superiority of shifting to the tactical defensive *after* a dispersed strategic offensive was recognised, and this had a devastating effect as scores of heroic but futile French charges were decimated. Moreover, the *Kesselschlacht* needed a decentralised command system to enable dispersed strategic advances. This system was later to permeate to the operational and tactical levels to decisively contribute to the marked superiority of German forces at these levels during WWI and especially in WW2.

The essentials of the German system of mobilisation and staff planning were basically copied by most European powers and the US before World War I, and in the Great War the Germans followed the *Kesselschlacht* tradition as manifested in the Schlieffen Plan. However, German attempts at strategic encirclement and annihilation were stalemated by several factors including trench warfare and the withering effects of defensive firepower. While so called *storm tactics* and the beginnings of combined arms operations were developed towards the end of the war to break the impasse of trench warfare, they came too late. Nevertheless, the rudiments of combined arms operations using primitive armoured and air warfare technologies, doctrines and tactics were in place. After the war it was left to General Staff officers like Guderian to take *Kesselschlacht* a step further in the form of *Blitzkrieg* to make truly dispersed, *deep strike* warfare possible. *Blitzkrieg* was achieved by integrating several technical advances in communications, mechanisation and air power with organisational/doctrinal changes such

as putting infantry *in support* of tanks and emphasising coordinated, close air support. However, and most importantly, the ability to seize and exploit battlefield opportunities through the decentralised command system, or *Auftragstaktik*, coupled with numerous organisational advantages over the allies, proved the decisive force multipliers for the Germans.⁵

Blitzkrieg technologies have tended to get a disproportionate amount of credit for successes on the WW2 battlefield, and it is easy to overrate their effects. We should remember that at the start of WW2 less than one seventh of the German Army was 'mechanised' and the spectacular successes of 1939-41 were due mainly to German mastery of operations and organisation that had developed over the previous century. Since the 1850s, General Staff education methods created literally thousands of consistently good to high quality General Staff officers whose operational flexibility and innovation consistently outmatched opponents in several wars. Consequently, it is instructive to remind ourselves of *their* collective view of just what really counted in war, and note the relative priority of men, doctrine, processes, organisation and technologies. Some key indications of relative emphasis can be found in the first articles of the German Army publication *Truppenführung* (Command of Troops) 1936 which was extant throughout WWII and had been progressively developed since the 1870s⁶:

(Article 1) '.... War is an art, a free creative activity resting on scientific foundations.

It makes the highest demands on a man's entire personality'.

(Article 2) '....The art of war is in a constant state of development. New weapons cause it to assume ever changing forms. The advent of these weapons must be foreseen in good time, and their effect correctly assessed. Thereupon they must quickly be taken into service...'

(Article 3) '....The situations arising out of war are infinitely varied. They change often and unexpectedly and can rarely be foreseen in advance. Often it is precisely those factors that cannot be measured that are of the greatest importance. One's own will is confronted by the enemy's independent one. Friction and errors are everyday occurrences ...'

(Article 10) '....The advance of technology notwithstanding, the role of the individual remains decisive. His significance has been further enhanced by the dispersion characteristic of modern warfare'.

(Article 15) '... *Decisive action remains the first prerequisite for success in war. Everybody, from the highest commander to the youngest soldiers, must be conscious of the fact that inactivity and lost opportunities weigh heavier than do errors in the choice of means* (emphasis in the original).

Technology practically always played a secondary role in accounting for German success at the tactical and operational levels. From massed armoured battles on the Russian Front to German Raider operations at sea in the South Pacific, the ability of German forces to *exploit opportunities*, even under conditions of technical, logistical and numerical inferiority was generally ascribed to superior organisation and doctrine.⁷ Surprisingly, this conclusion held true under all conditions – whether attacking, defending or withdrawing, and under conditions of air superiority or inferiority.

By the end of World War 2 the Allies had grown to 'look' and operate in similar ways to the German forces. Essentially, Blitzkrieg was the second quantum leap forward in the ability to mobilise, manoeuvre and mass *conventional* armed forces since the Napoleonic Wars. It involved new technologies incorporated in new processes by flexible organisational structures. It was the result of processes that started at the end of the 18th Century; processes that were systematised in the latter half of the 19th Century and accelerated during the 20th Century.

The blitzkrieg doctrine and force structure was taken up by most advanced nations after WWII, especially by the Soviets and Israelis. In fact, with an increased

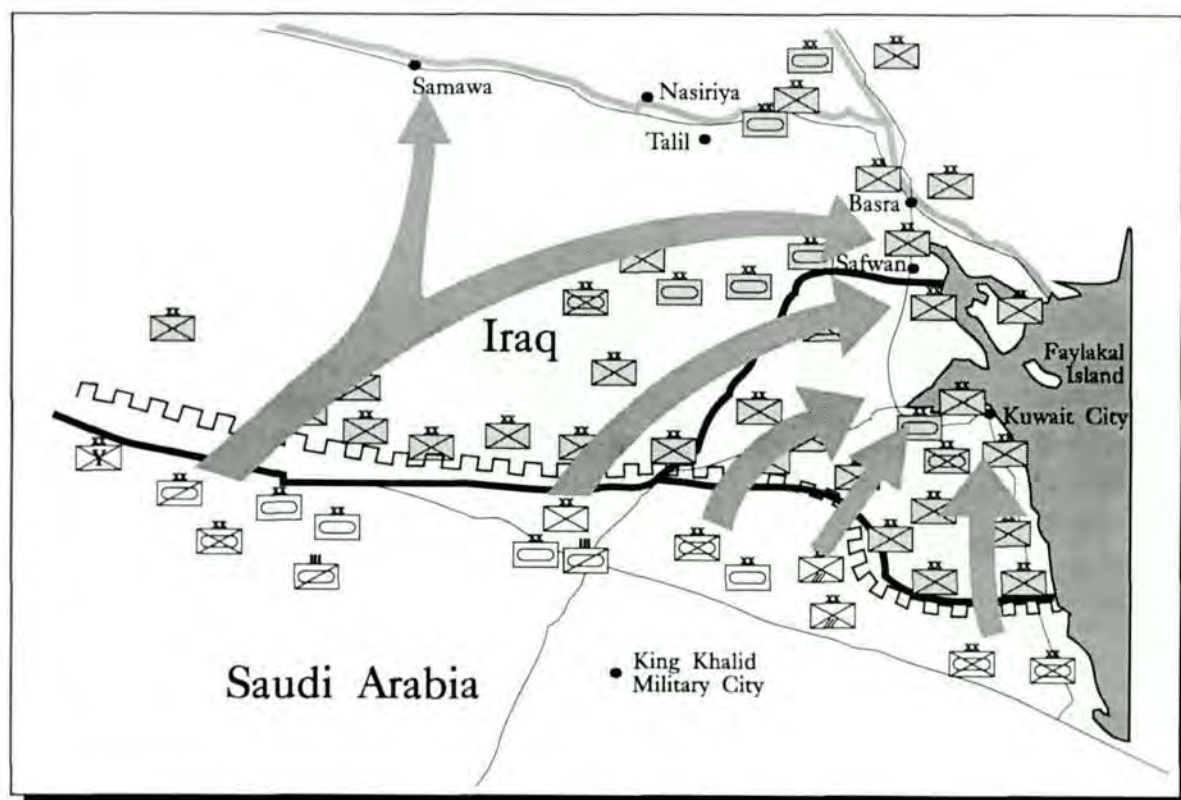
emphasis on air operations, it still forms the basis of modern, conventional land warfare doctrine. The blitzkrieg doctrine was certainly reflected in the Gulf War.

THE GULF WAR 1990-91

While the Gulf War certainly represented a major triumph for the Allied forces and the UN, we should not read too much into it regarding the future of conflict. In fact, it may mark the culmination of the 'Blitzkrieg tradition' where the winning edge given by improving capabilities to mobilise, manoeuvre and mass for big, offensive wars may now yield diminishing returns.

Certainly, at first sight all the promises of the proponents of technology and champions of Air Power seemed to be realised in January 1991 as an 'RMA' was demonstrated on our television sets in living colour. But the Gulf War was a *special case* in far too many ways and cannot be considered representative of modern conflict. It was fought under very special, probably unrepeatable, conditions. Overwhelming success in the Gulf was the result of a conjunction of the following very favourable characteristics and international conditions:

- Iraq was an unrepresentative 'target system'. State



The Allied land force offensive

versus State conflicts have become very rare in the 1990s and are 'outnumbered' by much messier *intra state* conflicts by a factor of over 30 to 1. This trend is likely to continue.

- An Arab State invaded another sovereign Arab state. This extremely rare event led to relatively quick agreement (or acquiescence) among Arab States to permit establishment of staging bases in Saudi Arabia and throughout the Middle East.
- Russia and China were in no position to blunt UN resolve for a number of critical internal and international reasons.
- Classical conventional war could be waged in what was *basically* a target rich 'moonscape'. This made detection, classification and targeting solutions simple and straightforward. In most other situations, technologically driven and dependent war fighting solutions are far more difficult to apply. Weapons systems that work well in deserts are substantially degraded in performance in jungles, forests, cities and towns. Iraqi equipment, communications and emissions 'meshed' perfectly with Allied targeting systems and weapons.
- An enormous number of sensors could be focused on a single geographic area with minimal 'clutter' problems.
- The Iraqis were clearly outmatched in virtually every aspect of conventional warfare. Also, they had no ability or intention of attacking critical allied data nodes and links which are increasingly attractive targets.
- Large segments of Iraq were essentially free fire zones and were only occupied by the enemy. This minimised the chances of incurring non belligerent casualties and collateral damage - both are very important considerations in modern war.
- The Iraqi leadership did not try to undermine Allied cohesion prior to hostilities or to deny a quick Allied victory. In fact, the Iraqi leadership could not have done much more to facilitate Allied cohesion and victory - from the lost opportunity to break the cohesion of the Allies at the January 1991 Geneva Conference, to recklessly pumping oil into the Persian Gulf to destroy Saudi desalination plants at a time when some of the allies, like France, were having second thoughts; to the indiscriminate use of SCUD missiles against Israel.
- A 'blank cheque' was effectively made available for the prosecution of the war. The massive effort cost over \$US 60 Billion and this burden was shared between a dozen or so nations.
- Finally, a six month period to place and prepare an overwhelming orchestra of force was available. Time is always a decisive factor in war; most uncertainties can be eliminated if effectively unlimited time is available. Under the circumstances of the conflict, the time available for movement and support of forces practically

eliminated uncertainty in prosecution, if not in outcome.

The Gulf War exhibited an impressive stage in the evolution of blitzkrieg and the continued integration of dominating manoeuvre and precision strike. It reflected the rapidly increasing rate with which military capabilities can detect, identify, track and attack relatively simple *conventional* targets with higher precision and lethality far quicker, and over a much larger area. However, organisationally and doctrinally, it is interesting to speculate whether General Colin Powell's 'surround them and kill them' concept of operations involving a series of dispersed 'pincer' envelopments was really different in its fundamentals to what a Moltke, Schlieffen or Manstein would have suggested. Ultimately, the Gulf War simply showed the devastating effectiveness of hi tech, hi tempo, highly coordinated conventional forces against low tech, low tempo, poorly coordinated, conventional forces.

Certainly, Iraq was an ideal 'site' to showcase the impressive capabilities of the Information Age, but it is now time to look at the *downside* of the military information revolution.

NEW VULNERABILITIES

The very complexity of modern military command/control/communications systems can be a source of many potential weaknesses, dislocations and 'blindspots'. Today, increased capability often leads to increased vulnerability and dependency along ever increasing support chains studded with information and logistics nodes and links. Proliferation of nodes, links, systems and 'fusion centres' often makes it harder to stay in control under adverse conditions, and these nodes and links are increasingly attractive targets for electronic attack involving jamming, data manipulation, EMP and old fashioned physical destruction of sites. Also, redundancy of modern systems remains extremely expensive and includes hardening key nodes and links, or even going to the point of making key nodes mobile. Additionally, alternative systems and backups need to be defended 'all along the line', and this is a very expensive business involving high direct and opportunity costs. One of the opportunity costs is that elaborate C3 defence takes from the up front, numerical advantage at the 'sharp end'.⁸

Numbers of systems interfaces are also very important when minimising vulnerability of information oriented warfare systems. As Rechlin warns, 'The greatest leverage in system architecting is at the interfaces (but) the greatest dangers are *also* at the interfaces. Even small changes and disruptions can lead to drastic system discontinuities and 'crashes'.⁹ Furthermore, according to Mullen, a good C3I system,'

should be able to degrade gracefully; that is, it must be able to lose some of the capability it started with initially, and still not come unglued ... (But) As we concentrate on how best to design the C3I system, there's a tendency to envision one that's centralised - but frequently, centralised systems don't degrade gracefully'.¹⁰

Important tradeoffs also need to be made with data availability and sharing in modern military information systems. For example, 'Information Warriors' have to reveal a lot about themselves and their capabilities to machines, and if one data base 'knows' something and other databases know other things, and they are linked, then vulnerabilities and compromises can multiply. The general capabilities of these kinds of machines and systems are known by many people; this is largely because military technology is finding it increasingly difficult to keep up with civilian developments and is more and more absorbing and being led by these developments. As VADM J. Tuttle suggests when discussing US systems, 'Our C4I Systems components are generally a technological generation behind commercial counterparts by the time they are installed'.¹¹ Moreover, even at the most basic system level of the Information Age - the PC type computer - major security problems will persist with data being revealed, lost, or changed without authorisation.

Challenges in maintaining program data security and integrity are formidable, and even minor errors in legitimate programming can cause hugely expensive problems. For example, the bulk of the billion dollar plus B52 strategic bombing operations during the Gulf War had practically no effect because of a simple programming mistake in the B52 navigation system. Eventually, Iraqi tanks and emplacements had to be picked off individually (and expensively) through tactical strike.

The expense of new capabilities is another factor to be taken into account when considering the opportunities and vulnerabilities inherent in information age, high technology warfare. At the 'top end' of the market, an F117 Stealth bomber costs \$A 75M (or \$1 Billion per squadron of 12), but can deliver only four bombs on target per sortie, with each sortie taking several hours to prepare for. Similarly, super sophisticated JSTAR and AWAC aircraft provide extremely valuable capabilities, but in achieving their missions they emit huge electromagnetic signatures, need expensive protection and could be 'taken out' by alert, relatively modestly equipped enemies. All this adds up to enormous expense and lower numbers of platforms. Lower numbers affect tactics and the preparedness to take risks and experience losses. Consequently, very careful judgements need to be made on the return for investment in many of these weapons

and systems, and determining the right 'mix' that a country needs and can afford.

Complexity and costs of modern weapons also demand careful consideration. A cruise missile costing \$A 1.8 M can only deliver a 200 kg warhead on target, and it needs the support of billion dollar space based capabilities and near ideal programming conditions to even begin to get on target. And even under these conditions a success rate of 50% has never been exceeded, as indicated by their use in the Gulf War and the US attacks in Iraq during August/September 1996 (45 launches). Even laser guided munitions under staged test conditions generally only realise about 60% 'hit' effectiveness. In combat, this figure can reduce to 30-50%, with the higher result only being achieved in the Gulf War after resistance was crushed.¹² Even the highly publicised Patriot Missile had a SCUD hit rate well under 10% (some suggest no 'hits' were made by Patriots), despite claims made at the highest official levels during the war that the 'hit' rate was of the order of 95% (41 out of 42 launches).

It should be realised that physical limits are being approached in terms of technological *response time* to unconventional threats, even in the context of effectively Launch on Warning (LOW) systems. For example, the limits of the most advanced technological detection and interception capabilities are evident in the Middle East: using every technological 'trick in the book', the Israeli Defence Force's reaction time to Hezbollah man portable rocket attacks got down to an amazingly short three minutes. However, this is still over two and one half minutes too long! Sooner or later the law of diminishing returns comes into play with weapons and sensor systems. A disproportionate amount of dollars are then needed to achieve the effectiveness needed to combat threats *predominantly* with technology.

Investment in superior organisation and doctrine often gives a better return than investment in technology. By getting carried away with the technology 'leg' of the RMA triad, we take the risk of only looking at one side of the conflict equation and 'objectivising' the enemy. *He* becomes a mere *radiator* of detectable signatures. It is imperative to remember that conditions of conflict are also determined by a living, reacting enemy who can come up with novel ideas to degrade sophisticated capabilities; sometimes using completely different systems and organisations to those employed by the technologically superior side. No more sobering, relatively recent example can be found of this than the Vietnam War. This war highlighted the generally poor effectiveness of hi-tech, hierarchical, specialised conventional forces against a 'networked', unconventional opposition.

REMEMBERING THE GHOSTS OF VIETNAM

Some believe that the Gulf War helped lay to rest 'the ghosts' of Vietnam. But three of the less conspicuous ghosts of that conflict are over confidence, over reliance on technological solutions and a lack of knowledge of and respect for the enemy.

In Vietnam, the US used *and persisted* with an inappropriate command and control structure. This derived from a systemic failure to understand its 'target system' and make appropriate doctrinal and organisational adaptations. US forces that had well learned the lessons of Blitzkrieg and conventional combined arms operations, were confronted with an unfamiliar 'target system' - a 'networked' enemy which simply could not be located, encircled and annihilated.

The overarching strategic problem for the North Vietnamese was to overcome massive, US superiority in conventional resources and firepower. In 1965 virtually *no one* - except the North Vietnamese perhaps - believed that a 'raggedly assed little country' (a quote attributed to US President Lyndon Baines Johnson) could long stand up to the conventional might of the US. There was no question that the North was incapable of competing on preferred US fighting terms, but by keeping the key elements of its forces untargetable through 'distributed networks' run by highly motivated and trained cadres, and *politicising* the war, the North attacked the very *process* of US command and control at the highest levels of government; not necessarily the systems that supported it and carried out missions.

North Vietnamese strategy provided a framework for coming up with novel, even paradoxical ways to get cover from fire and view. Decades of fighting against the Japanese, the French and the South had equipped them for this. Moreover, in Vietnam, the dimensions of war extended well beyond the battlefield and this made a decisive difference. Military considerations gradually became swamped and constrained by political, diplomatic and economic factors. Perhaps this is where another kind of revolution in military affairs resided - in orchestrating the inability of the US to focus and effectively target its hierarchical, conventional power on a highly networked, 'low radiation' guerilla system.

The Vietnam experience also provides *enduring* lessons on the dangers of the 'information pathologies' that are side effects of technical progress in the Information Age. In his book *Command in War*, Martin Van Creveld looks at command and control in Vietnam during 1965-68, and he points to a twenty fold increase in information needed to administer, coordinate and control divisional sized US units in the two decades since 1945.¹³ This was due to a vast increase

in the complexity of weapons systems, administration, supply tail and the resulting specialisation. This in turn led to high levels of centralisation and greater reliance on reliable and rapid communications. Nevertheless, this failed to make the US command system effective and appropriate. In fact, Van Creveld argues that systemic 'information pathologies' developed which were reflected in huge requirements for information and subsequent coordination which, paradoxically, resulted in an inability of the military organisation to really know what was going on around it.

Communications complexity and *availability* had a debilitating effect on the way command operated in Vietnam. The insatiable demand for information *and then coordination* slowed the whole system down, even leading to dramatic increases in the times involved in organising major operations. For example, divisional level operations like *Cedar Falls* and *Junction City* took on average four months to organise; a plan to cut off the Ho Chi Minh trail by invading Laos took six months to develop.¹⁴ Moreover, a performance sapping side effect of the growing information pathology was that manning, administering and guarding the extensive US communications/information system was a major factor in causing less than 10% of US forces in country to be available to actually fight the enemy on the ground. At its peak of 585,000 troops in 1968, only about 50,000 were in field units, most of which were endemically short of replacements and outnumbered by the enemy.

Despite having a military signals organisation in country comprising over 23,000 specialist personnel, with enormous communications resources at call, Van Creveld suggests that '.... the communications establishment made possible by the revolution in technology, and necessary in order to deal with the consequences of specialisation and complexity, had itself turned into a major source of both specialisation and complexity. *The cure was part of the disease (my emphasis)*'.¹⁵ In Vietnam during 1967-68 there was never enough communications resources to satisfy demand; the world's most sophisticated and expensive signals communications system simply could not cope.

At the end of his chapter on Vietnam, Van Creveld makes the comment that, 'To study command as it operated in Vietnam is, indeed, almost enough to make one despair of human reason; we have seen the future and it does not work'.¹⁶

One would hope that Van Creveld was stretching a 'long bow' and things have changed for the better. We could perhaps cite the Gulf War as an indication that the future is bright. Unfortunately, well into the information age indications are that problems of 'information pathology' persist and may even grow.

Modern conventional and unconventional warfare is an undertaking that cannot be readily partitioned into smaller and less complex sub tasks that are independent and easy to deal with. Lines of communication rise rapidly as more people, specialisations, services and nations enter the warfare system. Therefore, a stage can be reached where increased communication/coordination assets actually cause a *diminishing* return in performance.¹⁷ Paradoxically, adding more information/coordination resources can exacerbate these pathologies, and former Defence Secretary Aspin's comment at the beginning of this chapter is a timely reminder of this.

The need to understand tomorrow's 'Target Systems'

One of the most disturbing events in the Gulf War was bought about by a handful of mobile SCUD missile launchers that led to the diversion of almost the entire Allied air effort to search for them. Nevertheless, the detection rate for SCUD launchers from air and space was practically *zero*. The handful of mobile launchers were being supplied with SCUDs by civilian buses that had been 'gutted' and were in effect undetectable as missile transports from the air or space. Importantly, what ended up working best against the mobile launchers and resupply buses were small, eight man SAS teams in four wheel drive vehicles using MK 1 'eyeballs'; these teams could identify and illuminate targets for air power to destroy. This emphasises the continued importance of the 'man on the ground' supported by high technology. The situation also highlights the point that the conspicuous tools of the Gulf War - specialised aircraft, ships, sensors and cruise missiles - are good at fighting things that are *like* themselves, that is, conventional targets, emissions or stationary facilities, but are not good at hunting *other things*. They are designed to fight *each other* and the effectiveness of their electronic sensors heavily depends on the complexity of the target environment/background.

Unfortunately, the decisive factor in determining target environment complexity is the enemy, and in future it is likely to become increasingly hard to distinguish between friend and foe. We are going to have to come up with better ways to go out and get information on a far wider variety of target systems - such as terrorists/freedom fighters, ethnonationalist movements, international crime cartels, renegade remnants of failed states and perhaps even the disparate threads of unregulated population flows. Coming out on top in modern conflict - especially unconventional or low intensity conflict - still depends on finding out who the enemy is; how he operates; where he is strong; where is he weak; what he values and what he fears. Technology can only go so far in answering these questions and dealing with complex, non conventional target systems.

The 'Information age' RMA cannot be pursued on the basis of technical solutions alone. Understanding tomorrow's human target systems means getting much better at obtaining, processing, assessing and using Human Intelligence (HUMINT), and being able to adapt new organisations, technologies and processes *around* HUMINT. HUMINT is information gained from humans. Its sources range from spying, infiltration, special forces surveillance, debriefings of defectors, captives, refugees and visitors to overseas countries.

Most intelligence failures since the Vietnam War have related to poor collection *and* processing of HUMINT. Comprehensive studies of major wars since Vietnam reveal that:

'...All (wars) were characterised by basic failures in HUMINT on every side. This was particularly true of each side's ability to analyse the probable course and outcome of the conflict and the behaviour of opposing leaderships and commanders, but it was also true of warning, the ability to predict the behaviour of potential regional allies and enemies, and a host of other factors. In most cases, these failures occurred in spite of considerable SIGINT and PHOTINT indicators that might have been highly useful if the proper HUMINT had been available'²⁰

The studies go on to distil common reasons for these failures:

'... These failures stemmed from: (a) inadequate policy level guidance and lack of interest in intelligence that disagreed with existing policy and preconceptions, (b) lack of adequate analytic resources and objectivity, and (c) a failure to allocate adequate resources to HUMINT and particularly to obtaining a wide range of views and inputs. It is striking to note that most intelligence failures in all five wars occurred in HUMINT and that most failures were at least as much the result of policy level action as of action by intelligence elements. *Helpful as improved intelligence technology might have been, no key strategic intelligence failure would have been overcome by such assets.* (my emphasis) The intelligence failures with strategic importance all occurred because of problems in HUMINT, and policy guidance that limited the objectivity and depth of intelligence analysis'²¹

So, despite ample technological means, *uncertainty* in human conflict would still appear to be largely determined by the limitations of organisational processes and structures. Looking around at the *increasingly* complex, hierarchical defence organisations in the Western world this may come as no surprise. As Van Creveld suggests, certain attributes of complex organisations usually translate to higher uncertainty:

'...the more numerous and differentiated the

departments into which an organisation is divided, the larger the number of command echelons superimposed upon each other, the higher the decision thresholds, and the more specialised the individual members, then the greater the amount of information processing that needs to go on inside the organisation. *Uncertainty, in other words, is not dependent solely on the nature of the task to be performed; it may equally be a function of the organisation itself* (my emphasis).²²

If we are searching for an 'RMA' to yield decisive advantages against the diverse threats of the 21st Century, no 'leg of the RMA triad' can afford to be neglected. Indeed, remoulding our conventional organisations and processes - especially our analysis and control processes - may well be the principal area of focus for reducing uncertainty in conflict in the first decades of the 21st Century. Technology may well take second place.

Conclusions

Revolutions in Military Affairs are often the results of years, even decades of hard work following serious defeats. They frequently arise from the challenges of confronting an overarching strategic problem and are marked by a conjunction of organisational, doctrinal and technological changes. An RMA is usually crystallised in a major conflict where the manner, means and pace of conducting conflict fundamentally change. This allows the innovative party to seize and decisively sustain the initiative for a time, while the opponent is generally forced to either copy the new ways of warfare, go 'underground' or become the *opposite* of the attacker.

The Gulf War did not indicate an RMA per se. However, it exhibited an impressive stage in the evolution of the Kesselschlacht / Blitzkrieg doctrine through the continued integration of dominating manoeuvre, precision strike and information warfare (coupled with space warfare). Organisationally and doctrinally, General Colin Powell's 'surround them and kill them' strategy and operations involving a series of dispersed 'pincer' envelopments is hardly different in its fundamentals to those developed and used by the likes of Moltke, Schlieffen or Manstein (with a focus on the air dimension). Ultimately, the Gulf War simply showed the devastating effectiveness of hi tech, highly coordinated conventional forces against low tech, poorly coordinated, conventional forces.

Many views of the RMA demonstrate a certain amount of Western parochialism and fascination with the 'big guns' of technology. For example, it can be argued that the North Vietnamese victory over the US and its allies in Vietnam was a revolution in military affairs no less impressive than a *Blitzkrieg*. While the technological innovation 'leg' of an RMA triad was not

conspicuous in North Vietnamese/Viet Cong operations, the communist *doctrinal processes* of extending warfare to the political, social and economic dimensions was impressive, if not decisive. In organising most communist forces to remain all but untargetable, the North Vietnamese developed systems and operations aimed at degrading vastly superior US capabilities which ended up unable to achieve decisive strategic and operational objectives. Perhaps this is where a less conspicuous revolution resided - in orchestrating the *inability* of a vastly superior technological power to effectively target its hierarchical, conventional power on a highly 'networked, low radiation' guerilla system. Victory was achieved by the Vietnamese not by trying to beat the enemy at his own game, but by becoming organisationally and doctrinally his *exact opposite*!

Today, there is no question that we are witnessing a major acceleration in military technical capability development in a number of key areas - Precision Strike, Information Warfare, Dominating Manoeuvre and Space Warfare. Integration of these areas can definitely yield a 'system of systems' synergy applicable across a broad range of the conventional conflict spectrum. This is reflected in the rapidly increasing rate with which military forces can detect, identify, track and attack relatively simple *conventional* targets with higher precision and lethality far quicker, and over a much larger area. Nevertheless, we should *hasten slowly* in placing too much confidence and investment in speculations made by the growing number of RMA enthusiasts.

What remains at the end of the 20th Century is a situation of generally poor effectiveness of fewer, hi-tech, hierarchical, conventional forces against many more 'networked', low signature, unconventional target systems. Unless tomorrow's technological innovation is combined and matched with organisational and doctrinal change that can identify and undermine these unconventional 'target systems', then the effect of superior technology alone may only be marginal.

We must also realise that new, powerful technologies and capabilities generate new vulnerabilities, and at least six enhanced areas of vulnerability are inherent in the Information Age. These are:

- Command and Control systems of increasing sophistication can be seriously compromised, even under mildly adverse conditions. Proliferating nodes, links, systems, interfaces and their power supplies make attractive targets for electronic attack involving jamming, data manipulation, EMP and physical destruction. Even simple mistakes made by one's own side can cause expensive, even disastrous delays and errors.
- Modern 'systems of systems' tend towards being highly centralised and interdependent. They are unlikely to degrade 'gracefully' because, without

expensive redundancy measures, relatively small changes and disruptions can lead to drastic system discontinuities and 'crashes'.

- 'Information Warriors' have to reveal more and more about themselves, their plans and capabilities to extensively networked machines. The general capabilities and vulnerabilities of these kinds of machines and their increasingly 'off the shelf' components are known to many people. Consequently, more and more 'performance blunting' tradeoffs may need to be made concerning data sharing. This mitigates against effectiveness and efficiency and, paradoxically, may promote the very compartmentalisation that 'Information Warriors' seek to avoid.
- Problems of maintaining computer and program data security and integrity in conflict are likely to increase. Sensitive data and programs can be disclosed, changed without authorisation or lost and almost undetectable 'logic bombs' in programs have the potential to seriously compromise operations at all levels.
- Information volume and complexity can distort and hamstring command operation if the insatiable demand for coordination and information in conventional military organisations is not checked. Innovative organisational and doctrinal filters must sieve the relevant from the not so relevant and irrelevant information. Unless these filters exist, lines of communication can increase - perhaps exponentially - as more people, specialisations, interfaces, Services and nations enter tomorrow's conflict systems.
- Adding more information/coordination resources can exacerbate existing 'information pathologies'. Unconventional warfare simply cannot be readily partitioned into smaller and less complex sub tasks that are independent and easy to deal with. Situations may more quickly be reached where

increased communication/ coordination assets actually cause diminishing return in military performance.

We can hedge against these vulnerabilities in a variety of ways. For example, by using distributed systems wherever possible and training people in the disciplined choice and use of information throughout careers. But, above all, we must give primacy to really understanding a much wider variety of unconventional 'target systems' - terrorists/freedom fighters, ethno nationalist movements, international crime cartels, renegade remnants of failed states and unregulated population flows.

Achieving 'Dominant Battlefield Awareness' against non conventional target systems in the 21st Century demands much better HUMINT acquisition and processing methods. Ultimately, war is still basically about finding out who the enemy is; how he operates; where is he strong; where is he weak, what he values and what he fears. Appropriate technology, as always, can help here, but the less conspicuous doctrinal and organisational 'legs' of the RMA triad will be neglected at our great cost.

End Note

Should today's naval planners simply assume that the roles of current platforms and operations will be maintained or increased in future, or should they be far more open to new missions and doctrine? What can we 'take on board' from new technological, doctrinal and organisational developments to maintain or increase naval capabilities in environments of increasing austerity? In Part Two of this series, Commander Richard Jackson, RNZN, discusses these and several other issues in 'Navies and the RMA'. (February/April 1997 issue).

The author

Lieutenant Commander Alan Hinge holds a Masters Degree (MA) in Strategic Studies and a BSc (Physics), both from the Australian National University. In 1984 he became the first junior officer in the ADF to be awarded a Defence Fellowship, and since then has had forty five articles published in professional military journals in Australia and overseas. These articles have covered a wide range of topics: from leadership, management and adventurous training to naval operations, weapons technology, defence economics and project management. He has written a book on mine warfare and is also the contributing editor of two books on defence project management.

Alan Hinge is a contributing author to the Australian Dictionary of Biography and has won ten major prizes in international essay competitions. He edited the Journal of the Australian Naval Institute during 1987-88 and 1994-1996. In 1993 he became the inaugural Rockwell Scholar in Strategic Studies and is currently the Co Director of the Australian Defence Studies Centre's Defence Industry and Logistics Program. In July 1996 he took up the inaugural CDF Scholarship. His topic is: Achieving More Cost Effective Defence Preparedness in the Post Cold War Era.

NOTES

¹ US Defence Secretary Les Aspin and William Dickinson in 'Defence for a New Era: Lessons of the Persian Gulf War'. Cited in Snyder.F, *Command and Control: The Literature and Commentaries* (National Defence University Press, Washington, 1993), p. 71

² Gibson, T, 'Developing a Command and Control System in War', *IEEE Communications Magazine*, Jan 1992, p.56)

³ See VADM Owens' introduction to the publication *Dominant Battlespace Awareness: The Winning Edge* (NDU Press, Washington, 1995) S.E Johnson and M.C Libicki (eds)

⁴ Krepinevich, A, 'Cavalry to Computer: The Pattern of Military Revolutions', *The National interest* Fall 1994, p.39

⁵ Extensive literature exists on explaining the markedly superior tactical and operational capabilities of the German Army in WWII. It ranges from the qualitative to the highly quantitative (eg. DePuy). One of the best relatively recent work on the superior organisation of the German Army is by Van Creveld, M, *Fighting Power: German and US Army Performance 1939-45* (Arms and Armour Press, London, 1983) especially Chapters 6,7, 8 and the conclusion.

⁶ Cited from Van Creveld, M (1983) op cit, pp. 28-29

⁷ The best collective narrative of WWII German Raider operations is given by Woodward.D, *The Secret Raiders: The Story of Operations of the German Armed Merchant Raiders in the Second World War* (William Kimber, London, 1955). These voyages are examples of 'switched on' crews led by extraordinarily resourceful officers for long periods, with next to no support if things went wrong. Using numerous disguises, stealth and cunning, these few raiders destroyed or captured over one million tons of shipping (about a years wartime production of British shipyards)

⁸ Van Creveld, M, *Command in War* (Harvard University Press, Cambridge, Mass, 1985) Chapter 7 describes how this happened during the Vietnam War. The problem is described briefly later in this paper.

⁹ Eberhardt Reichtin in *Systems Architecting*. Quoted by Snyder.F, op cit p.105.

¹⁰ Thomas H. Mullen in *C3I: Issues of Command and Control* (1982). Quoted by Snyder, F, op cit,

p.105

¹¹ VADM J. Tuttle, 'C4 For the 21st Century', *IEEE Communications Magazine*, Jan 1992, p.49.

¹² Ibid, pp.389-90. For a discussion of Gulf War weapon inaccuracy, even under close to ideal conditions, see Badsey.S and Primlott.J (Eds), 'The Gulf War Assessed' (Arms and Armour Press, 1992) pp.122-23.

¹³ Van Creveld, M, (1985) op cit, p.235

¹⁴ ibid, p. 249

¹⁵ ibid, p. 16

¹⁶ ibid, p. 260

¹⁷ This syndrome is commonly seen in software development. For example, F.P Brooks in his book, *The Mythical Man-Month* (Addison Wesley, London, 1979) identified the problems of diminishing return and even counter productiveness of injecting more people and resources into even medium complexity, but still difficult to partition software development tasks. The costs of rapidly increasing lines of communication by adding more people and resources are almost invariably disproportionate compared to the gains. This theme is elaborated on in the military environment in M.A Rice and A.J Sammes (eds) in *Communications and Information Systems for Battlefield Command and Control* (Brassey's, London, 1989). See the chapter entitled 'The Software Crisis'.

²⁰ Cordesman.A and Wagner, A (Westview Press, Boulder, 1991) Vol III, p. 367. This is one of the best series of works dealing with the issues of modern military effectiveness. The (now) four volume study is based on research conducted for the US Advanced Research Projects Agency (DARPA) on the lessons of modern war between 1973 and 1993.⁸ The conflicts analysed cover a very wide variety of conflict, including the Arab Israeli conflict of 1973, the Soviet Invasion of Afghanistan (1979-89), the 1982 Israeli invasion of Lebanon, the Falklands War (1982), the first Gulf War between Iran and Iraq(1980-89) and the Second Gulf War (1990-91).

²¹ Ibid, Vol III, p. 367-368. Often, even the best intelligence networks themselves provide channels to feed false indicators designed to reinforce cultural and strategic misperceptions concerning the very nature and direction of threat.

²² Van Creveld(1985) op cit p.269



St Peter's Fleet—a Brief History of the Papal Navy

Graham Wilson

Rome, the Eternal City, City of Emperors, city of monuments, city of pigeons, city of tourists — and tourist attractions. Perhaps the best known of the tourist attractions of Rome is the Vatican City, independent mini-state and home of the Pope, supreme head of the Roman Catholic Church. The Vatican itself holds many tourist attractions of its own but perhaps the best known of them is the colourful and picturesque Swiss Guards, the Pope's tiny personal army.

There would be very few readers who would not be aware of the existence of the Swiss Guards and therefore of the fact that the Pope has an army. How many readers are aware, however, that the Pope once had his own navy and that this navy was a power in the Mediterranean for almost 1000 years?

The beginnings of the Papal Navy can be traced back to the 8th century AD and the navy survived until the middle of the 19th century. Throughout its long history the Papal navy had only one enemy, Islam, and it fought hard to check the spread of this rival religion throughout the Mediterranean.

The driving force for the creation of a Papal Navy came from the fact that the nominally Christian rulers of Europe were largely indifferent to the menace of Islamic expansion, except when that expansion directly threatened them. Despite the fact that Moslem corsairs and privateers were constantly raiding Christian shores and enslaving Christian people, it proved impossible throughout the centuries to unite the emperors, kings and princes of Christendom in common cause. In 876, with Moslem expeditionary forces deep into northern Italy, Pope John VIII (872-882) beseeched Charles the Bald, Holy Roman Emperor, and Basil the Macedonian, Byzantine Emperor, for assistance in clearing the invaders from Italian lands and waters. When assistance was not forthcoming, the Pope decided to take matters into his own hands and, in March 877, led a fleet of galleys, the first warships of the Papal Navy, in an attack on the Moslem fleet off Terracina which saw a number of the Moslem ships sunk, 18 captured and the rest put to flight as well as seeing the release of 600 Christian slaves.

This first fleet action by the Papal Navy had been a costly venture for the Papacy, the Papal coffers having been drained to pay for the construction of the galleys

and to hire their crews and fighting men. Nevertheless, it proved the advantage of the Papacy having its own navy and the decision was made to retain the force after the victory at Terracina. This foresight was to be rewarded in 1016 when 10,000 Moslems under the Christian renegade Mogeid landed in Sardinia. Mustering a combined force of Pisans, Genoese and Neopolitans built around a core based on his own fleet, Pope Benedict VIII (1012-1024) drove the raiders out with great loss of life and ships.

Some time later, in 1085, during the reign of Pope Gregory VII (1073-1085), a Papal fleet of 300 ships sent to meet the Moslems won such a stunning victory as to finally convince the rulers of Europe to combine against the common foe. This co-operation did not last long, however, and when, in 1087, a Turkish fleet combined with Arab pirates from the southern Mediterranean to raid into northern waters, Pope Victor III was unable to enlist the aid of any of the Christian potentates of Europe. As a consequence, the Moslem squadrons roamed largely at will, their depredations almost unchecked despite the best efforts of the vastly outnumbered Papal Navy. It was the same story in 1291 when Pope Nicholas IV (1288-1292) requested aid for an expedition to relieve besieged Christian settlements in Egypt. With no help forthcoming, the Pope was forced to charter 20 galleys from Venice and add them to his own ten ships sailing for Egypt. In a desperate struggle, the Papal fleet was defeated but was at least able to rescue the surviving Christians in Egypt and evacuate them to Cyprus.

By the 14th century, it had finally become clear to the rulers of Europe that the Ottoman Empire was showing such strength and audacity that nothing could come but disaster for Christendom if something drastic was not done. Once again, and probably grudgingly, the rulers of Europe united under the Papal standard, this time that of the vigorous and dominant John XXII (1316-1334) and in 1334 sailed out to defeat and destroy the Ottoman fleet in the Sea of Marmora. Unfortunately, soon after this brilliant victory John died and the league he had forged and held together by force of his personality fell apart. With John's death, the Papal Navy was on its own again defending the Christian shores.

One of John's later successors, Pope Calixtus III (1455-1458), finally despaired of enlisting the aid of the European monarchs and decided instead to expand

and modernise the Papal Navy. A ship yard was established on the Tiber and was soon turning out galleys and Papal transports for the fleet. To command the Papal Navy, Calixtus appointed Cardinal Scarrampo as admiral. The cardinal in turn appointed Velasco Farinha, a Portuguese, as vice admiral and in 1456 sent his squadrons out into the Mediterranean and the Aegean to harry the Ottomans. In three years of cruising, the Papal Navy cleared the Ottomans from large sections of the Aegean and in doing so freed over 100,000 Christian slaves.

The following decades were taken up with skirmish, raid and counter-raid, as Ottoman and Arab raiders attempted to gain footholds in Christian lands and the Papal Navy strove to fight them off. During the reign of Pope Innocent VIII (1484-1492), the Papal Navy formed a special squadron of four galleys, each equipped with 50 oars and a landing or boarding force of an additional 50 men. In the bow of each galley was fitted a *rembata* or platform which served as a shooting platform for specially trained riflemen who were able to wreak havoc on the crews of raiding ships. This squadron was apparently extremely successful.

During the 15th and 16th centuries, the Papal Navy took part in many expeditions to the Holy Land as part of various fragmented operations mounted or sponsored by European rulers. In 1534, Pope Clement VII (1523-1534) sent 12 of his galleys to serve with the great Genoese admiral Andrea Doria, then in the service of Emperor Charles V, in the expedition which cleared the Turks from southern Morea. Clement's successor, Pope Paul III (1534-1549), again sent 12 of his galleys to join the expedition to Tunis in 1535 which saw the stronghold of the infamous Barbarossa destroyed and thousands of Christian slaves released. By this stage also, the Papal Navy was at least not alone in its day to day operations against the infidels as they had now been joined by the Knights of St John, one of the great maritime powers of the Mediterranean, who had occupied Malta in 1535 and now fared forth from their island base on regular raiding expeditions, called "caravans", against the Moslem foe.

Unfortunately, the Papal Navy, and the Pope himself, had to contend not only with the Moslem enemy in front, but with political enemies to the rear and this often had a detrimental affect on the fortunes of the navy. In 1558, during the reign of Pope Paul IV (1555-1559), following the machinations of Philip II of Spain, son of the Emperor Charles V, the fortunes of the Papal Navy sunk to their lowest ebb when all of its galleys were destroyed at the Battle of Jerbah as a result of Philip's duplicity.

This blow to the Papal Navy, not to mention Pontifical prestige, was so profound that when Paul's successor, Pope Pius V, agreed to send 12 galleys to Cyprus to join the fleet of the Republic of Venice in the defence

of the island, the Pope was forced to purchase the necessary ships from the Venetians themselves and to equip them out of his own pocket. By this stage, in the face of generally fragmented and half-hearted Christian resistance, with the exception of the brilliant and gallant actions of the Knights of St John during the Great Siege of Malta in 1565, the Ottomans and their allies were becoming bolder and more aggressive and met with numerous successes, both at sea and on land. The position was so desperate that Pius V was at last able once again to cobble together a European military alliance of sorts and inspire the alliance to put to sea in October 1571 to defeat the Moslem fleet once and for all at Lepanto. During this pivotal naval battle, at least 20 ships of the Papal Navy were present.

Following Lepanto, the Papal Navy went into something of a decline. While the Ottoman threat had largely been negated, Algerian and Tunisian pirates continued to infest the southern and central Mediterranean and there was still a job to do. The job, however, was more and more being done by the navies of the newly emerging European nations. By the time that Pope Benedict XIV (1740-1758) was invested with the triple tiara and the Keys of Peter, the Papal Navy had been reduced to a negligible force of a few small galleys. The "fleet" was based at Civitavecchia, the ancient Roman seaport on the west coast of Italy to the north of Rome which was the main seaport of the Papal States. The Papal Navy had been based at Civitavecchia for over 200 years, operating from the naval arsenal built by Pope Julius II (1503-1513) in 1504. A grand edifice in its day, the arsenal had by Benedict's time fallen onto times every bit as hard as the fleet. Benedict, who was determined to re-establish the temporal pre-eminence of the Pontiff in the Papal States and Italy in general, took an interest in the navy and increased its funding. He also ordered two 30-gun frigates from England. These two ships, *San Pietro* and *San Paolo*, arrived at Civitavecchia in 1743 and were immediately sent south to patrol the commercial shipping lanes along the northern African coast. Almost immediately they surprised and put to flight a squadron of Algerian xebecs and pinks which had been about to fall on a convoy of Dutch and Genoese merchantmen. Later that year, *San Paolo* distinguished herself while escorting a Dutch convoy by capturing a Barbary ship of 94 guns. The Dutch convoy commander was generous in his praise of the actions of the Papal frigate and the Pope received the thanks of the Dutch government.

In 1758, *San Pietro* and *San Paolo* were replaced by two larger frigates, *San Clemente* and *San Carlo*. These two ships were built at the naval arsenal at Civitavecchia, an indication of the improved state and status of the Papal Navy. Pope Clement XIII (1758-1769), after whom *San Clemente* was named, travelled to Civitavecchia to bless the two new ships at their

launching. A feature of the two ships was the elaborate scroll work and decorations which gave them more the appearance of pleasure ships than ships of war. The filigree and gold leaf, however, only served to pretty up what were two very efficient and well armed war machines. The ships were grand enough, however, to be used by the Pope as transport for important guests of the Papacy. When the British King George III's brother, the Duke of Cumberland was making the "Grand Tour", the Pope placed *San Clemente* at his disposal.

With the coming of the French Revolution, the Papal Navy was again to fall on hard times. By this stage, the fleet consisted of two 20-gun corvettes and a few smaller vessels. When Rome was occupied by the French Revolutionary Army of Italy, the Papal Navy base at Civitavecchia was taken over by the French Navy, who also confiscated the Papal ships, both naval and merchant. Now under the tricolour, the Papal ships were pressed into service as part of the ill-fated French expedition to Egypt. By the turn of the century, all of the ships of the Papal Navy had either been sunk or captured and at the beginning of the 19th century the navy itself had ceased to exist.

The Papal Navy was to rise from the ashes once again, this time at the hands of Napoleon Bonaparte. Keen to maintain the support of the Pope and with an eye to protecting his flanks, Bonaparte took an interest in the revival of the Papal Navy and in 1809 presented two 16-gun brigantines to Pope Pius VII (1800-1823). These ships were christened *San Pietro* and *San Paolo* and, just so the Pope wouldn't forget, Bonaparte ordered the inscription "Donné par le premier consul Bonaparte au Pape Pie VII" to be inscribed on the transom under each ship's name. As an aside, *San Pietro* had started life in the Royal Navy as HMS *Speedy*. Considered an excellent fighting ship during her RN service, *Speedy* had established something of a record by taking 50 prizes in a 12 month period and it had taken three French line-of-battle ships to corner her and force her to strike, following which she had been presented to the Pope.

The need for a Papal Navy eventually became questionable as a result of the double effects of the American onslaught on the Barbary Pirates and the end of the Napoleonic Wars which finally brought tranquility to both shores of the Mediterranean. Although a small naval establishment continued to be maintained by the Papacy following the end of the Napoleonic Wars, it was now more of a coast guard force and was mainly concerned with protecting and policing Papal fishing grounds. *San Pietro* and *San Paolo* survived but were now employed as merchant ships, although still flying the Papal crossed keys standard. It was as merchant ships that they voyaged to Egypt in 1840 to transport some alabaster monoliths, gifts of the Pasha to the Pope, back to Italy. This gift, an attempt by the

Pasha to gain favour with the Pope, was a sure sign of the rapprochement which had finally been reached between Catholicism and Islam after centuries of fighting.

On arriving back at Civitavecchia in 1841, the convoy, which included another Papal merchant vessel, the *Fedelta*, was greeted by Pope Gregory XVI (1831-1846). Gregory welcomed his ships and the Pasha's gift with a warm speech in which he also expressed the desire to revive the almost extinct Papal Navy. As a first step, money was once more provided to refurbish the sadly run down naval arsenal at Civitavecchia and the keel was laid for a new ship, the 12-gun brig *San Pietro e San Paolo*. His Holiness the Pope exhibited his continuing interest in the revival of the Papal Navy by taking a short voyage on the new brig on her shake down cruise in September 1842. The trip obviously cemented the Pope's interest for he now planned a complete revival of the navy on a larger scale. One of the Pope's merchant captains, Alessandro Cialdi who had commanded the monolith expedition to Egypt with *Fedelta* as his flagship, was commissioned as admiral of the Papal Navy and set about reviving his command. Cialdi was a master mariner with extensive experience in both the Mediterranean and the Atlantic, having commanded Papal vessels on voyages to America. He was also experienced with machine driven vessels and was something of a scientist, having done considerable research on wave motion and the improvement of navigational instruments.

Along with his naval responsibilities, Cialdi was entrusted with the task of improving the navigability of the Tiber River and for this task he journeyed to England to purchase vessels and equipment. After touring shipbuilders in London, Liverpool, Glasgow and Edinburgh, Cialdi purchased three paddlewheel tugs in London, *Archimede*, *Papin* and *Blasco de Garay*, were the first steam tugs to be brought into service in Italy and they were also the first steam powered ships to make full use of the inland waterways of France, travelling from the English Channel to the Mediterranean via canals and rivers of France on their delivery voyage.

Over the next few years, the Papal Navy underwent a modest expansion with the purchase of a number of small steam powered vessels in England for coastal defence. The last ship to be purchased for the Papal Navy was also its finest, the corvette *Immacolata Concezione*, built in the Thames Ironworks at Blackwall and launched in May, 1859 during the reign of Gregory's successor, Pope Pius IX (1846-78). *Immacolata Concezione* was delivered to the Papal Navy in August 1859. She was a full rigged iron ship of 627 tons with a 160 hp steam engine driving a screw propeller. A sumptuously fitted deck cabin was included for the use of the Pope and the ship was armed with eight 18-pounder brass cannon. Designed as a

coast guard and fishery protection ship, she had a normal complement of 46 officers and men. A contemporary print of an officer and a rating of the Papal Navy shows them to be wearing uniforms closely patterned on those of the Royal Navy.

Immacolata Concezione served as flagship of the Papal Navy until 1870. In that year, after decades of effort on the part of Italian patriots and decades of resistance on the part of the Papacy, the remnant of the Papal States was overrun by the Royal Italian Army and annexed to Italy and the Temporal Power of the Pope came to an end, with Rome becoming the capital of the Kingdom of Italy. Prior to this, the bulk of the Papal States, namely the territories of Romagna, Marches and Umbria had seceded from the Papacy and voted for union with Italy in 1859.

With the end of the Temporal Power, the Papal Navy's base and arsenal at Civitavecchia and its ships were taken over by the Royal Italian Navy. The exception to this was *Immacolata Concezione* which was retained as a Papal yacht. As Pope Pius IX and his successors until 1929 were to remain, by their own choice, "prisoners of the Vatican" and not stir out St Peter's as a protest against the Italian takeover, there wasn't very much call for a "Papal yacht" and *Immacolata Concezione* remained tied up at Civitavecchia until 1879 when Pope Leo XIII (1878-1903) presented her to the Dominican Fathers who ran the nautical training school of St. Elmo at Arachon in France. The Dominicans operated *Immacolata Concezione* as a training ship until 1883 when she was sold to British shipping interests and passed into the merchant trade. She ended her days tragically in about 1905 when she was destroyed by fire and run

ashore on the Algerian coast. A sad end for a beautiful ship which had once been the pride of St Peter's Fleet.

So ended the Papal Navy, a small force with a great history - and a long one. Nowhere is it recorded at any time in its almost 1000 year history that the Papal Navy turned its back on the foe. Never a conquering force, its reason for existence was to preserve Christianity and protect Christians from the depredations of Moslem invaders and pirates. Throughout its long history, the yellow and white ensign with the crossed keys of St Peter fluttering at the masthead of ships of the Papal Navy had been a welcome sight to vessels of all Christian countries.

At first glance, it might appear odd that the Popes, Vicars of Christ, the Prince of Peace, should have recourse to something as blatantly military as a navy. Yet we must not judge the Popes of old by the standards of today. The Catholic Church was, by force of historical circumstance, in the forefront of the long war against the forces of Islam. While there was justice and injustice on both sides of the conflict, the fact is that the conflict did exist, someone had to lead it and with the chronic inability or unwillingness of the European monarchs to unite against the foe, except as it suited them, that someone by default had to be the Church, that is, the Pope. With the Mediterranean serving as the traditional and natural avenue for invasion of southern Europe, it was natural that a Papal Navy would have developed. As an earlier chronicler of the Papal Navy put it, the Church and Christendom "survived the onslaught of the infidel (over the centuries) because the men of the Papal Navy knew how to light the fuse of a cannon as well as a candle".

THE AUTHOR

Graham Wilson was educated by St Joseph's and Sacred Heart Nuns in Victoria and Darwin and Christian Brothers in Canberra and Sydney. He enlisted in the Regular Army in 1971 after a short period of service in the CMF. Originally an infantryman, he served in Australia and overseas with the 7th and 5th/7th Battalions, the Royal Australian Regiment and as an instructor at the Infantry School. He transferred to the Australian Intelligence Corps in 1979 and has served in a variety of intelligence postings in Canberra, Brisbane, Sydney and Port Moresby. Awarded warrant rank in 1985, he recently retired the Army. Graham is married with three children and as a hobby he combines a life long passion for militaria and military history with a love of writing.



The Swiss Navy?

Graham Wilson

The Swiss Navy? Switzerland is a landlocked, alpine republic and there could really be no way that it could have a navy. Yet, landlocked or not, Switzerland actually does have a coastline of sorts and the armed forces of the Swiss Federation actually do include a nautical element which, for want of a better term, can be called "the Swiss Navy". The aim of this article is to introduce readers to this organisation.

Background

Switzerland's foreign and defence policies are both based on the concept of armed neutrality. The armed forces of the Federation exist not so much to wage war as to protect the integrity of the nation's borders and to ensure that its neutral stance is not compromised. The Swiss Army is responsible for surveillance of the country's land borders and is tasked with challenging, disarming and interning any non-Swiss units or individual soldiers who may cross over the borders onto Swiss soil. In the event of outright invasion, of course, the full weight of the Army would be brought to bear in an effort to repel or destroy invading forces. For its part, the Swiss air force (the Swiss Army Air Corps) is charged with maintaining the sovereignty of Swiss air space and supporting the ground forces as needed.

This just leaves Switzerland's "coastline". Although it is in fact landlocked, Switzerland's borders run through three great lakes, namely Lakes Constance, Geneva and Maggiore and the country thus shares a "maritime border" with France, Italy and Germany. It is for this reason that the Swiss Army maintains a marine element charged with the "maritime defence" of the country's borders.

Waterborne defence of the big lakes was ignored for many years, the Swiss relying on shore based artillery to repel invaders. At the outbreak of World War Two, however, Swiss military planners saw the need for a force of armed vessels to operate on the lakes in defence of Swiss neutrality. To this end, ten wooden hulled patrol boats were built in Swiss yards in 1941 and deployed onto the lakes, maintaining patrol throughout the war years. These boats were retained after the war and continued in service up until the early 1980s.

By the late 1970s, it had become evident that the World War Two vintage boats, although well maintained and with updated surveillance and weapons systems, were

reaching the end of their useful lives. A prototype replacement boat known as the P-80 (Patrouillenboot 1980) was built and exhaustively tested. These tests on the prototype, named *Aquarius*, proved that the P-80 met the Swiss Army's requirements and in 1981 an order for a class of ten boats (eleven in total including *Aquarius*) was let with the firm of Spiez Muller AG. Construction of the first two boats, to be named *Venus* and *Mars*, commenced on 14 November 1981.

Fleet Organisation

The fleet is organised into three patrol boat companies, one to each of the lakes. Each company is organised into three or four platoons equipped with P-80 and other craft. There is no upper limit to the number of boats assigned to each platoon since suitable civilian boats are requisitioned as needed for training and exercise purposes in reflection of what would be fleet practice in time of war. These requisitioned civil craft would be tasked with the interception of unidentified targets picked up by the P-80's surveillance radars.

This requisitioning of civil assets is a standard feature of Swiss military practice and philosophy. Every useable asset is regarded as a defence asset in time of war or national emergency and every Swiss citizen knows this. As an example, Swiss Army engineer units routinely requisition heavy plant equipment from civil contractors for use on exercise. There is never any quibble about this as the contractor's themselves will be members of the army, possibly even members of the unit carrying out the requisition.

The P-80 Patrol Boat

The P-80s are constructed of a GRP/Airex composite for the hull and GRP/plywood for the superstructure. The boats have a length of 10.6m and a beam of 3.3m and draw less than 1m. They were originally powered by two Volvo Penta AQ255A petrol engines but these have been since replaced with the slightly more powerful AQ260A engine. The engines give a top speed of approximately 32.5kt and the boats have an economical patrol endurance of approximately 24 hours. Armament consists of two .50 cal/12.7mm MG64 machine guns, one forward and one aft, as well as the crew's personal weapons and the boats are equipped with an I band surface search radar.

Operational and living spaces for the crew of 6-8 (depending on task) consist of the wheel house, navigation space, galley recess and sleeping berths for four personnel. All portholes and windows are fitted with blackouts for night operations.

Personnel

Each of the boat companies is commanded by a captain with a major in overall command of the fleet. Each platoon is commanded by a lieutenant and the boats are commanded by under-officers (roughly equivalent to warrant officers). All personnel are either conscripts undergoing initial military service or reservists rendering their militia obligation. As a result of this, the boats are not operational under army control for the whole of each year. During those periods when they are not in use by the army, the boats are seconded to the Swiss Customs Service.

The crew of a P-80 generally consists of the captain, a helmsman, a radar operator, a radio man and two gunners. For patrols or operations of longer endurance, boats usually carry an additional radar operator and an additional radio man to enable longer watches to be kept. All crew members are cross trained in at least one other crew task.

Personnel of the boat companies wear standard Swiss Army uniforms. Normal dress of the day "at sea" is the extremely distinctive Swiss alpine woodland pattern camouflage uniform with grey side cap, the latter replaced by the even more distinctive Swiss helmet, either the old or the new pattern, in action. Prior to the complete revision of the Swiss Army system of badges and insignia in late 1970s, members of the boat companies wore a small foul anchor as their distinctive insignia along with an embroidered boat badge as their qualifying insignia. Presumably something along these lines continues to be worn.

Training

Personnel for the patrol boat companies are recruited through the standard Swiss method, that is via the Federation's universal conscription system. During their initial training phase, personnel assessed as suitable for employment in the boat companies will be selected for further training at the Swiss Army engi-

neer's school where they learn the basics of seamanship and boat handling. As far as possible those selected will come from the region of one of the three big lakes and will preferably already have some sort of small boat experience. At the completion of their initial period of full time training personnel pass onto the reserve and from then on will render their militia service with the boat company they have been allotted to.

During annual training commitments boats will be activated and training exercises and operational patrols carried out. Skills practiced include camouflage, navigation and gunnery. The latter is particularly relevant as the Swiss take weapon handling very seriously. Gunnery training is carried out on Lake Lucerne, where a dedicated firing range has been set out on an isolated area of the lake to enable both static and mobile firing to be practiced.

Logistic Support

All boats, both P-80s and civil craft, are required to be kept fully provisioned at all times ready for instant use. During periods when they are operated as customs boats, the P-80s are maintained by the Customs Service. During periods of military service they are maintained by the crews using mainly civilian support facilities, again a reflection of the Swiss national military philosophy. The combination of marine resistant construction materials and the relatively benign environment of the fresh water lakes means that wear and tear on the hulls and systems of the P-80s is fairly minimal.

Conclusion

Swiss independence and neutrality, although shaky at times, have been upheld and ensured by the readiness of the Swiss soldier, that is to say every adult Swiss male citizen, to fight to preserve his country since the mid-19th century. Were any invader foolish enough to attempt to invade Swiss territory, they would find out that they had bitten off an extremely tough mouthful. While the "Swiss navy" is very small and really nothing more than a waterborne police force, there is little doubt that they would give as good account of themselves as possible in defence of their country should they ever be called upon to do so.





BOOK REVIEW

War in the Indian Ocean Vice Admiral Mihir K. Roy PVSM AVSM, (Spantech and Lancer UK 1995 \$27.50)

Reviewed by Lieutenant R.C.A. Leahy

Vice Admiral Mihir K. Roy has provided us with a fascinating and timely account of the strategic maritime importance of the Indian Ocean from a perspective with which few Australian readers would be familiar. The scope of *War in the Indian Ocean* is comprehensive, taking the reader on a seven hundred year journey - from the 1400s through to the Twenty-First Century.

We begin our Indian Ocean odyssey by setting sail onboard the Fukien Junks of China, (commanded at one time by the famed Zheng He, also known as the Sambo Taigian - the three-jewelled Grand Eunuch!). After an all too brief explication of the genesis of India's maritime perceptions, we learn the part the Indian Navy had to play in the years leading up to and immediately following independence. Chapters 3 to 5 deal with the naval aspects of the conflicts between Indian and Pakistan. The final chapter, in my view, the book's strength, deals with Admiral Roy's perception of the current state of maritime issues in the Indian Ocean. In this respect, Admiral Roy's presentation at the forthcoming 'Seapower in the new Century' conference in November will be eagerly anticipated.

Admiral Roy frequently uses the term 'sea blindness' to describe the inability of politicians and strategists alike to grasp the importance of the maritime dimension of international security. The current imbalance of the Indian Defence Forces he ascribes to a historical preoccupation with the defence of the Himalayan passes, at the obvious expense inadequate means of defending 7300km of coastline and 1264 islands. In economic terms, the extent of this 'sea blindness' becomes apparent when we are told that, in the 1950 Indian defence budget, the Navy was allocated only 4.76%! By 1994 this had risen to only 12% of the total defence outlay.

Many readers will be fascinated by the role played by the Indian Navy during India's struggle for independence and during partition. Interestingly, the simple fact that Indian and Pakistani naval officers had trained together in the UK in the years leading up to the partition, meant that acrimony and division within the Navy was largely avoided. For instance, in 1947 we are told that the Indian frigate *Cauvery* sighted a Pakistani frigate enroute from Chittagong to Karachi. The CO of the Indian ship ordered Action Stations and then invited the Pakistani CO to join him for a drink! Similarly, while the armies of India and Pakistan were engaged in com-

bat with another, their naval compatriots were engaged in a contest of a different kind - on the hockey field!

For the naval historian, the somewhat bitter break-up between the Indian and Royal Navies makes fascinating reading. Until 1958 the Indian Navy was commanded by a Royal Navy officer. However, in 1963 when the UK only offered India the ageing Battle Class destroyers and 'T' class submarines to re-equip her fleet, the Indians begin to look further afield. History records that India eventually acquired *Osa* class missile boats, *Petya* class patrol craft, *Nanuchka* class missile corvettes and later the *Kashin* class destroyers and a *Charlie* class nuclear submarine from the former Soviet Union. Interestingly, Vice Admiral Roy sees this break as necessary, not only from an equipment point of view, remarking that the RN/RIN relationship had "... in a way stunted self-reliance and also diminished innovative thinking."

Although *War in the Indian Ocean* does provide a refreshingly new perspective on the maritime aspirations of one of Australia's near neighbours, the book, as a whole, does suffer from some frustrating and annoying elements of self-promotion. At times I became a little confused as to what identity the book was attempting to adopt - was it a history? A biography? A strategic treatise? A set of Memoirs? For instance, we are brazenly told:

"I, surviving two 'ditchings', pioneered anti-submarine warfare, photographic intelligence and aerial mining and also assisted in framing ab initio rules and regulations governing the Fleet Air Arm of the Indian Navy" and

"The CNS left in a huff and his hitherto cordial relations with Admiral Roy were thereafter frosty ... In some way this misunderstanding impinged on the choice of CNS' successor."

Now, while either or both of these remarks may be true, the self-serving nature in which they were presented detracts from the remainder of what is a fascinating book.

However, as mentioned earlier, the final chapter of Roy's book is its strength. The prediction that the geostrategic situation since the end of the Cold War has

"... ushered in greater factionalism, sub-nationalism, terrorism, famine, ethnic cleansing, fundamentalism and environmental degradation ... and has turned the Cold War into boiling conflicts."

is a sober and timely warning for us all.

For a thorough background on Indian maritime strategic perceptions, the reader should turn to Vice Admiral Roy's *War in the Indian Ocean*.

THE AUSTRALIAN NAVAL INSTITUTE Inc.

Office Bearers

				Telephone	Fax
President	RADM	C. Barrie	A-4-18	(06) 265 5158	
Snr. V/President	CDRE	P. McGuire	CP3-1-06	(06) 266 4102	
Jnr. V/President	LEUT	J. Sears	ADFA	(06) 268 6099	
Secretary	LEUT	A. Nelson	F-3-64	(06) 265 4673	(06) 265 6206
Treasurer	LEUT	C. Roberts	CP4-1-B6	(06) 266 4790	(06) 266 4818
Journal Editor	LEUT	A. Cooper	APW2-G-11	(06) 266 6576	(06) 266 6754
Councillors	CDRE	W. Dovers	B-4-05A	(06) 265 6606	
	PCHA	M. Davis	D-3-26	(06) 265 3264	
	CMDR	A. Du Toit	CP2-3-16	(06) 266 3159	
	LCDR	D. Devereaux	D-4-06	(06) 265 3201	
	LCDR	A. Hinge	ADSC	(06) 268 8454	
	LCDR	K. Wallis	HMAS <i>Harman</i>	(06) 280 2809	
	LCDR	N. Wark	A-4-17	(06) 265 5157	
	LEUT	L. Blunden	A-4-24	(06) 265 2599	
	LEUT	B. Spurgin	D-3-15	(06) 265 4035	
	POWTR	P. Andrews	D-2-20	(06) 265 3950	
Public Officer	CDRE	A. Brecht	APW2-1-17	(06) 266 6297	

New Zealand Chapter

Convenor	CMDR	B. Coffey	OTS HMNZS <i>Tamaki</i>	64 9 445 5653	64 9 445 5677
Secretary	LCDR	C. Olliver	20 Pukeora Ave, Remuera, Auckland		
Treasurer	LCDR	W. Stevens	C/- PO Box 817, Auckland		
Wellington Liaison Officer	CMDR	R. McKillop		64 4 478 0725	

Past Presidents

RADM C. Oxenbould, AO (1994-95), RADM D. Chalmers, AO (1992-93), CDRE I.A. Callaway (1988-92), CDRE A.H.R. Brecht (1985-88), CDRE I.B. James, AM (1983-85), RADM R.C. Swan, AO CBE (1978-83), CDRE J.A. Robertson (1977-78), CDRE V.A. Parker (1975-77)

Honorary Life Members

ADM Sir Victor Smith, AC KBE CB DSC, VADM Sir David Stevenson, AC KBE, ADM Sir Anthony Synnot, KB OBE, CDRE J.A. Robertson, Rt. Hon. Sir Zelman Cowan, AK GCMG GCVO QC, RADM R. Swan, AO CBE, CDRE I.B. James, AM, CMDR G. Cutts, CDRE A.H.R. Brecht, CDRE I.A. Callaway.

Foundation Members

Bennet, G.A.	Dickie, D.D.	Jervis, G.E.	Macleod, B.D.	Scott, B.P.	Williams, K.A.
Berlyn, N.R.B.	Fisher, T.R.	Josslyn, I.K.	Nathey, R.J.	Sharp, W.R.	York, D.
Bonnet, V.W.L.	Fox, L.G.	Kemp, W.A.	Nicholson, B.M.	Shearing, J.A.	
Brecht, A.H.R.	George, J.	Knox, I.W.	Nicholson, I.H.	Smyth, D.H.D.	
Broben, I.W.	Gibbs, B.G.	Lee, N.E.	Orr, D.J.	Snell, K.E.	
Calderwood, G.	Goddard, F.C.	Loftus, W.B.	Parker, V.A.	Stephen, K.C.	
Cole, S.E.W.	Grierson, K.	Loosli, R.G.	Patterson, D.R.	Stevens, E.V.	
Cummins, A.R.	Hall, I.W.	Martin, D.J.	Ralph, N.	Stevens, J.D.	
Cutts, G.	Herman, F.J.	Martin, P.C.S.	Read, B.J.	Summers, A.M.F.	
Dalrymple, H.H.	Histed, G.	Mayson, J.H.	Reynolds, I.	Swan, R.C.	
Davidson, J.	James, I.B.	McDonald, N.E.	Robertson, J.A.	Swan, W.N.	

APPLICATION FOR MEMBERSHIP

(Family Name) (Initials) (Title) (Organisation)

(Private Address)

(Postcode)

(Service/Business Address)

(Postcode)

I apply for FULL/ASSOCIATE membership of the Australian Naval Institute for:

☐ One Year (\$25)

☐ Three Years (\$60)

Please debit my BANKCARD/MASTERCARD/VISA card number

(Card Number)

(Expiry Date)

If accepted for membership I agree to abide by the Constitution and By-Laws of the Institute.

(Signed)

(Date)

Enquiries and membership applications should be directed to:

The Secretary
Australian Naval Institute
PO Box 80 Campbell ACT
AUSTRALIA 2612

MOVING? Please return the slip below to the Secretary.

(Family Name) (Initials) (Title) (Membership No.)

(Address)

(Postcode)

JOURNAL OF THE AUSTRALIAN NAVAL INSTITUTE Inc.

PO Box 80 Campbell ACT

AUSTRALIA 2612

Print Post Approved

Print Post Publication Number:

PP 229 219 000 20

POSTAGE
PAID
AUSTRALIA

SURFACE
MAIL

0 0002 295

CDRE JA ROBERTSON RAN(RTD)

57 NEWRY ISLAND DYE

URUNGA

NSW 2455

MAY BE OPENED FOR POSTAL INSPECTION