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Letter to the Editor

Dear Editor,

I was delighted to see my old ship *Queenborough* in the Visions from the Vault section of the December *Headmark* having been the navigator during her epic and perilous trip to Europe in 1955.

I must take you to task about the statement that she completed a global circumnavigation as her trips over and back were both via the Suez Canal. In fact, on the return trip and at the request of the Scottish canal pilot, we transited the Great Bitter Lake at 28 knots. I seemed to be the only one on the bridge who had reservations about this procedure.

With respect to the kangaroo, it [they] were modeled on the kangaroo on the reverse of the Australian penny and were manufactured onboard by the shipwright.

Yours,

John Smith, Senior Researcher
Naval Historical Society of Australia Inc

Dear Editor,

I read with fascination the article in the December issue, on the late Admiral Conrad (Emile) Helfrich.

During the 1960s and 1970s, I worked very closely for some years with his son Jan (John) at the Australian HQ in Sydney of the famous Royal Interocean Lines. Jan subsequently joined another company, however we remained in close touch and in 2006, some four years before he passed away, he kindly gifted me a copy of a limited edition of the *Familieboek Helfrich.* Whilst mainly in Dutch, there is a good English summary. Moreover, Jan sent me, among other writings etc., a most splendid photo of his father signing the Japanese Surrender Document onboard *Missouri* in 1945. General Douglas MacArthur

and, I think, General Wainright (correct spelling?) are standing by.

But the real treasure in Jan's material is an English translation from the Admiral's memoirs, relating to his meeting with General Douglas MacArthur prior to the Signing Ceremony. I quote in full:

General Douglas MacArthur received me in his room. As in my previous meetings with him, he was lively, sharp, trim- looking in his single field- khaki, courteous, obliging and understanding. What must have gone through his mind stepping on enemy soil? As in Manila, I congratulated him but somewhat more effusively because this was 'the end'.

"*You are the representative for 'Netherlands'?*"

"*I am sorry Sir, I am the Representative for the Kingdom of the Netherlands.*"

"*I understand. But my instructions from Washington told me that you are a Representative for Netherlands.*"

" *The instructions of the Netherlands Government told me that I had to sign the Surrender as Representative for 'the Kingdom of the Netherlands.'*"

" *After some moments of silence: 'I see the difference. But everything is ready. I'll see what I can do' ".*

" *On the Instrument of Surrender, I have signed as ' Kingdom of the Netherlands representative'.*"

Jan's book expresses some obviously interesting views involving his father's association with the very controversial loss of *HMAS Perth* and *USS Houston.* If it would assist further ensuring the accuracy of history, I'd be pleased to loan all the material from Jan, to you or colleagues.

A tale untold until now?

Kind regards,

Warwick Abadee, Sydney.

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Contents

Front page : A Toll search and rescue paramedic is lowered on to the aft deck of HMAS Diamantina during winching training off the coast of Solomon Islands on Operation Render Safe 13. Photo by Sergeant Hamish Paterson 1st Joint Public Affairs Unit

HMAS Melbourne/Voyager Collision: Cause Theories and Inquiries (with aspects of the HMAS Melbourne/USS Frank E Evans collision)

BY COMMODORE DAVID FERRY

With discussion likely at commemoration of this accident I review theories as to its cause – including one I advanced in this journal in 2004 – and incorporate opinions I have encountered since. The review extends earlier assessment of the investigations and adds related experience from the *Melbourne/Evans* collision.

The Accident

On 10 February, 1964, the destroyer *HMAS Voyager* collided with the aircraft carrier *HMAS Melbourne* off Jervis Bay, New South Wales. The two were positioning themselves for night landing practice by aircraft based ashore. *Melbourne* was in tactical command. The night was almost windless, clear and moonless, with a slight swell. With *Voyager* leading, fine on *Melbourne's* port bow (at position 1 in figure 1), *Melbourne* ordered a turn together of 40° to port and into wind for flying. About halfway through this turn, with *Voyager* now ahead (position 2), *Melbourne* signalled a flying course of 020, the effect of which was an order for *Voyager* to take up station to port and astern of her, for rescue of aircrew from any aircraft which might ditch. *Voyager* swung to starboard as depicted before reversing in a long turn to port, accidentally crossing *Melbourne's* bows. Despite going full ahead and attempting to turn away at the last moment – and *Melbourne* going full astern – *Voyager* was cut in two. Her bow section sank quickly, the stern some hours later. Eighty two died, all onboard *Voyager*. *Melbourne's* bow was stove in though she remained afloat.

Subsequently there were two inquiries by Royal Commissions, the first into the accident and the second into allegations that *Voyager's* captain, Captain DH Stevens, RAN, was physically unfit for command. There have been numerous cases of claims since by survivors from *Voyager* and also crew of *Melbourne.* The cause of the collision remains undetermined since none of those on *Voyager's* bridge familiar with stationing manoeuvres survived and there was no voice or data record of her track, speed, helm or engine orders.

Royal Commissions and the Port Side Theory

The first Royal Commission found that *Voyager* was responsible for the collision, though *Melbourne* should have given her warning. Its findings as to how the accident occurred were unpersuasive.

The second Royal Commission found grounds to re-examine the

Frank E Evans pictured post-collision (Courtesy USN)

Figure 1.

Fig. 1. The Collision

Collision

N

3. During final port turn

3.

020

2. Turns to starboard to manoeuvre to new station

1. Turns to 020

060

VOYAGER

2. Orders Voyager to new station port quarter

1. Turns towards 020

060

MELBOURNE

Turning Circles
Voyager, 1000 yds (10 deg rudder)
850 yrds (15 deg rudder)
Melbourne, 2800 yds

Speed Averages
Voyager, 19 knots
Melbourne, 21 knots

0
200
400
600
800
1000   Yards
1200
1400
1600
1800
2000

accident cause, determining that *Melbourne* carried no blame and that *Voyager* may have believed she was still to port of *Melbourne*, when manoeuvring to her new station, this explaining her turn to port. This view was shared by the Naval Board which believed that *Voyager* was disorientated. Both thought the carrier's lighting might have played a part, a view shared by retired Vice Admiral Harold Hickling, RN.[1] .More recently retired RAN Rear Admiral Chris Oxenbould AO, a navigator, ascribed to this, while noting that, "we will never know why" the checks and balances which should have prevented the collision failed.[2]

There are good reasons supporting this theory, these being:

- *Melbourne*'s captain, Captain R J Robertson, DSC, RAN, gave evidence that her navigation lights, including her port and starboard side lights, were dimmed. As per figure 1,*Voyager* would have entered the arc of her starboard light about half way into their turn in unison onto the flying course and the flying course signal was sent after this "when *Melbourne* was just steadying on her new course."[3] Had the dimmed starboard light, visible for a mile,[4, p4] been evident to *Voyager* she would have known she was to starboard of *Melbourne*. However *Melbourne* like other carriers displayed undimmed masthead and other red lights to warn aircraft of her presence and to indicate that manoeuvrability was restricted. There was the possibility that being dimmed the green light might have been dominated by these.

- *Melbourne* also was experimenting with red flight deck floodlights. *Melbourne*'s captain had given instructions that *Voyager* be

warned of this innovation. *Melbourne*'s navigator and her air operations commander had circled the carrier by boat in Jervis Bay beforehand to check the new lights did not shine or reflect outboard. Even so it is possible that the direction of the lights was altered after this check, to optimise them for flying. Besides, ship roll and manoeuvring heel at sea might have yielded a different impression, as might height above the sea of *Voyager*'s bridge and her distance. During a later helicopter flight at low level across *Melbourne*'s bow in which the first Royal Commissioners were shown what *Melbourne*'s lighting looked like, one of the pilots, Lieutenant Albert Riley, remarked[5] that all he could see was red light when he should have been able to make out the green.

- When *Voyager* was signalled to take up station, *Melbourne* was in *Voyager*'s funnel haze and in her radar blind arc, increasing the chances her red lights would mislead *Voyager* as to her course, at least at that stage.

- Had indeed she remained to port, or even thought she was ahead, a 90° turn to port followed by a like turn to starboard (a "fishtail", see later) would have her in her new station quickly (my 2004 article, p 11), there being a straightening between the two. The first Commission's opinion was that she had straightened in that general direction before the collision, [4, p10, p23] though this was disagreed by the second.[7, p212] Commander AI Chapman RAN (Rtd), a wartime captain, wrote a thorough cause and investigation analysis published as an RAN training manual[6]. His best-fit theory was an attempted fishtail

to port.[6, p129, 314] He canvassed the psychological aspects which might have led to mistaken perception of *Melbourne*'s inclination[1], which he believed[6,p48]central to likely collision cause possibilities.

Even so there are counters to the above:

- The pilot's observation could have been at longer range than *Voyager* had been, at least as she had been when closing with *Melbourne* during her final port turn. As to swell, being slight on the night of the collision would reduce its potential to play a part. Likewise, any effect of *Melbourne* heeling during the joint turn would be the less since *Voyager* was ahead.

- Generally, despite any misleading initial impressions, as the two vessels closed during *Voyager's* final turn *Melbourne's* starboard light would have been more apparent and she would have been out of *Voyager's* funnel gas haze and the radar blind arc, so there should have been warning; even though any inclination reversal illusion (see below) would give the appearance of her starboard light being aft of her island. Two or more on *Voyager*'s upper deck noticed *Melbourne*'s starboard light as the two converged.[6, p321] There were several officers qualified as officer-of-the-watch (OOW) on her bridge and one could expect that more than one or two would take an interest in *Melbourne*'s initial position and approach.

- From this alone it is unlikely she should remain under any belief that she was on *Melbourne*'s port side. Furthermore, if to port, *Voyager* as she turned would

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1   Inclination is the angle between the course of a ship and the line of sight to her. A vessel heading directly away has zero inclination. Chapman addressed inclination illusions.(6, fig 43)

HMAS Melbourne/Voyager Collision: Cause Theories and Inquiries

have experienced *Melbourne's* true bearing swinging rapidly the wrong way.

- Having been fine on *Melbourne's* port bow before the joint turn, *Voyager's* should have pictured herself to starboard after such a joint 40 degree port turn, from simple geometry.
- The joint 40° course alteration to port mirrored a starboard turn 6 minutes earlier[4,p6] from 020 to 060, *Voyager* in the same station. Any difficulty with side light visibility should have been apparent then.
- *Voyager's* initial starboard turn would require explanation still. Some have postulated that her captain might have overruled a helm instruction by the OOW, who had intended a full turn to starboard to take up station. However even had Captain Stevens reversed the turn, of itself it would not explain why she turned some 45° before reversal. This starboard turn also suggests not all thought she was to port. Chapman thought the turn was a station adjustment independent of the final turn to port, explaining how this might arise.[6, p142]

The Frame Theory

In his comprehensive and informative book on the accident published in 1992[8] Dr Tom Frame came to the conclusion that its cause was most likely a double signal mix-up, leading *Voyager* to misunderstand *Melbourne's* instructions.

This theory suffers from several weaknesses:

- Communications between the two ships were clear and amongst trained individuals. The two ships' communications staffs included supervisors, befitting

close–quarters manoeuvring; and circumstances placed them under no particular pressure.

- Part of the theory entailed an undetected transposition in a signal received by *Voyager*, changing the signal's intent. However the transposition Frame had in mind would lead to unnecessary convolution where a much simpler signal would have done, leading to a likely query from *Voyager*.
- Also, Frame believes this transposition would have led *Voyager* to turn to back to port believing she would be doing so in concert with *Melbourne,* though in fact it would have required that she turned to starboard.
- Moreover a prerequisite in the theory was a coincidental second part to the mix-up. This entailed *Voyager* confusing the extent of the turn to port which *Melbourne* had signalled though again several sets of ears would have heard the transmission on the two bridges; and *Voyager* would have been party to signals from *Melbourne* to the aircraft on the way for deck landing practice, advising them also of the flying course.
- As before, it leaves open why

it was that *Voyager* first turned one way then reversed into the collision; that sequence not being integral to a signal mix–up explanation.

- The above characteristics are *additional* to those basic to other theories, namely mistaken perception of inclination of *Melbourne* and an ineffective lookout.

To my mind the first four points above render this theory implausible.

The Fishtail Theory

There is also the possibility espoused in my 2004 ANI article that *Voyager* had understood her instructions, knew which side she was on, had elected to change station using a 'fishtail' and had misjudged the room needed. The fishtail is more formally known as an even-speed manoeuvre. I add below a figure to illustrate and a discourse, some of which extends to other theories.

Voyager was obliged to keep clear of *Melbourne.* The safe and standard way for her to change sides was by crossing under *Melbourne's* stern. To effect this using an even-speed manoeuvre *Voyager* had to swing away wide from *Melbourne's* track then reverse her turn

Figures 2. and 2a.

Fig. 2. Successful Fishtail
(above using 10 deg port wheel)

Fig. 2a. Inclination Illusion
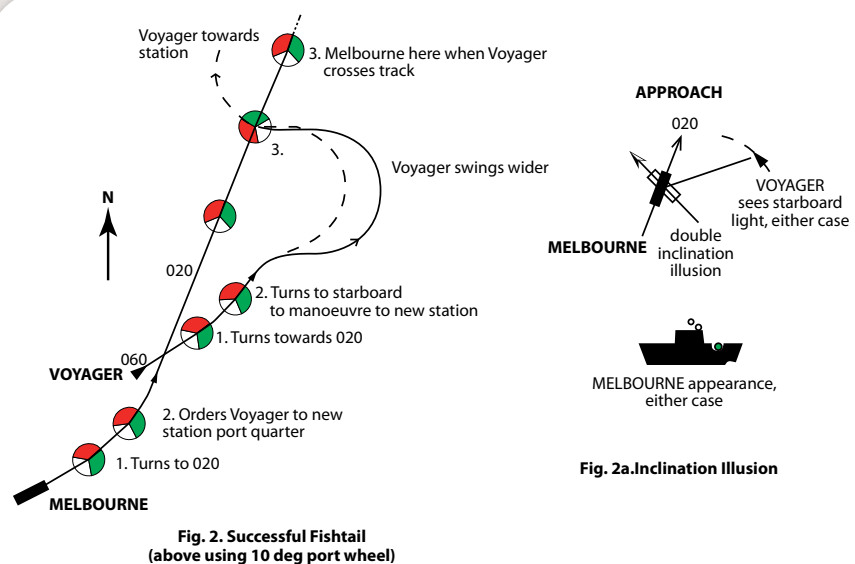
such that she gave *Melbourne* time to get past before crossing her wake to her new station, while leaving her propeller speed unaltered. The misjudged fishtail theory is that this was the manoeuvre *Voyager* was attempting but she did not gain enough room, that is she did not swing out wide enough to starboard initially (fig 2).

There is more than one possibility as to why she would have swung back early but the most likely is that those on the bridge, during her starboard turn, thought that she was already abaft *Melbourne*'s beam. Seeing *Melbourne*'s starboard light, they misinterpreted where she was within the light's arc. Sidelights extend over 110½°, so the course of a vessel with a side light visible can range over the same, about a third of a circle. Chapman comments that, "on a dark night...it is often hard to tell whether a ship is angled away from you or towards."(6, p63) and inclination assessment is more difficult in a swinging ship. Figure 2a depicts a possible "double inclination" illusion in *Voyager*. An inclination *reversal*, the *Melbourne* silhouette in 2a heading left, is part of the port side theory, the sidelight now being overlooked.

While large vessels normally have white steaming lights at different heights fore and aft, the separation of which help clarify their course, this separation is impractical in a carrier's layout. They do not help with "double inclination" though they are reversed in an inclination reversal. Radar images were not considered reliable for this purpose. Compounding general lack of help from steaming lights, carriers when operating aircraft and about to, display various red lights as mentioned earlier, which can be brighter than side lights – particularly with the latter dimmed. *Voyager* would have been aware that it is notoriously difficult to discern a carrier's course visually at night. The Royal Navy Far East

HMAS Melbourne, with Westland Wessex flying, escorts Sydney on passage to Vietnam (Courtesy RAN)

Fleet subsequently issued a warning about it ("...exceptionally difficult... to judge inclination and varying turn rate of a carrier...").(8, p102) Even spotting what *Voyager* was doing was difficult, *Melbourne*'s captain misjudging her direction of turn at one point.(4, p14) Captain JP Stevenson, RAN, captain of a *Voyager* sister ship and of the destroyer squadron that included *Voyage*r, has told me(9) he relied more on vessel shape than lights to ascertain inclination, using binoculars, though on this occasion there was no moon.

Likelihood of a Fishtail Selection

Because I specialised in engineering my bridge experience is limited to around six months on *Voyager's* bridge, of 20 months onboard. However the even-speed manoeuvre has been described as a plausible theory,(10) by retired Rear Admiral Ken Doolan AO, ex-Fleet ("Maritime") Commander, himself a navigator, in the context that since key bridge personnel did not survive the cause will never be certain. He had experience of this type of manoeuvre in *Voyager*, *Melbourne* and a *Voyager* sister ship. He has described an initial swing of 70° from a carrier's course as a minimum, as in fig. 2, depending on starting room. Robertson, who had similar experience in the same sister ship, also described a fishtail as a "normal method of changing station in the circumstances" after the accident.(3, Para 26) Chapman describes it as, "the most efficient and expeditious method." (6, p66) Stevenson sees it as a possibility but a full turn offering a more predictable outcome(9). He worked closely with Robertson in preparing reconstructions for the first Commission, being a close friend to both Robertson and Stevens. As to why Robertson did not raise this as a possibility before the Commission, Stevenson said that was because he had formed a view and was "overwhelmed" by the event. *Melbourne*'s navigator told me,(11) based on his earlier experience that he thought the fishtail "clumsy", though he did not rule it out. The then Fleet Commander, put his view to the first Commission that a turn towards a carrier when forward of her beam would be 'unseamanlike',(4,

HMAS MELBOURNE/VOYAGER COLLISION: Cause Theories and Inquiries

p105) implicitly rejecting the possibility that an experienced captain such as *Voyager*'s would have selected it, unlike Robertson; and supposing *Voyager* was aware she was forward of *Melbourne's* beam.

The more conventional and less hazardous manoeuvre, continuing her starboard turn to almost a circle before then crossing *Melbourne's* wake, would have placed *Voyager* behind station,[6, p134] with aircraft arriving, depending on the extent she tightened the turn and sped up. Evidence was that she did not change engine revolutions.[6, p35]

I note that following the principle of Occam's Razor, the theory of a miscalculated fishtail is consistent with *Voyager's* turn to starboard then reversal of course. Also, there was some evidence[4,p8] that she may have been close to dead ahead of *Melbourne* before the joint turn and therefore about 200 yards to starboard of station than figure 1 (drawn from a *Melbourne* reconstruction) depicts. This could have led to a lesser perceived need to swing wide.

All the same, though initiation of a misjudged fishtail could be explained as per light arcs and being out of station as above, the impression that she would pass clear astern of *Melbourne* would have to persist until she was very close. Yet knowing that she was turning towards *Melbourne,* even behind the beam in the mind's eye (or eyes), should have made her more alert than a belief that she was on the port side and turning away. As discussed below, ("Other Accident Cause contributors") there was evidence from the bridge tactical operator (signalman) that her captain was at the chart table[4, p11] adjacent to the bridge. If there for any time he would require frequent updates by the OOW of bearings of *Melbourne.*[10]. However it seems unlikely such bearings were taken since they would have disclosed the mounting hazard,
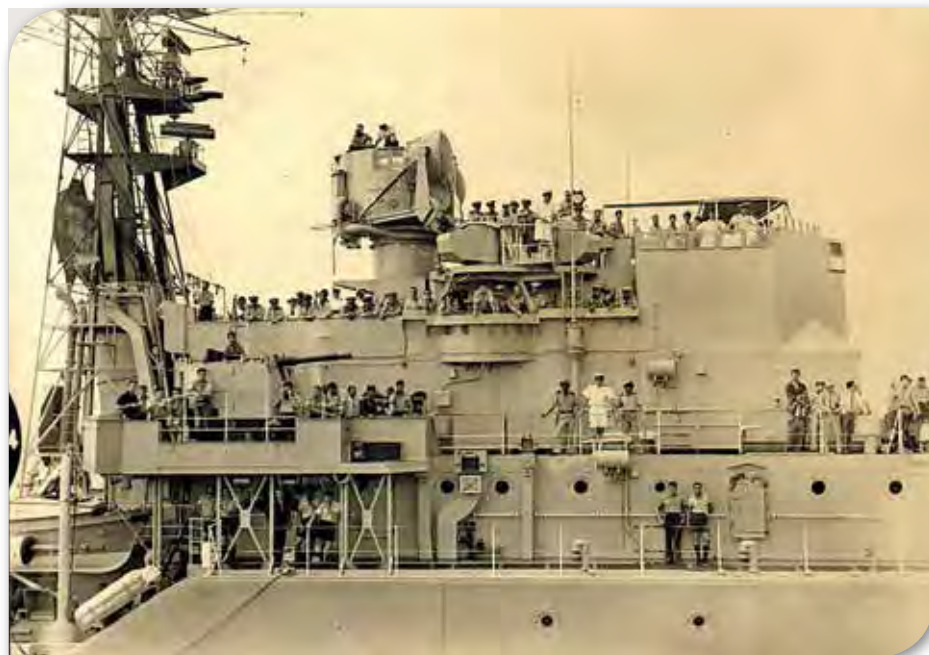
so being away for more than a few moments would be incompatible with the fishtail theory. That cannot be established, either way.

Inadvertent Turn Theory

Another explanation raised during the first Commission[4, p23,24] was that *Voyager's* final port turn was a result of Captain Stevens countermanding a turn to starboard, ordered by the OOW to take up the new station, ordering "port 10", the OOW then assuming that the port turn should continue whereas her captain intended just to return to 020 while he checked whether immediate stationing action was required (discussed further below). Hence the port turn, her captain by his action assuming control until the OOW received an order otherwise.

Robertson did not favour this theory,[4, p23] believing that *Voyager* would have been alerted by the continuing heel. Stevenson[9] and Chapman[6, p21] do not agree that 10° of wheel would create heel that would be noticed necessarily. Stevenson initially shared Robertson's port side theory but later came to prefer this inadvertent wheel retention.

But also as iterated from earlier *Voyager* turned some 45° to starboard, quite a delay before the turn was reversed, suggesting it was *her captain* who ordered the starboard turn then changed his mind[2]. Even so the theory does help explain a starboard turn first and accords with some evidence of use of 10° of wheel [4, p22] rather than the more usual 15° for an individual manoeuvre; and also why some crucial attention might have been concentrated elsewhere.

Like the other theories it does not explain why the OOW lookout was ineffective. The OOW was seen looking at *Melbourne* with binoculars before ordering full ahead. Robertson later observed that if *Voyager* had left port wheel on in error, when the OOW discovered *Melbourne* on his port bow instead of astern he would have gone hard a starboard rather than pick up his binoculars and look at her.[4, p12]

Other Accident Cause Contributors

At the first Royal Commission the *Voyager* bridge signalman, one of two

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2 Stevenson agrees[9] that this delay weakens the theory.

bridge survivors (with a lookout), said [4, p9] that he believed that *Melbourne* failed to turn to 020. Supposing he overheard a bridge remark based on a port-side belief, this observation must have been well before a collision was imminent. Otherwise appearance of *Melbourne*'s starboard light should have dispensed with any port side notion as they converged. If well before the collision this would have been reason for close observation and thence avoiding action at sight of the starboard light. Were there no belief she was to port and she was confronted with lack of room during a fishtail, this could give her the impression that *Melbourne* had not turned.

Voyager's captain apparently was reviewing a signal at the chart table after receipt of the stationing signal. [4, p11]. Most likely, as speculated by the first Commission, [4, p6] he was investigating, or joining his navigator and signals supervisor in investigating, whether the stationing signal required the immediate action *Voyager* had just taken to change station; or whether such action should await a further signal. While it was confirmed later that immediate action was indeed required and that this was what *Melbourne* had intended, he may have wanted to have this checked. Such distraction *if* prolonged might well have had a major effect under any of the theories. Stevenson has observed that Stevens had limited destroyer experience.[9] Chapman, a friend too, queried his self discipline.[6, p211] His fleet commander thought he handled his ship well but in company could be impetuous.[6, p305] However, there is no evidence that any such characteristics had a bearing on the accident.

Another contributor might lie in the unquestioned authority which a captain exercised. This was paralleled at the time in aviation, leading to a disaster some years later. A consequent change of cockpit practice left the aircraft captain in charge but with it being mandatory that he be questioned should he appear mistaken. The bridge officers were gaining/regaining their expertise in this type of manoeuvre so may have lacked confidence. Many captains would not have welcomed others appraising their actions, to say the least. Even though *Voyager's* navigator was also on the bridge, alerting of her captain to a dangerous situation might have been delayed. He might have needed time to assess the situation once alerted.

While *Voyager* did have twin rudders, both ships had direct-geared steam turbines, much slower to react and also less responsive astern than earlier steam reciprocating engines, electric drive or internal combustion engines with controllable pitch propellers.

About any lingering public impression that Stevens might have been affected by alcohol, the second Royal Commission investigated this most thoroughly, including examination of post–mortem evidence. It found, "beyond doubt that any suggestion that his faculties or judgement were in any way impaired by alcohol at the time of the collision is positively excluded."[7, p228] Even so he was found to have concealed a long-standing ulcer, warranting posthumous censure by that Royal Commission on moral grounds. Nevertheless the second Royal Commission found that, "none of his personal circumstances need be implicated in the accident." Later it was disclosed that he may have used amphetamines.[8, p269] Though these were legal at the time, any such use and his ulcer should have been reported by medical staff, which would have led to him being posted ashore.

As to *Melbourne* altering course or speed earlier, or warning *Voyager*, she was obliged to hold both course and speed until finding herself so close that action by *Voyager* alone would not have averted collision. *Voyager's* twin rudders made her particularly manoeuvrable so this would have been very late and at a point where action by *Melbourne* would make no appreciable difference. The first Commission

HMNZS Royalist sporting 8 x 5.25-inch guns, inboard of the ill-fated Daring-class destroyer HMAS Voyager, and the Royal Navy Type 61 Salisbury-class frigate HMS Chichester (Courtesy Vic Jeffery)

HMAS Melbourne/Voyager Collision: Cause Theories and Inquiries

found nevertheless that a warning from *Melbourne* might have alerted *Voyager*,[4, p22] based on finding that *Voyager* was on a steady course before the collision. The second disagreed that she was on a steady course, described *Voyager*'s action in continuing her turn to port as, "far from reasonably foreseeable, entirely incredible" to *Melbourne*. It overturned the first's finding.

Finding of Cause and Lessons Learnt

Three plausible theories are belief in *Voyager* that she was to port of *Melbourne*, a misjudged fishtail and port helm being left on inadvertently. All have strengths and weaknesses. The time the *Voyager* captain was off her bridge would help but is unknown and it is uncertain that only 10° of port wheel was applied. This was the recollection of an engine telegraph operator, the only wheelhouse survivor. His testimony, differing from his earlier statement, added 'wheel amidships' after a 'port 10' order, followed by a course to steer.[4, p22] This sequence would fit with steadying after an earlier turn to starboard. Some evidence of sharp heel during the final turn[8, p75] from below decks and the operations room would point to more than 10°[9]. A pilot in an aircraft just arrived overhead observed, "*Voyager*'s wake had appeared as a hard turn and then straightened...."

Stevenson's opinion is that a fishtail or full turn normally entails more than 15° helm, though this does not rule out a fishtail with less helm if under the illusion that this will take *Voyager* safely across *Melbourne*'s wake.   15° would discount helm left on, due to heel. However reconstructions are based on 10° and recasting to a tighter turn would conflict with observations of earlier relative positions, supporting

Skyhawk launch from HMAS Melbourne (Courtesy RAN)

10° as the more likely.

For lack of decisive evidence about time off bridge and port wheel applied we will not know which of the three, supplemented by contributors, was the initiating cause. Neither is it at all clear why the lookout by the bridge officers was ineffective, the final cause, other than most likely inclination in the dark remained an illusion even as the two closed. This is about as far as any inquiry could go with cause.

However another objective of accident investigation is to wrest, salvage and distil what can be gained from the wreckage of aircraft, ships and vehicles and lost and damaged lives, so that accidents and their aftermath are offset by whatever gain might be had. What of the royal commission process here?

Suitability of Royal Commissions

Some broad issues arise from use of royal commissions for this type of investigation. They have extensive powers and offer detachment though they need not be led and manned by lawyers as in these two cases.

Unfortunately the focus of the first Commission was on testing of evidence and witnesses rather than seeking their co–operation in the search for cause. Chapman has likened this to a trial without a jury.[6, p265] Generally naval inquiries by their structure seek full voluntary disclosure from witnesses.

Furthermore that Commissioner's findings were limited in the way of lessons learnt and underlying improvements warranted. There was no critique of the appointment of officers of the watch.[4, p28] He recounted that though the *Voyager* OOW had held a watch keeping certificate for many years, he had worked in minesweepers almost continuously. As to whether this was sufficient his comment was that, "The inexperienced must gain experience". Thus they "could gain in a work–up programme under supervision". He might have addressed what experience, training and currency were sufficient to qualify OOW's formally to conduct manoeuvres such as screening an aircraft carrier. Nevertheless with the general experience of the captain and directly related experience of the navigating officer, both on the bridge, the *Voyager*

OOW's training should not have been central.

The Commissioner recommended changes to safety arrangements and to procedures and, as to materiel state he found, "the ships and equipment in a proper state of readiness."[(4, p 27)] What his Commission might have explored if tasked with recommendations for preventing recurrence were:

- objective systems for qualifying and periodic requalifying of bridge watchkeeping officers for day and night manoeuvres, including with ships darkened;
- a better means of assessing a ship's inclination to supplement navigation lights;
- whether navigation lights should be dimmed when others in use are not;
- greater encouragement of reporting of mistakes and near misses (several unrelated incidents were disclosed during hearings and Chapman describes many)[(6)];
- preference for quick–response propulsion to increase manoeuvrability generally;
- review of night manoeuvring instructions;
- review of this night manoeuvre with its close stationing – its benefits, risks and alternatives;
- recording of ship voice commands;
- course and speed data recording in a resilient and recoverable form (for accident *and incident* reconstruction). (Chapman recommended this too)[(6, p210)]
- explicit handover of ship control;
- use of klaxons as an emergency alert (voice broadcasts by themselves lacked impact and clarity in *Voyager's* case); and,
- availability of requisite independent accident investigation expertise.

The second Commission did achieve a principal purpose though in Chapman's view it should have found that the Naval Board should have known that Stevens was unfit.[(6, p309)]

A second broad issue is that a royal commission can be ordered without public review of its findings and opinions. The outcomes of these Commissions were discussed in parliament but the subsequent concentration on justice and the politics of public reaction overlooked the systematic gains which again might have been drawn from more analytic and objective review. The parliamentary debate did not address expectations of the royal commission process and the adequacy of the Commissioners' reports. Many in the media were distracted by the superficial rather than comparing the work of these royal commissions and parliamentary review of them with desired outcome. Had the suitability of royal commissions been aired publicly, subsequent debate might have led to more discrimination in public expectations of them; and could still.

A third is that Chapman describes a legal practice called "pre–arrangement", [(6, p332)] effectively a deal between opposing lawyers. If part of any inquiry this would detract from its objectivity.

As to the suitability of a naval board of inquiry, there was the very similar collision in the South China Sea between *Melbourne* and the USN destroyer *Frank E. Evans* some five years later in which 74 died, all from *Evans.* A Combined USN/RAN Board of Investigation was convened, led by ("Senior Member") a USN rear admiral whose command included *Evans.* The combined structure was requested and agreed by Australia, the USN earlier intending its own investigation with RAN observers.[(12)] [3] The senior RAN representative was a rear admiral

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[3] On 7th June the Naval Board convened a Board of Inquiry, listing the USN members and the naval lawyers assisting, by name (17, p152)

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also. Some Australian accounts of it construed USN command partiality in its process and outcome, illustrating the advantages of separation from that possibility. More about this follows.

While an RAN inquiry into the *Voyager* accident may have been more informed as to cause than a royal commission and drawn more lessons from it, its findings would have lacked the appearance of impartiality in an atmosphere of public mistrust. As it happened, had it been a naval inquiry which was followed perforce by a separate investigation into the physical fitness for command of Captain Stevens, doubtless this would have had the appearance of a "cover–up".

The Combined Investigation had more crucial evidence available to it but the Royal Commissions were not subject to the same legal difficulties in compelling testimony. The first Royal Commission reported six months after the *Voyager* accident. The Combined USN/RAN Investigation took two months, was more focussed and used less resources.

Judicial General Courts of Inquiry can now be set up by the Minister for Defence when required.

Actions by the Navy

Changes included a new Coordinator of Naval Safety, review of manoeuvring instructions and correction of safety deficiencies.[(28)] Others made subsequently[(2, p 109)] included assessment of safety drills, command team training in simulators ashore and structured and monitored workups. A zone ahead of *Melbourne* was established into which escorts could not enter without specific approval and under which *Voyager* "would not have been permitted to turn to port". There is now monitoring and assistance from operations rooms on stationing courses and challenging of unclear

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THE APPROACH TO COLLISION
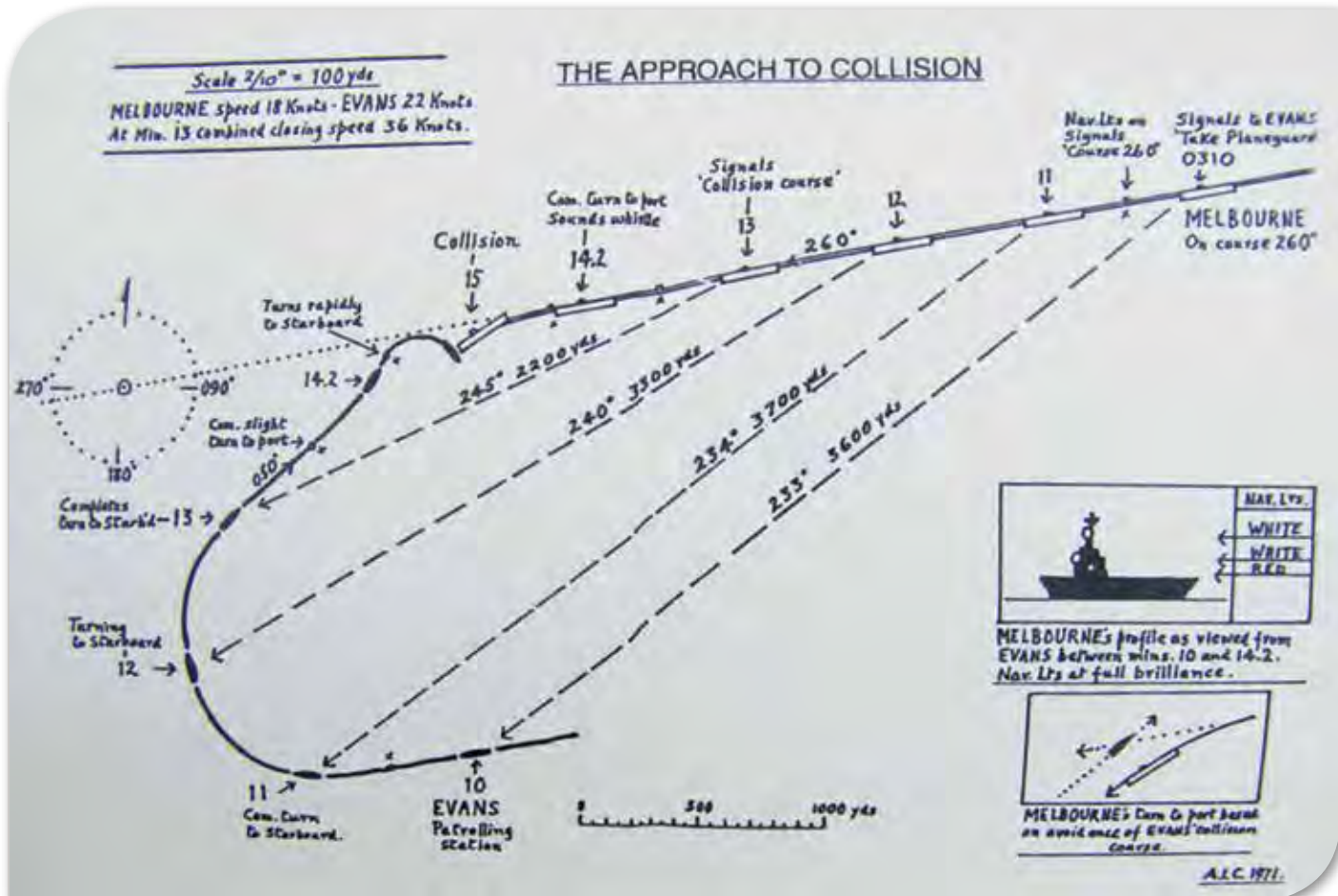
manoeuvring signals is obligatory. Also the Naval Board altered procedures for the medical examination of captains and instructions to medical officers; and there was cultural change.[13]

Related Experience from the Evans Collision

First, a brief description of the accident. A little after 3 am on 3rd June, 1969 *Evans* was about 3600 yards on the port bow of *Melbourne* when ordered to a position 1000 yards astern of her in preparation for them turning to a course for flying. The ships engaged in this SEATO ASW exercise had been zigzagging, darkened. In ordering an initial reversing turn the *Evans's* JOOD (Junior Officer of the Deck or assistant OOW) misunderstood the base course and the collective zigzag situation, placing *Evans* in his mind on *Melbourne's* starboard bow. Consequently he turned to starboard

and set course towards *Melbourne* with her fine on his port bow, expecting her to draw across *Evan's* bows to starboard. The JOOD was not yet qualified as an Officer of the Deck (OOD) and he did not assess her aspect visually.

Melbourne had turned on her navigation lights at full brilliance as a precaution. After[4] *Evans* unexpectedly turned inwards towards her track *Melbourne* signalled her course.[14, F 98] [5] Conditions were calm, clear and moonlit: others had had no problem with picking her course when darkened. The JOOD's concentration was on taking bearings. *Melbourne's* drift he found was to the left, which puzzled him and he altered course slowly to port to correct. The *Evans* drift from *Melbourne* was progressively finer on her port bow, *Melbourne*

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4   Stevenson says that this was before.
5   The Combined Board's instructions sought facts ('F') and opinions ('O') only(17,p148,152).

relying on her captain's 'seaman's eye.'[14, F 115] The *Evans* captain did not always supervise such manoeuvres [14, F 44] but had left instructions to be apprised of them, which the OOD did not do. Hence he remained turned in. The OOD left manoeuvring to the JOOD and decoded *Melbourne's* course signal. He erred[6] by 100°; moreover misunderstanding the signal's purpose and interpreting it to mean she was turning 100° to port. Thence to his mind *Evans* would be on her starboard beam after *Melbourne's* turn. He had seen that *Evans* was on her port bow when the JOOD was bringing *Evans* around to starboard initially.[14, F 107] He said to the JOOD, "watch her, she is coming left..."[15, p43].

As the *Evans* approach continued *Melbourne* signalled a warning

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6   USN practice, apparently not followed on this occasion, was for bridge decodings to be compared with that in the Combat Information Centre (CIC) (ie Operations Room)(15, P31). Neither of the CIC officers survived.

she was on a collision course. This gained the OOD's attention, though *Melbourne*'s lights apparently added to JOOD confusion (see below). The OOD wrote[7] that he and his assistant "eyeballed"[16, p44] the approach from the starboard wing, probably at this stage. With *Evans* about 1200 yards away,[14, F 125] the two closing at more than 30 knots, *Melbourne* turned hard to port, informing *Evans* and sounding her siren.[8] Her signal crossed, near enough, with one from Evans, her OOD reacting to *Melbourne*'s earlier collision warning. He was not confused by lighting,[14, O 16] was now aware that *Melbourne* "had not altered its course"[17, p65] and ordered "full

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7   According to testimony presented to the Combined Board of Investigation(17, p74) he had been qualified 10 days before after standing four months of watches onboard and 20 months sea service, though his formal qualification is in doubt.(16, ch 12) Evidence from him consists of written statements shortly after the collision: he declined to give testimony at the Board hearings. Press reports from his ensuing court martial are sketchy, though they included his admission that he should have taken control earlier from the JOOD.(17, p14) He said he would have turned more to port than the JOOD. While in his mind *Melbourne* was yet to turn to port(15, p44) reports of his court martial convey that he intended crossing her bows, presumably for fear that a turn to starboard would coincide with the expected *Melbourne* turn. He disputed,(15, p41) mistakenly (14, F 23), that there were instructions which required him to alert his Captain. The Board found that *Evans* Captain had discharged his responsibilities satisfactorily though he had inherent accountability as Commanding Officer.(14, O 104–106) As to RAN witness' rights not to give testimony to the Board, Statutory Rule No 90 of 6th June, 1969, signed by the Governor–General(17, p149) authorised the Naval Board to convene a Board to inquire into the collision. It permitted refusal to answer questions "if liable to a penalty", required that witnesses be warned of this and stipulated that its proceedings were inadmissible in a court-martial. Stevenson was unrepresented at the Board hearings since he had not been named as 'suspect'. He recalls(9) no warning though he says he would have given evidence anyway. An Australian lawyer(21, p71, 222,) sent to assist Australian witnesses was not allowed to attend, having multiple clients. US defence lawyers did not "sit in" either.(26)
8   *Evans* did not do likewise for her starboard turn.(6, p363)

right" rudder, informing *Melbourne*. So therefore neither vessel when applying wheel was aware of the other's turn. Despite *Evans* having placed the two in extreme danger her starboard turn might have been at least partially successful [16, p100] had *Melbourne* not found it necessary to make her own evading turn. Now instead of *Melbourne* clearing her, her turn took her across *Melbourne*'s bows, practically square. She went full astern, as did *Melbourne*, but their steam turbines were ineffective and she was cut in two. Her bow sank, her stern was salvaged.

There were some points of common ground with the *Voyager* collision:

•   Neither the *Voyag*er nor *Evans* bridges sought assistance from their CIC/Ops Room.

•   In neither case were data or recordings available to reconstruct exact timings of orders, signals or tracks. In particular signal timings differed, even amongst *Melbourne*'s crew,[17, p97] as they had in the *Voyager* collision. The Combined Board ordered a signal log analysis to establish sequence and timings but found this had errors,[14, p2] a focus being on delays in *Melbourne*'s signalling system (more below). The outcome was that the Board concluded the helm orders in both ships were given at: "approximately the same time." [15, p96]. Also the Board noted that its reconstruction diagram was, "at best an approximation".

•   As to *Melbourne*'s lighting, in *Voyager*'s case her navigation lighting was dimmed, she bore red lights for flying and utilised red deck floodlights. With *Evans,* her navigation lights were on full, though according to other ships her steaming lights mounted on her island and mast dominated her side lights. Some of her white

deck "moonlighting" was on during this approach also,[14, F 74] though the Board found the latter of no consequence.[20] The JOOD testified[15, p46] that during the *Evans*'s final turn, *Melbourne,* "had bright white lights on her flight deck a masthead and range (*ie steaming*)light; well her navigation lights were on, but due to the number of lights, we still couldn't tell what aspect we were seeing". The OOD and JOOD went to the port wing as *Evans* turned and, "at that time we saw we were looking at the bow aspect of *Melbourne*". Her OOD had been aware of *Melbourne*'s port light in ordering the full right rudder, though he had thought *Evans* to be broad on *Melbourne*'s bow[14, O 27], not fine. *Melbourne*'s lighting was criticised by the Board as, "warranting the attention of all concerned",[14, O 15] implying there was a correctable design problem. If of long standing this might have been within the scope of the first *Voyager* Royal Commission, though side lights in use with *Voyager* were those mounted on sponsons, with *Evans* on her island. Left open is whether, had *Melbourne* issued no warning and not turned, *Evans* would have been deceived until too late, as *Voyager* had been, albeit in different circumstances. The USN was conscious of the general problem with carrier lighting[15, p99] and confusion from bright lights.[15, p49] Incidentally, *Evans* had assumed rescue destroyer station successfully several times that evening, manned by another watch. It is probable that *Melbourne* was not darkened then. [9] *Evans* was considered by her destroyer squadron commander as probably the squadron's most efficient ship[15, p8] and had

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been recently on the gun line in Vietnam.

- *Melbourne* had been criticised for not warning *Voyager*. After the *Evans* accident the Board was of the opinion that Captain JP Stevenson, now posted as *Melbourne*'s captain, and who was also temporarily officer in tactical command, had responsibility for the safe operation of all ships[14, F 107] and as such carried a share of responsibility for the accident. The "informatory" collision course signal, "was in the circumstances not positive enough". This begs the question as to how as OTC he could have been aware, and accepted, that the *Evans's* captain was not on the bridge, how he could have known the nature of the *Evans* problem and how he could be confident his instruction would help. (Separately as OTC he was criticised together with the screen commander for, "a less than vigilant watch" in not correcting *Evans* when she, "displayed a remarkably low standard of station keeping" earlier: E*vans* had been twice out of her assigned sector.[14, F 139, O 41])[9] The Board also[14, O 108] put its view that had *Melbourne* "backed his engines at the time he put his rudder over" this might have "lessened the effects" of the collision. This was inconsistent with an earlier opinion[13, O 33] that had *Melbourne* gone astern on receipt of the *Evans's* full right rudder signal, shortly after *Melbourne* turned, it would have, "made no difference whatever". It also took no account of the early deceleration caused by going hard-a-port, or the effect on rudder efficiency or turning rate. Captain

Stevenson was court-martialled on return to Australia, as OTC, for not giving *Evans* positive direction and, as *Melbourne* captain, for not going astern when collision could not be avoided by *Evans*'s action alone. He was honourably acquitted but subsequently retired. The Defence Minister in 2012 said that his treatment and court–martial were unfair[22] viewed from today.

- International Regulations, to the extent they apply to manoeuvring naval ships, required a vessel to starboard, which *Melbourne* was until she turned, to hold her course and speed until the actions of the giving-way ('stand-off') vessel alone cannot prevent collision. The *Evans* OOD asserted that had *Melbourne* not altered course there would have been no collision.[17, p14] *Melbourne*'s OOW when asked whether there would have been a collision without this turn responded candidly that, "..it would have been close."[16, p100] Stevenson[9] observes that *Evans* was crossing *Melbourne's* bows when he ordered the hard port turn to avoid her stern. The Board found,[14, O 98] supported since by published reconstructions,[10] that had neither ship altered course, *Evans* would have cleared *Melbourne* ahead: in other words when *Melbourne* altered course they were not on a collision course. Expert witnesses[6, p412] at the Stevenson court martial said that if *Melbourne* had not turned, *Evans* would have cleared her. Even so, the first Royal Commissioner's Report, in concluding that *Melbourne*

in 1964 was not required to go astern sooner, quoted[4,p17] from Halsbury's Laws of England about the International Regulations for Prevention of Collision at Sea: "......the rule relating to the duty of the stand on vessel is the most difficult of all the Regulations to understand and obey"; "It must always be a matter of some difficulty for the officer in charge of a stand–on vessel to determine when the time has arrived for him to take action and some latitude must be allowed to him.....the rules have to be construed so that men may act *reasonably* [my italics] on them." Even so, had they been on a collision course when *Melbourne* turned, *Evans*'s manoeuvrability (like *Voyager's*), evinced by her final turn, suggested that the point where *Melbourne* was allowed and obliged under International Regulations to take evading action would have been very late.[11]

However, bearing in mind the:
–   awareness in *Melbourne* of the *Voyager* collision,
–   general warnings and directives given to escorts prior to and during the exercise, plus the precaution of positioning escorts astern before stationing them for flying,
–   near collision with another US destroyer changing station three nights before,[12]
–   specific signalled warning to *Evans;* and,
–   judgement in *Melbourne* that high risk of collision remained; the Combined Board and RAN later

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9   Stevenson says[9] he did not mind escorts being mildly out of sector since this would complicate the task of an attacking submarine.

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10 Fig 3 above illustrates this. Chapman[6, p388] estimates clearance at 350 yards, 1½ lengths of *Melbourne*. He adds that though there was a, "possibility she might get across...at a rapidly closing rate of 30 or more knots, at 900 yards was no time to take chances on a possibility".

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11 An expert opinion offered at Captain Stevenson's court–martial was about 55 seconds before.[21, p189]
12 She was using a zigzag plan with the wrong time base and also, coincidentally, turned to starboard then port, as did *Voyager*.[21, p24] *Melbourne* was darkened. Stevenson's memory is that after this incident, signalling by *Melbourne* of her course and displaying navigation lights became routine.

levelled no criticism of the need for and timing of, *Melbourne*'s final turn.[13] As with the *Voyager* collision, the problem is compounded when one vessel is manoeuvrable, the other not; and further the latter *is* manoeuvring. If the other can do nothing to avoid it, at that stage she can do nothing either. [14,15]

Further on signals, an opinion[14, O 40] of the Board was that conning officers should have direct loudspeaker and transmission access to the Primary Tactical radio circuit to reduce signal delays. An example of delay was the *Melbourne* OOW noticing *Evans*,

13 *Evans* had to keep clear under both the naval ATP1(A) and International Regulations Rules (the relevant one then being No 19)(14, O 28, 29), which the ATP displaced. *Melbourne*'s duty under International Regs 21 (apparently applicable even though she might be without lights!) was to hold her course and speed. According to an Australian lawyer familiar with some behind the scenes aspects, the Board Senior Member had to abandon, "four other particulars of negligence on Stevenson's part" on legal advice to the Board.(21, p229)
14 The 1972 rules now allow the stand-on vessel to act when the give–way vessel is, "not taking appropriate action". Pertinent here, under 1972 rules, preferably the stand on vessel should not alter to port. Chapman(6, fig 87) illustrates that a starboard turn by *Melbourne* would have been ineffective had *Evans* not turned. Chapman(6, p432) notes that a starboard turn *may* not work more generally.
15 The Board Senior Member posed adversarial questions(21, chap 8) to the *Melbourne* OOW about avoiding action which she might have taken. The questioning suggested the Senior Member did not understand the International Regulations. Sherbo's(15, p99) view is that he seemed aimed at invoking, against *Melbourne,* the 'General Prudential Rule'(19, p108); to the effect that mariners may disregard the Regulations in special cases if needs be to avoid collision. However whether or not this Rule could imply that *Melbourne* acted too late, it also might be a defence against any criticism she acted too early. But about the tenor of the Senior Member's questions, Mrs Jo Stevenson, the Australian-American wife of Captain Stevenson who was attending the hearings, wrote and complained(21 ,p124) to the USN Chief of Naval Operations, whom she had met. She received no direct reply. It transpires that the CNO, Admiral Moorer was chief mentor to the Board Senior Member, Rear Admiral King (his obituary, Washington Post, 17th June, 2008).

"was coming right by the time the signal man had told us" of her message advising this. In *Melbourne*, signals were logged, relayed/transmitted by a signalman[14, F 135a&c]: the *Evans* conning officer had quick access to the microphone and loudspeaker. Even so, with bridge officers manning, recording, interpreting [29, p120, 310]and taking any urgent action, there could be other delays. The collision course signal had to be repeated[6, p395]. The signal log analysis above was followed by a forensic examination of one *Melbourne* log.[15, p95] The Board Senior Member apparently alleged some time later that the *Melbourne* logs were, "fudged"[21, p199], though the forensic results could be explained.[16]

The Board's listings[17] of *Evans's* JOOD and OOD failings were extensive, these and her captain being punished, two being court–martialled. [23] Its opinions embraced command and control (including zigzag instructions), tactical publications applicable, the status of the ships, *Melbourne's* lights and dissemination of their characteristics, signal selection/procedures/addressees/execution/coding etc., applicability of international collision rules and those of ATP1(A), and clarification of ships' turning circles. One would have

16 He remarked also to Commodore J Matthew RAN (Rtd) later that he was "working to instructions" during the hearings.(9)
17 The JOOD was not helped in his not understanding the base course and zigzag position.(15, p33,37) *Melbourne*'s stationing signal was sent in the middle of a short zigzag leg and the zigzag instructions may have been confused by what reference to use, according to the RAN Fleet Communications Officer. The zigzag had been suspended by *Melbourne* earlier signalling a flying course, the same course she later signalled she was on. The JOOD may not have been clear about the suspension.(29, p119) However his basic mistake was to confuse the previous formation course with the new base course. The OOD's assertion that *Melbourne* would turn to port reinforced the JOOD's mindset.

expected another about the scope for improvement in OOD training and qualification. Instead it found,[14, O 43] "...*Evans'* officer training program was well organised, planned and executed". Further, leaving aside her captain's overall accountability, its opinion was that he had discharged his specific responsibilities adequately, including that to, "insure(sic) that a qualified and trained watch was posted." [14, O 104] It was her captain who had qualified the OOD. The station keeping failings above of the JOOD/OOD [14, O41] add to questions. The Vietnam War might have placed the USN under training and public[18] pressure, influencing a possible compromise in the Board's findings and the light sentences the JOOD and OOD received. In 1975 the USN did release a training film, "I relieve you, Sir" as a consequence of this accident; now accessible on 'YouTube'. At the same time I would add that if it was just the OOD training which accounted for mistaken *Melbourne* inclination this would beg the question as to how several more highly qualified and experienced officers on *Voyager*'s bridge were deceived. Though this was during work-up on a dark night it did not have the zigzag complication. As to RAN training, Chapman speculated[6, p457] that the *Melbourne* OOW's knowledge of Collision Regulations (see footnote 15) might have been found wanting had Stevenson not been on her bridge but concluded that most likely it was the Senior Member's manner which unsettled him at the Board hearings.

I expect that simulator training and other assessments currently would fill any gap in bridge skills in most

18 The Pentagon press release on the Board's findings came after the Australian release of news of Captain Stevenson's court–martial and after that news had distracted the press in the US. The Department of Foreign Affairs had been under the impression that the timing would be coincident.(17,p48)

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navies; partly due to technological development but also an evolutionary perception of need.

The Combined Board's findings were approved by the Commander Seventh Fleet [23] (who noted, "the rights of RAN witnesses were protected under procedures applicable in an Australian investigation"(which indeed is so [29, e.g. p76]) and the Commander–in–Chief, Pacific Fleet,[25] who described the Report as, "thorough and complete in all respects. This is particularly significant in view of the delicate and complicated nature of the proceedings which were conducted in full view of the world press." He complimented its Senior Member on, "..an outstanding investigation.....". It may be that there was a review conducted by the RAN and opinions in the Report on such as *Melbourne*'s lighting and signal delays were taken up but this has not been not evident to date.[27] It is ironic that the Report's sole manifest RAN outcome was a court-martial of an officer who, with his Fleet Commander, made every effort to see that the *Voyage*r collision was not repeated.[19]

19 The Naval Board had been told that it would provide Stevenson with the opportunity of having, "imputations against him judged professionally"(8, p334), denied Robertson. This memorandum added that Stevenson, "had stated that he intended to rebut any criticism of his conduct if such were made in the report". Naval Board minute 94/1969 of 25th July(8, p335)forwarded the Report to the Fleet Commander, "for necessary action". The Fleet Commander weighed this(21, p231)and decided on the court–martial, possibly to bring the opinions of the Combined Board to closure. He might have thought it would provide Stevenson the rebuttal opportunity, though Stevenson did not welcome it.(21, p231) The rebuttal Stevenson had sought was of the Report, to which he had had no access(9a) (rebutted later(21, ch15)). Frame thought he should have been consulted.(8, p337) In the event, Stevenson's lawyers contended at proceedings that there was 'no case to answer', leading to the 'honourable acquittal' outcome. Stevenson agreed reluctantly to this,(21, p188) it precluding opportunity for a full airing of the Combined Board's findings and of any constraints it was under. Rear Admiral Davidson AO RAN (Rtd), who as a captain had been a Combined

Despite shortcomings in the Investigation and concern as to objectivity,[21](see annex), and general distraction by blame apportionment between the USN and RAN,[20,21] its Report was competent in much of its work and efficient. It was dated 18th July, the completed report having 362 findings of fact and 108 opinions, comparing favourably with the discursive style of the Royal Commissions. Some of the apparent partiality might have stemmed from procedural and legal differences. The Board Senior Member did

Board member, says that Australian Board members were under no constraints of which he was aware.(26, see annex) As to Stevenson's posting, the CNS of 1964 "relieved Robertson of his command" having been, "overconfident and slow to react."(6, p250)) Perhaps Stevenson was seen as having some 'inherent accountability' akin to the *Evans* CO. However he completed his *Melbourne* posting, being advised after the Naval Board 25th July meeting(8, p335) that though he had been led to expect it would be as Chief of Staff to the Fleet Commander,(8, p 335) it would be another Sydney shore posting. The new Fleet Commander had headed the investigation's RAN contingent, a more likely prompter of the posting change. Stevenson's new post at the time was filled by a more junior officer though the plan was to upgrade it to Commodore, which eventuated. Apparently Stevenson did not learn of this intention until later.(21, p214) It was seen widely as having the appearance of a demotion. He was offered alternatives(8, p336) but had been led(21, 205) informally to expect a promotion course: not forthcoming. Even so the reason he gave to the Navy Minister for his retirement(21, p219) was because he could not serve with some seniors(21, p214), including those who had signed the Combined Board's report. Stevenson endorses this account.(9a)
20 At the Pearl Harbor washup after the 1973 RIMPAC exercise, attended by hundreds of officers including dozens from the RAN, the Exercise Director, COMTHIRDFLT Vice Admiral Rapp USN referred to the *Melbourne/Evans* collision in his address along the lines, ".. I was in the Philippines at the time and was familiar with the Board of Inquiry into that collision. The fault lay entirely with the *Evans*..." (31)
21 Taking us back to those times, the Chinese on 6th June after outlining the accident noted, "The US naval authorities then tried hard to blame their satellite for the disaster...but the Australian authorities would not swallow this"... "The row between the master and the satellite only revealed the quandary US imperialism is put in"(24).

say the RAN had agreed, "that the procedures of the US Navy manual of the Judge Advocate General should apply", [14, p1] which might have led to misunderstandings. An example was the RAN misconstruing the roles of its counsel.[21,p224] Though the subject was touched on in the Report, whether it was addressed in a Naval Board review is unknown. The Combined Board could be seen as successful, as it was by the USN, when compared to what it might have been. It may be though that scope for misunderstanding and partiality persist in international armed forces investigations and less ad hoc arrangements could be looked into if not yet in place.

This Paper's Outcome

More broadly, investigations such as those of *Voyager* and *Evans* should be holistic and seek out systematic improvements. Defence now has a judicial court of inquiry system but there might be lessons available still from these accidents which go beyond those of investigation structure into scope. Moreover they extend to review and implementation process: assurance that recommendations are adequate and that those which should be implemented, are. Leaving aside review, the Australian Transport Safety Bureau integrates its findings with priorities for implementation and an implementation control process. The 2012 investigation by the ATSB of the engine explosion in a Qantas A380 provides an example. Defence might benefit from checking what the ATSB might offer. I intend drawing its attention to this. It is possible that further lessons can be gained still from these accidents of decades ago.

Worth highlighting are bridge training, tasking and qualification, now hopefully well in hand. I quote from an *Evans's* OOD statement post-collision, of

interest beyond the USN and past times:

> The ship had been manoeuvring quite beyond its normal tactics with the *Kearsarge* [a USN carrier] during the entire SEATO exercise with the Commonwealth ships. They sharpened us up you might say. They like to do a lot of playing around, type flanking movements and we have very seldom if ever, gone through zig–zag plans and things like this. I can't say it was new. We had been going through that for 3 or 4 days, these zig–zag plans. But it did make everybody a little bit tight. But what made me particularly tense was an 18 knot zig–zag plan, was the closeness of the 3000 to 5000 yards screening station. Mr Hopson (JOOD) and I – when I had the conn the first two hours it was just constant change. I couldn't do anything but watch the carrier. Mr Hopson was doing the same when he took it.[30]

As one RAN retired navigator has commented about the RAN, "...we expect too much from junior officers. In close quarters situations, especially at night, experienced personnel should be in charge. Even then some of the manoeuvres are unnecessarily complicated."[32] The USN did release its training film afterwards and may well have taken other measures.

To the RAN there was a theme spanning these twin accidents; inclination assessments at night with and without lighting and how to obviate ambiguity. To me this was a priority, applicable to close manoeuvring at least. Perhaps it is still, in or out of radar silence.

Final Observations

At the decommissioning ceremony for *Evans*, her Commanding Officer, Commander McLemore, addressing survivors assembled on her stern hulk,

might have spoken for *Voyager* also:

> With a great deal of personal sadness it is my duty today to farewell a fine fighting ship. Concurrently, it is with a great deal of pride that I pay tribute to those officers and men, who served her so well. Those who survived the tragic accident that so hurt *Frank E Evans* have every right to be proud of their effort and performance, both before and after the accident. Those who died in the collision share in being part of a fine and dedicated crew, and their sacrifice is part of the price sometimes paid by those who go down to the sea in ships.

Returning to *Voyager* (though with a similar eye to *Evans*), as with so many accidents misfortune played a large part. Had she been a few seconds sooner, or *Melbourne* later, the two ships would have missed, whichever sequence it was which led to the collision; and an accident so calamitous for those who died or were injured and their families, and so momentous for others affected, might have been avoided.

However on the other hand some of the rescued might have been fortunate that the accident occurred in calm seas and warm water within range of shore support. Search and rescue craft were able to respond from *HMAS Creswell* at Jervis Bay and helicopters from the Naval Air Station, supplementing *Melbourne's* early rescue efforts, other ships joining from further afield. Also, had *Voyager* been a few seconds later she might have penetrated *Melbourne's* hull a deal more seriously. As it was, a bulkhead prevented serious water ingress and there was no aviation gasoline stored in the damaged area. ✈

Commodore David Ferry AM RAN (Rtd) was visiting Melbourne at the time of her collision with Voyager. He was air engineer of her helicopter squadron when she collided with USS Frank E. Evans. He joined the Navy as a cadet–midshipman aged 13 in 1953. After general list training, he specialised in aircraft engineering. Subsequent postings were to air squadrons ashore and afloat, aircraft engineer of Melbourne air group and specialist staff positions, including as Director of Naval Aircraft Engineering.

Annex [(see (26))]

Extract by David Ferry from written recollections by Rear Admiral J Davidson, AO RAN (Rtd), January, 2014, about his membership of the Combined Board of Investigation into the *Melbourne/Evans* collision.

(His recollections carry a caveat that this was from his memory of 45 years ago, with no notes from then. He noted that he had read my draft paper and later the presentation of his recollections below)

- He was sitting in for Secretary to the Chief of Naval Staff, Vice Admiral Sir Victor Smith.
- After the two Royal Commissions,

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Smith, "was determined to avoid having non-naval lawyers doing a re-run this time. Accordingly he rang the USN Chief of Naval Operations and agreed with him to set up a joint Naval Board of Inquiry".

- Rear Admiral HD Stevenson, Captain Shands and he (a captain) were nominated. He was surprised being a Supply, (non seaman) officer. Smith told him his nomination was because of his *Voyager* first Royal Commission experience and, "he wanted me to monitor whether anything might come out which would cause later pressure for a Royal Commission here" (he had been Secretary to the Fleet Commander and had to liaise with Smyth QC, assisting the Commission, "who ran a very biased 'shop' apparently based on his belief that all naval witnesses would lie to implicate Captain Stevens of *Voyager* as the sole culprit – I remember well how shocked Admiral Becher was when he returned having been the first witness at his treatment by Smyth...." (*I add that he has told me that as a Supply and Secretariat officer he had received training in naval law and had been a Judge Advocate at a court–martial)*

- At the Board he places on record that he was constrained by, "lack of sea command etc experience in expressing any views on such matters". Shands and he shared a room in the Bachelor Officers' Quarters at Subic Bay and, "he was meticulous in discussing all the points with me after we finished each day".

- "It has been suggested that the RAN officers of the Board had been given prior orders – presumably by Admiral Smith –

that because of the close reliance on the USN in many areas we were to avoid findings that were solely critical of USN officers and this resulted in unfair criticism of Captain Stevenson. Unless this was to Admiral HD Stevenson only and not to me and Shands, I don't believe this was so." *(a measure of the respect the RAN had accorded the findings would be the action it took on the Board's opinions. There is no evidence of action other than the Stevenson court martial, though this may be because it has been lost.)*

- They were accompanied by Commander Glass, QC, RANR. "I am not sure what the comment in David Ferry's article about an RAN lawyer being denied presence refers to (see footnote 7. It referred to Anthony Vincent[21, p71], Lieutenant RANR another lawyer who accompanied them, one of whose tasks was to assist all Australian Naval witnesses or potential witnesses with legal advice.[21, p222]. The Glass task was to assist the Board, jointly with his USN counterpart).

- The Admirals and lawyers met to discuss procedure and the other RAN Board members were informed that:
  - "All decisions should be unanimous. (Sounds prescriptive but worked to our advantage sometimes as I shall mention (*see "King...below"*)). Harold Glass told us that this was basically sensible unless there was something terrible to object to."
  - "All questions would be put by Admiral King to avoid multiple 'fire' and that other members would pass questions they wanted to him (this was followed and I never saw a

case when he refused to put a question so asked."

- Two points seem to him to be forgotten: *(see my earlier comments about criticism of the OTC)*:
  - "...*Evans* crossed *Melbourne*'s bow from port and returned to be hit on her port side, was completely new to us. The *Voyager* collision occurred in a very short space of time with that ship turning from a roughly parallel course straight under the carrier's bow. This (*ie Evans*) clearly gave the *Melbourne* a much longer time from first noticing the 'collision course' in which POSSIBLY to do something".
  - "Captain Stevenson was in 'tactical command' of *Evans* as shown by his order to take up RESDES position and his signal warning of her course. He could theoretically have sent other ORDERS to her."

- "It soon became apparent to Shands and me that (HD) Stevenson was .. (*not forceful*).. and hardly ever argued with King. It was up to us (ie Shands in effect) to put answers to King's arguments." *(both HD Stevenson and Shands are now deceased. HD Stevenson on emerging from a meeting with the Board Senior Member apparently told the RAN Fleet Commander[21,p67] that the latter would not, "like what's going to happen" though this might have been a casual observation.)* "The well known difficulties placed by International Law on the 'stand on' ship arose here and it is really a conundrum which devolved into, "he could or should or couldn't and shouldn't." King of course pushed for could/should and Stevenson and Shands could not

definitely refute it – it was best left to a Court-Martial."

- " King also came up with a list of about 8 items of criticism of Captain Stevenson – I have no exact memory but they were things like, 'a noisy bridge' (*ie too many contributing. (Voyager's might have been?)*) and HD Stevenson had accepted them to go into the report as criticisms". "Shands was adamant and I backed him. We therefore stated that we would not agree to a unanimous finding of them as criticisms. In face of having to record a dissent on the Board the two Admirals settled for mentioning them as having been raised but 'the Board did not proceed to question his judgement on them'."(*footnote 13 would seem to relate to this*)

- "I must emphasise that Shands was the mover and shaker and I was the backer".

- He adds a note about a recent discussion he had with JP Stevenson, which I have passed on to him. About any impression he had given to Stevenson, "that it had been agreed that all decisions should be unanimous (and) he read into this that we had been ordered to give in to the USN on everything. NOT SO........".

- "I remember HD Stevenson's first words to VAT Smith when we reported to him, "I'm afraid Steve will have to be Court Martialled". I took no part in anything that happened later. After another note about JP Stevenson and the IDC, he added , "...voicing a thought which we all had that he would be treated properly and given his chance for selection for promotion to Admiral for which the IDC (promotion course) was a given. Why VAT Smith treated

him (*presumably the posting*) as he did I have no idea and join with all in applauding the Government's tardy apology.

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Vernon Parker Oration 2013

WITH COMMANDER DAVID HOBBS, MBE, RN (RTD)

Commander Hobbs is a well-known author and naval historian. He served in the Royal Navy from 1964 until 1997 and flew fixed wing and rotary aircraft though a long career as a Fleet Air Arm pilot. He has flown Gannet, Hunter and Canberra aircraft as well as Wessex Commando Helicopters. His Log Book contains 2,300 hours with 800 deck landings, 150 of which were at night. His service afloat included the aircraft carriers Victorious, Hermes, Albion, Bulwark, Centaur, Ark Royal (IV) and Ark Royal (V).

After retirement from the active list as a commander in 1997 he became Curator and Principal Historian of the Fleet Air Arm Museum at Royal Naval Air Station Yeovilton in Somerset until 2006 when he became a full time author and lecturer.

He writes for several journals and magazines and in 2005 won the Aerospace Journalist of the Year, Best Defence Submission. He has written 12 books on naval aviation and co-authored nine more. A Century of Carrier Aviation - The evolution of Ships and Shipborne Aircraft has become a standard reference book on the history of flying at sea. His most recent book was The British Pacific Fleet. This is a definitive study of the Royal Navy's operations in the Indian and Pacific oceans in 1944-45. His interest in the history of maritime aviation in Australia is of long

duration. He won the essay prize awarded by the Navy League of Australia in 2008.

David lectures and broadcasts on naval subjects worldwide and has been a regular presenter at King Hall Naval History Conferences over the last decade including the one just concluded last week. He has become well known to readers of Headmark for his book reviews and his incisive articles. He deploys his historical understanding of flying at sea in the twentieth century to illuminate the opportunities technology make possible in aviation in this new maritime century.

It is a privilege to have been asked to give the 2013 Vernon Parker Oration and, as a member of the ANI a pleasure to join so many of you this evening.

Captain Mike Fell DSO DSC* RN, a fighter pilot with a distinguished war record commanded *HMAS Sydney*'s air group in 1951 during her operational tour in the Korean War. In 1966 he commanded *HMS Ark Royal IV* in the Far East Fleet and when asked by the media what his ship did, he replied that it had the ability to steam vast distances quickly and then perform any operational task assigned to it. 'Any operational task' is an accurate and succinct description of

HMAS Sydney carrying ADF personnel and vehicles to Vietnam. (David Hobb's Collection)

what a big-deck warship can do and I believe that similar words will be used to describe *Canberra* and *Adelaide* by their commanding officers when they join the Fleet. The world is actually a more dangerous place today than it was 50 years ago and aviation, within a maritime strategy, will have a vital part to play in many operations that cannot, yet, be predicted.

The Royal Navy first deployed a three-dimensional task force almost exactly one hundred years ago, in July 1913, when the cruiser *Hermes* was commissioned as a dedicated seaplane carrier during the autumn mobilisation manoeuvres. We can say three-dimensional because her two aircraft were embarked to carry out aerial reconnaissance for the 'Red Fleet' and provide a surface picture for its commander. Less sophisticated experiments with aircraft were carried out in the same year by the United States, French, Italian and Japanese Navies. *Hermes'* aircraft included a Caudron with both wheels and floats that could, and did, take-off from a small flight deck over the forecastle in ideal conditions and a Short 'Folder',

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the first naval aircraft in the world to be designed with folding wings for stowage in a ship's hangar. It was also fitted with a wireless transmitter but its engine lacked sufficient power to lift the weight of a receiver.

Wireless telegraphy was the technological break-through that allowed time-critical information to be passed from an airborne observer into a fleet 'net' but it still took some years to evolve the system. After 1913 naval aviation developed with the procurement of seaplane carriers which were really floating hangars and workshops; their aircraft used the sea as their runway but their operation proved to be difficult in any but the most ideal sea conditions. These were seldom found in the North Sea. The RAN fleet unit had no embarked aviation capability in 1913 but a number of Australians serving in the RN made significant contributions to the early development of naval aviation. Among them were Lieutenant Longmore, one of the first four qualified RN pilots, and Captain Dumaresq, a gunnery expert who was one of the first senior officers to appreciate the value of embarked aircraft and to insist on his own ship having the best aircraft and equipment available.

Pre-war strategists including Clement Ader in France and Victor Loughead in the USA predicted ships with flight decks and aircraft support facilities which would form the core of future fleets. Both saw aviation as the third dimension of naval warfare rather than an isolated force fighting its own battles but many British politicians believed that aircraft heralded a new and different form of warfare that would be better conducted within the Empire by a unified force to avoid rivalry between separate Naval and Army air arms. Thus the Royal Flying Corps was

Civilians being evacuated in HMS Warrior. (David Hobb's Collection)

created by Royal Warrant on 13 April 1912 to take responsibility for all British military flying. It comprised Naval and Military Wings with a central organisation responsible for the training of pilots and the development and procurement of aircraft and engines. All three Wings were manned by personnel seconded from the RN and the Army.

The integrated RFC had many points of merit; surprisingly so considering that none of the men who drew up its terms of reference had any real idea what aircraft could, or could not, actually achieve. It was intended that pilots and aircraft from either Wing would reinforce the other if necessary. The Military Wing was quite capable of deploying a handful of aircraft as part of an expeditionary force on land and operating them from a suitable flat surface close to the divisional or brigade headquarters. The airmen could search for enemy forces over a wide area by day in clear weather and, once located, the enemy was likely to be either static or moving sufficiently slowly for the pilot to fly back to the general and his staff and give positions, including accurate map references, which would remain tactically relevant for hours or even days. They could also locate the exact positions of friendly forces that were out of contact with headquarters and

drop written messages to them.

These were exactly the functions the RFC performed for the BEF in 1914 but it was neither trained nor equipped to perform a useful function over the sea. An Australian Flying Corps, similar to the Military Wing RFC was established at Point Cook in 1914 and was organised as a Corps of the Australian Imperial Force.

The Naval Wing in 1912 had no real operational capability; a means of operating aircraft routinely from ships did not exist. From 1913 when seaplanes could be operated to locate enemy warships, they were time-sensitive targets that required an accurate assessment of their position course and speed to be passed to the command quickly, hence the need for wireless telegraphy. Unlike their military contemporaries, naval pilots could not use map references and had to develop a means of accurate navigation over the featureless sea to give the enemy's position relative to the flagship or some other agreed navigational 'fixed point'; even a small navigational error would render their information useless.

The politicians who created the RFC had assumed that the two operational Wings would integrate to develop new aeronautical ideas; while laudable in theory, the concept failed because of the different environments

they had to operate in. Aviation trials were carried out in 1913/14 under the direction of an Admiralty Air Department, formed in November 1912 to deal with all questions and organisation relating to aircraft in commission with the Navy. Aircraft flew over coastal waters in differing sea states to see if it was possible to detect submarines or mines below the surface and air weapons including torpedoes, machine-guns, darts and even a two-pounder cannon were tested. The focus on naval activities drew the Naval Wing away from the Military Wing of the RFC and the Royal Navy's air component was officially recognised as the Royal Naval Air Service, RNAS, in July 1914. The RAN had no separate aviation element but a large number of Australians joined the RNAS and served in it with distinction.

Given the forceful nature of Winston Churchill, the First Lord of the Admiralty, the new RNAS quickly absorbed a number of unconventional and unforeseen tasks but made rapid progress. Command and control of naval aircraft shifted from the Admiralty Air Department to commanders-in-chief and area flag officers in 1915, helping their integration into naval tactics. In 1917 the post of 5th Sea Lord was established to administer air matters and an Admiral Commanding Aircraft appointed to the Grand Fleet as the focus of naval air operations. Admiral Beatty created the Grand Fleet Aeronautical Committee, an informed and influential group of senior officers to force the pace of development of embarked aviation from 1917, leading directly to the commissioning of the world's first aircraft carrier, *HMS Argus*, in September 1918.

Captain GW Steel USN, an observer sent to study aviation in the Grand Fleet reported to his General Board that so many ideas had been gained from the British that any discussion of the subject must consider their methods. The RNAS had designed and developed an effective airborne torpedo, the Sopwith T1 to carry it and the practical aircraft carrier from which they could be launched. Realistic training for a carrier-borne air attack on the German fleet in its harbours had begun before the war ended.

Aviation was not the decisive weapon that some had predicted but its achievements were significant. The naval attempt to force the Dardanelles was undoubtedly encouraged by the anticipated ability of aircraft to spot for ships' guns and the contribution of shore-based RNAS aircraft and airships to littoral convoy defence was remarkably effective although not widely understood outside the RN. Throughout the war RNAS aircraft operated ashore in France

Sopwith one-and-a-half Strutter launch from HMAS Australia. (David Hobb's Collection)

and Belgium in support of naval operations off the enemy-occupied coast and when the RFC called for help in the autumn of 1916, the RNAS honoured the original Naval Wing commitment and deployed fighter squadrons from Dunkirk to RFC control. Some of these units earned fame and fought with considerable distinction over the German side of the lines whilst integrated with RFC Brigades. Other RNAS Wings were formed to strike at German industrial targets in the Ruhr with the aim of reducing the amount of steel available for the construction of U-boats and yet others in the Mediterranean, the

Lt Cdr V A T Smith DSC RAN as Operations Officer on HMS Tracker. (David Hobb's Collection)

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Middle East and African theatres of operation.

In 1917 air operations became a focus of political attention with arguments over the supply of material, command and control. A Committee was set up under the nominal authority of Prime Minister Lloyd George to study the organisation of Imperial air forces but its report was effectively the work of one man, the South African General Smuts, who took evidence in closed session and recommended the amalgamation of the RNAS and RFC into a single air force. The post-war structure of aviation in the British Empire was not the result of wartime experience, therefore, but of political wrangling for control of air operations.

Named the Royal Air Force, the new service came into being on 1 April 1918 and focused on the activities of its larger element, the former RFC. By October 1918 Admiral Beatty was complaining that the RAF was failing to provide for the growing air requirements of his Grand Fleet. Between 1918 and 1939 the Admiralty and the Air Ministry shared control of the aircraft embarked in the growing number of British aircraft carriers with the former retaining operational control at sea but the latter having administrative control ashore, including the training of pilots and the procurement of aircraft. The cost of this less-than-ideal organisation was borne by the Admiralty. The British Government insisted that the embryo RAF be given five years to settle in after 1919 but by the end of that time the policy that all pilots should be capable of all roles with time at sea considered as a temporary detachment meant that most of the carriers' time at sea was spent training new pilots who would be lost to naval aviation after a few months and air mechanics who could

not be used like sailors for ship duties such as damage control and fire-fighting.

Attempts by the Admiralty to recover the RNAS led to a compromise agreed after a series of discussions between Admiral Keyes and Air Marshall Trenchard in 1924 and subsequently known as the Trenchard/Keyes Agreement. Whilst keeping the status quo of RAF administrative control, all observers and telegraphist air gunners were to be provided and trained by the Navy and 70% of all pilots were to be naval officers. There was a significant 'but' however in that the pilots would have to have a 'flying rank' in addition to their naval rank and serve in whichever was appropriate to their current appointment although, in practice, they always wore their naval uniform. The term Fleet Air Arm was a positive outcome of the Agreement, the previous title of 'RAF Detachments in HM Ships' being considered rather long-winded.

In the USA similar arguments for a unified air service were voiced and in 1925 President Coolidge set up a President's Air Committee to look into the subject with Dwight D Morrow, a prominent lawyer, as chairman. The Morrow Board, as it was known, rejected these arguments, retained the navy's air arm and recommended that only pilots should be given command of aircraft carriers and naval air stations ashore. This encouraged many senior officers, some in their late forties including 'Bull' Halsey, to learn to fly and ensured that aviation was given the prominence it deserved before the outbreak of war. The Board established the aviation structure of the USN including carrier air wings, shore-based aircraft and specialised training that endures to this day. *Australia, Melbourne* and *Sydney* had all embarked RNAS aircraft during

RAAF Meteors of 77 Squadron being ferried into the Korean War Zone in HMS Unicorn. (David Hobb's Collection)

their time with the Grand Fleet and attempts were made to form an RAN Air Service when they fleet returned but, instead, the RAAF was formed in 1921 charged, like its UK role model, with providing seaplanes for operation from warships. The seaplane carrier *Albatross* was partly the result of political pressure to provide domestic ship-building work but also the response to Admiralty advice that the Australian Squadron must be self-sufficient in aircraft to be viable.

By 1933 the Admiralty had a clear concept of what it wanted from naval aviation and the dynamic Rear Admiral Henderson, a former carrier captain, was appointed Rear Admiral Aircraft Carriers. Among the many changes he forced through was the replacement, in 1933, of six-aircraft flights by operational squadrons with twelve or more aircraft numbered in the 800 series, the system that is still used in the RN and RAN today.

By 1937 dual-control was clearly unworkable and the Admiralty made a further bid to regain full control of its air element. Sir Thomas Inskip, like Morrow an eminent lawyer, was Minister for Defence Co-ordination and in a judgement subsequently

known as the Inskip Award he stated that naval aircraft and their crews were a great deal more than passengers in a convenient vehicle; that a pilot in the Fleet Air Arm would no longer need to be an Air Force officer and that the Admiralty should enjoy a more decisive voice in settling the type of machine suitable for naval use.

The Admiralty was given two years to take over full control of the aircraft which flew from ships including their procurement and shore support and did so two months before the deadline. However, Inskip ruled that the shore based maritime aircraft which formed Coastal Command should remain a part of the RAF as they had important secondary functions including bombing and troop transport which he considered, on the advice before him, to be incompatible with naval operations. The ruling applied not only to the RN and RAF but was adopted by the Services throughout the Commonwealth which evolved from them. Thus the Morrow and Inskip judgements are responsible for the different structures of the US and Commonwealth naval air arms to this day.

Before the Second World War the RAF had concentrated on the development of a strategic bombing force to emphasise its independence with the result that tactical aviation in support of naval and land warfare had atrophied. The RN Fleet Air Arm was small and despite the success of operations in Norway and the Mediterranean in 1940, it was unable to expand until significant numbers of 'hostilities only' pilots and technical ratings reached the squadrons in 1941. It was a maritime conflict in which the allies used an expeditionary strategy to attack the enemy at their point of choice. Australian forces operated as integrated elements of

larger Commonwealth formations with RAAF squadrons embedded in Coastal, Bomber and Fighter Commands of the RAF based in the UK. The RAN operated with the RN in the Atlantic, Mediterranean and Middle East Stations, with the US forces in the South West Pacific area later in the war and with the British Pacific Fleet, BPF, which joined the US Fifth and Third Fleets for the assault on the Japanese homeland in 1945. The BPF was miss-named, and could more accurately be described as the Commonwealth Pacific Fleet since it relied heavily on Australia, New Zealand and Canada for its composition.

In Australia, the RAN and RAAF provided the BPF with bases, airfields, ships and, latterly, replacement pilots who volunteered to transfer from the RAAF to the RANVR to fly RN aircraft from carriers. Many subsequently joined the RAN Fleet Air Arm. The naval aircraft of 1945 improved dramatically over earlier types. Carrier-borne aircraft had been seen as purely naval assets in 1939, intended to support the battle fleet in operations far out at sea but by 1945 the allied fast carrier task forces demonstrated a more comprehensive capability, able to concentrate

Flight Commander R A Little DSC RNAS. (David Hobb's Collection)

force where and when needed and to regroup for diverse, different objectives afterwards.

As three-dimensional operations came to dominate the activities of navies, the RAN found itself out of step in 1945 in that, based on a force of cruisers and destroyers it could no longer form a viable task force on its own. Negotiations to borrow two new light fleet carriers from the RN had begun in 1944 but were slowed by Prime Minister Curtin's suspicion that the Admiralty was merely trying to solve its own manpower crisis by

HMAS Sydney in the Yellow Sea as part of an Allied Task Force refuelling from RFA Wave Premier with the USS Hannah and HMS Aler. (David Hobb's Collection)

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obtaining Australian sailors to man ships that could not otherwise be brought into service. Agreement was finally reached in February 1945 when the BPF arrived in Sydney but by then it was too late for the ships to be transferred in time to see action and the plan was eventually shelved.

After 1945 the UK Government could not afford to donate carriers to the RAN but offered to sell two to the RAN for the construction cost of one plus the cost of their initial outfits of stores in 1947. After a study led by the then Lieutenant Commander VAT Smith DSC RAN, who had served with Fleet Air Arm as an observer during the war, the offer was accepted and *HMS Terrible*, under construction in Devonport Dockyard, was completed and handed over to the RAN in 1948 as *HMAS Sydney*, perpetuating a famous name. The second ship, *Melbourne*, was completed at a slower pace so that she could incorporate new technical advances including the steam catapult, angled deck and mirror landing aid, emerging in 1955 as one of the first three ships to have them built in during construction rather than retro-fitted later. The two carriers formed an important element of Australian maritime capability for three decades and increased the nation's standing, both with allies and potential adversaries.

Despite the ships' obvious value, the RAAF spoke against their procurement at the time as being not in the best interests of defence but the Prime Minister accepted the new capability, based on the role models in the UK and USA, as part of a five-year defence plan. This opposition is difficult to understand in retrospect because it appears that men who considered themselves to be proponents of air power spent time and effort in trying to limit the

F-35B taking off from the USS Wasp. (David Hobb's Collection)

nations' ability to deploy aircraft as part of a maritime strategy. Similar arguments were deployed later in the UK and succeeded in diverting Phantom fighters ordered for the RN to operate from the carrier *Eagle* and a number of Buccaneer strike aircraft to the RAF which was to operate them from land bases as part of a scheme named the Tactical Air Support of Maritime Operations or TASMO by politicians who wanted the big-deck carriers to be scrapped quickly. A more apt name would have been Removal of Air Support from Maritime Operations since the aircraft sat uselessly on their UK airfields while Sea Harriers in *Hermes* and *Invincible* fought in the South Atlantic War of 1982.

HMAS Sydney relieved *HMS Glory* off Korea in 1951, the first Australian carrier to go into action. On only her fifth day of operations, Commander Fell led her air group to equal the record for the largest number of aircraft sorties yet flown by a light fleet carrier in a single day and her performance was judged by her RN and USN contemporaries, with their extensive wartime carrier experience, as quite excellent. The RAN's Fleet Air Arm, which had

only been in existence formally since 1948, had done extremely well, albeit with a little help from the RN. *Sydney* flew her aircraft in support of the naval blockade of North Korea, on combat air patrol over the fleet, tactical ground attack and reconnaissance missions in support of allied troops ashore and strategic strikes against logistics, road and rail communications including bridges. The latter were integrated into an air-targeting scheme co-ordinated by the US 5th Air Force.

Sydney's usefulness did not end with the Korean War although financial restrictions prevented her being modernised to the same standard as *Melbourne*. In 1961 the Australian Chiefs of Staff agreed to bring her out of reserve and refit her for service as a fast troop transport as a short-term expedient to improve the ADF's strategic mobility. She did not embark assault helicopters like her RN and USN contemporaries in the LPH role but gave valuable service carrying out 25 ferry trips to Vietnam between 1965 and 1972 with men and equipment from every element of the ADF. She was withdrawn from service for the last time at unexpectedly short notice in 1973; an example, perhaps,

of politicians identifying a ship with a single role without comprehending its full capability.

Melbourne remained in service until 1982 with arguments about her replacement that mirrored debates in the USA and UK. She never saw action but for nearly three decades her latent capabilities underpinned Australia's maritime capability. In her time she operated the first all-weather fighters to go into service anywhere in the southern hemisphere, sophisticated anti-submarine aircraft and helicopters and, latterly, the very capable A-4 Skyhawk strike aircraft. Her ability to provide humanitarian relief was demonstrated in December 1974 when she used her helicopters to support Darwin after it was hit by Cyclone 'Tracy'. Her withdrawal in 1982 left a serious gap in Australian maritime capabilities and the RAN's Fleet Air Arm became an all-helicopter force with Seahawks and Sea Kings in the front line which were able to operate from most of the surface combatants and auxiliaries in the anti-submarine, surface search and what has come to be known as sea control roles.

In the UK, the deployment of HM Ships *Hermes* and *Invincible* in the task force sent to the South Atlantic to liberate the Falkland Islands in 1982 provides a very clear example of how big-deck ships can respond quickly to unexpected emergencies. *Hermes* was actually in refit when the crisis broke in late March but she was prepared for action, stored and sailed from Portsmouth as flagship of the task force on 5 April, by which time she had embarked her own reinforced Sea Harrier and Sea King squadrons and a commando assault Sea King squadron plus a number of Royal Marines' commando units and their equipment. Without the two carriers the mission would not have been possible as they

were the only means of providing tactical aviation.

The RAF aircraft allocated for TASMO duties stayed on their UK airfields and played no part but, fortunately the RAF's Harrier ground attack aircraft could be operated from a carrier and several were deployed south with air-to-air refuelling to embark in *Hermes* and support the Sea Harriers in the ground attack role. Thus a medium-sized carrier was not only able to take its own air group into action but to take other aircraft to the fight as well, just as RN carriers had previously taken RAF aircraft to the action in Norway, Malta, the Far East and a number of 'brush-fire' actions after 1945. The 1982 deployment succeeded on a diplomatic level with the highly publicised departure from Portsmouth; on a strategic level with the ability to deploy a balanced force over 8,000 miles from the UK and on a tactical level with the ability to fly many different types of aircraft from different services on different missions around the clock. *Hermes* spent 108 days continuously at sea, not bad for a ship that was dismissed by politicians in 1966 as being too small for effective use in an overseas intervention. Some years later, and on a smaller scale, the deployment of Army Air Corps Apache gunship helicopters to the British LPH *Ocean* for action over Libya in 2011 showed another example of how flexible such ships can be in placing the right amount of force in the right place and, more importantly, sustaining it in action for a long time if necessary. These big-deck ships provided politicians with an option they would not, otherwise, have had and which, sadly, some of them might not even have known their nation possessed.

Some commentators think that aircraft carriers can only be used in a limited number of scenarios in major

conflicts. They could not be more wrong and I could spend hours giving examples of aircraft carrier operations in a broad range of crises. Examples include the 1961 Suez Crisis when *Bulwark* acted not only as an LPH but used its radar both to direct RAF fighters from Bahrain and to provide an air traffic control service for RAF transport aircraft as they arrived in the Northern Gulf. In the 1956 Suez Crisis two thirds of the tactical fighters were operated from land bases in Malta and Cyprus and one third from British and French carriers. Analysis of the results show that two thirds of the strike sorties were actually flown from the carriers and only one third from land bases because the carriers could be positioned ideally within reasonable distance of the designated targets. Balkan operations during the 1990s revealed a similar imbalance with the British Government insisting that a carrier remained in range of British troops on the ground since shore-based aircraft were often grounded by bad weather and could not be relied upon. Since 1945 Commonwealth carriers have rescued helpless civilians from war zones; evacuated wounded nationals; protected nations at short notice that had asked for help, deployed peace-keepers and their equipment, and carried out a host of other tasks that have continued to vindicate the statement by Captain Fell with which I started this talk. Their very presence off Indonesia during Confrontation

Sea King helicopter being refuelled in flight. Courtesy of Seapower Centre - Australia

Vernon Parker Oration 2013

and off Belize deterred aggressors and prevented conflict.

A historical appreciation of the contribution of naval air power to the national strategy published by the Sea Power Centre-Australia in 2008 noted that such ships were not only the weapons system that had supplied most of the air support for amphibious operations around the world since 1939, but that the placement of carriers close to the centre of operations improved the flexibility with which command, control and communications could be exercised by all arms and responses to tactical situations could be made swiftly and effectively with the minimum of resources concentrated where they matters most. The Paper concluded by noting that the procurement of the two new ships of the Canberra class will provide the ADF with an unprecedented capability to project military force from the sea.

They can, in my opinion, do even more than that as part of a maritime strategy that makes use of the sea and the air above it to provide the broadest range of capabilities at the time and place of Australia's choosing. The future is unknowable and it would, surely, be wise to ensure that the LHDs can be used to their full potential in the national interest. They are, of course, perfectly capable of landing and sustaining a peace-keeping force but they may be required to go further into harm's way to land military forces against sophisticated opposition and it is not beyond the realm of possibility that they may have to fight a hostile three-dimensional enemy for control of seas that are vital to Australian interests with, or without allies. Should this happen, limitations placed on the full potential of these ships might not have been such a clever idea.

At the 2012 Australian Sea power Conference, the Chief of Air Force, Air Marshal Geoff Brown, stated that the RAAF was committed to supporting the full range of Navy activities and the Maritime Strategy. Further, he observed that Australia is surrounded by air as well as sea and that the RAN's ability to secure the nation's approaches and sea lines of communication represent a fundamental contribution to the defence of Australia. He informed the audience that the air contribution to the new amphibious capability will comprise a number of roles including the provision of intelligence, surveillance and reconnaissance information; strike; air mobility and the control of the air, complementing the principal roles of sea power.

In answer to questions the Chief of Navy, Vice Admiral Ray Griggs, stated that a lot of work needed to be done before unmanned air vehicles could be procured for operations with the fleet and that it was not Government policy to include fixed-wing STOVL fighters in the potential air groups to be embarked in the new LHDs. The Chief of Air Force's enthusiasm for the maritime strategy is heartening but the ability of land-based fighters to sustain operations for any length of time beyond the Australian littoral must, surely, be open to question. Their radius of action can be extended by in-flight refuelling but prolonged operations would lock up much of the tanker force and prevent it from carrying out its transport role

RN Sea Harriers and RAF Harriers on HMS Hermes' flight deck in 1982. (David Hobb's Collection)

concurrently. Fighters that rely on tankers to operate at extreme range in this way cannot react quickly or flexibly to unexpected threats and only have value while their weapons last. There is little point in maintaining a fighter on station if it fires out its weapons in the first few minutes after arrival.

Perhaps airfields on friendly territory or islands near the focus of action can be negotiated or seized but does Australia have the logistic and engineering capacity to develop them at short notice into bases while the focus of strike fighter, tanker and AEW & C activity is over the task force at sea? Will the air warfare destroyers be able to defend the bases as well as the task force? Can Australia, if necessary alone, supply a temporary base in addition to the seaborne task force itself with sufficient fuel, weapons, maintenance facilities spare aircrew and their needs for command, control and briefing in a timely manner? Can such a base be realistically defended? If these capabilities do exist, they are impressive but if they do not, dare I point out that once *Canberra* and *Adelaide* are in service, they will be at the focal point of the action, just like *Hermes* in 1982. They will bring flight decks, bulk fuel, accommodation, workshops, magazines, technical

sailors and command, control and logistic support for a broad range of tactical aircraft. In short, they are a mobile and effective air base with command and control facilities that can move over vast distances quickly and then perform any operational task assigned to them.

Strike fighters have important roles to play in expeditionary operations, integrated alongside embarked helicopters and long-range, high-endurance aircraft based ashore. The US Marine Corps must be considered the primary role model and it does not believe that shore-based fighters can support the full spectrum of maritime operations. The ADF will have to work with the Corps closely and the STOVL F-35B Lightning II was designed for the USMC to operate alongside helicopters in ships similar to the new *Canberra* and cross-deck STOVL operations must, surely, be considered important. The F-35B is not without major problems but it is being produced for the USMC, RN and RAF.

Before Australia orders production Lightnings, the significant increase in integrated performance the STOVL version would give an Australian task force ought to be considered. Without such a discussion Project Air 6000 is unlikely to deliver the maximum potential for Australia's maritime strategy and one has to question the judgement of those who dismiss embarked capability too readily. More immediately, the F/A-18F already operated by the RAAF was designed for carrier operation with the US Navy; could detachments be embarked in USN carriers to augment the tactical fighter force and illustrate allied resolve when necessary. There have been precedents with UK, French and Argentinean fighters operating from US carriers for short periods.

The past is full of examples of good and bad ideas; the many uses to which big-deck ships can be put within a maritime strategy are among the very good ones. Multi-purpose 'flat-tops' like the LHDs equip many of the world's navies, arguably becoming the capital ships of the twenty-first century. Remember the words of Captain Mike Fell with which I started and imagine all the ways *Canberra* and *Adelaide* can achieve their aim. ⚓

Fixing Australia's incredible defence policy
LOWY INSTITUTE ANALYSIS

BY JAMES BROWN AND RORY MEDCALF

EXECUTIVE SUMMARY

Australia's new government must make tough decisions in defence policy. Australia's broad national interests and the challenging strategic environment in Indo-Pacific Asia make it essential to modernise the Australian Defence Force. The nation's defence capabilities remain underfunded and its strategic edge in the region is eroding. The gap between the nation's interests and capabilities is widening, and it is getting harder to meet the demands of the US alliance.

Australia's new government needs to restore focus and funding to defence. The government will need a first-principles review to identify the military strategy and force structure required to protect and advance the nation's interests. It will need to increase funding or be prepared to make drastic cuts to defence capability, with full awareness of the risks. It must also think deeply about the role of the US alliance in Australia's security, and take the initiative in shaping that alliance in Australia's interests.

It's unlikely that many Australians spared a thought for defence issues at the polls on 7 September 2013. Just over five per cent of voters rate defence as an important political issue.[1] The 2013 election saw little pressure on either party to present detailed or even coherent defence policies.[2] Yet Australia's new Coalition government under Prime Minister Tony Abbott will need to make tough decisions that will have long-term effects on the nation's security, power and influence in the world. Failure to do so will be a consequential choice in itself. The new government will need to take major steps to address the serious funding and structural problems in Australia's defence policy.

Just as Australia faces large economic challenges, so too are long-held assumptions about the nation's security in flux. In Indo-Pacific Asia,

the rise of China is changing relations between major powers, resulting in greater competition and mistrust and raising the likelihood of confrontation, coercion, and perhaps even war. Australia's military edge in its neighbourhood is slipping as military technologies change and countries with faster-growing economies spend more on their armed forces. Australia's alliance with the United States is being reshaped in ways that will place new burdens on Australia. And even after a decade of foreign deployments, Australia's military will need to be ready for a wide range of new contingencies.

Any further decline, or even continued stagnation, in Australian defence spending would imperil its ability to respond to these challenges. Australia's defence budget has been shrinking as a proportion of

Replacement submarines? A Collins-class submarines Weapons Compartment (RAN photo)

government spending. As a proportion of overall national wealth, measured by gross domestic product, it is (at 1.6%) close to its lowest level since the 1930s.[3]

Both major political parties have agreed that Australia's future military capabilities will include many elements of *Force 2030*, a modernised defence force to be constructed over the next two decades, outlined in the Rudd government's 2009 Defence White Paper and largely endorsed in the

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1 *Defence and national security not on voter's radar*. Roy Morgan Research, 26 April 2013: http://www.roymorganonlinestore.com/News/Defence-and-national-security-not-on-voters%E2%80%99-radar.aspx.
2 Though security issues like East Timor, the 9/11 attacks, the Iraq War and the use of the navy to stop asylum seekers have played into some previous election campaigns, in the 2013 election defence was not a prominent issue, to the point that the Australian Labor Party did not release a formal election policy document.

3 David Watt and Alan Payne, *Trends in defence expenditure since 1901*, Parliamentary Library budget review: http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/BudgetReview201314/DefenceExpenditure.

Gillard government's 2013 version. Yet real doubts remain that this aspirational force will ever be realised. At a time when security experts show a rare degree of unanimity on the alarming state of defence policy, it is not clear that political leaders are assigning it a high enough priority. This is most evident when looking at the state of Australia's defence budget. The new government will need either to set out a credible plan to boost defence spending or begin serious cuts to capabilities and personnel.

This Lowy Institute Analysis details some of the key defence policy decisions that Australia's new government must make, notably in three areas: what it wants the Australian Defence Force (ADF) to be capable of doing; how it is going to pay for a force that can deliver such options; and what the future of the US alliance means for both of these issues. This is not intended to be an exhaustive study. Forthcoming Lowy Institute research will consider more detailed reform, force posture and strategic options for Australia's defence. What this Analysis will underline is the clear disconnect between, on the one hand, the increasingly complex strategic environment Australia faces, and its broad strategic interests, and, on the other hand, the low priority both sides of politics accord to defence policy and funding.

Broad national interests

Australia has broad national interests. It has one of the world's largest zones of maritime jurisdiction. The country is located far from most of its friends and allies and is not a member of any closely aligned regional bloc. Its prosperity and security depend highly on seaborne commodity exports, secure sea lines of communication, global flows of trade, finance, information and people, a rules-based

international order, stability among powerful nations in Asia and the strategic imperatives and choices of its powerful ally the United States. For all these reasons, Australia's interests extend well beyond the immediate physical security of its citizens and the protection of its territory. An Australian government could choose to define its national security interests narrowly in order to justify reduced defence spending. But that would make Australia a very different country, one no longer capable of contributing to international coalitions or otherwise influencing its strategic environment.

That strategic environment is also becoming more challenging. Australian interests now extend through much of the Indo-Pacific, and that broad region is entering a phase of geopolitical uncertainty and change.[4] The rise of China, and to a lesser extent India, is unsettling the Asian strategic order. Economic and political dysfunction is worsening across a range of countries, and multiple interstate

4   Rory Medcalf, Indo-Pacific: what's in a name? In *Reports from a turbulent decade*, edited by Michael Fullilove and Anthony Bubalo. Melbourne, Penguin Australia, 2013, pp154-157. On the extent of geopolitical change, see for instance: *Global trends 2030: alternative worlds.* United States National Intelligence Council, December 2012: http://www.dni.gov/ index.php/about/organization/national-intelligence-council-global-trends.

security tensions remain unresolved, including over maritime sovereignty. Nationalism, resource pressures, military modernisation and strategic mistrust are reinforcing each other in dangerous ways. The probability of armed conflict involving major powers in Asia remains small, but has become more thinkable than it was five years ago. For all of the upsides of economic growth, disruptive societal and technological change is making the behaviour of major countries in the region less predictable. This period of heightened risk and uncertainty will continue for many years, and could worsen.

In all of this, the probability of an adversary attacking Australian interests or territory remains low. But it is not zero. If strategic circumstances changed further, it is conceivable that another country might attempt to constrain Australia's choices or threaten its interests through force. Conflict between major powers in our region, even one that did not directly involve Australia, would have profound implications for Australian interests. Plausible scenarios include armed confrontation between China and Japan, the Philippines and Vietnam over maritime disputes, with the prospect of the United States being drawn into one or more of these

Will the Alliance be enough? USS Nimitz's Maritza Chavez explains operations to ABET Sam Whitfield from HMAS Toowoomba during an exchange programme. (USN photo)

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conflicts. A security crisis or even conflict on the Korean Peninsula remains an ever-present prospect.

Australia also faces an enduring range of security challenges in its nearer neighbourhood. Various South Pacific island states along with East Timor will remain prone to severe governance problems, resource and population pressures, natural disasters, and the effects of climate change. Piracy, illegal fishing and the smuggling of people, weapons and drugs will also need to be tackled. And the threat of terrorism has not gone away; it will pose a persistent threat to Australians.

Living on the defence edge

For decades, Australian defence policy has assumed that the country had a strategic edge over other militaries in the region by virtue of its access to advanced defence technology and the 13th largest defence budget in the world. This is clearly starting to change. The 2013 Defence White Paper concluded that 'over the next three decades, Australia's relative strategic weight will be challenged as the major Asian states continue to grow their economies and modernise their military forces'.[5] Analysis by the Australian Treasury concludes: 'If both we and other countries were to maintain military spending as a constant share of GDP, other countries' higher growth rates would lead their military capability to grow more rapidly than our own.'[6]

Although Australia still has a more professional military than its neighbours, some countries in the region are acquiring advanced fighters and submarines, and developing

sophisticated reconnaissance systems. Technology is shifting the balance. Disruptive military innovation has seen the development of offensive capabilities that are relatively cheap to acquire and deploy. Maintaining a regional defence edge is now more difficult for Australia and the ADF will need to raise its levels of capability, or face a relative decline.[7]

Australia's military capability is also eroding in absolute terms. After a decade of foreign deployments, much of the ADF's equipment is worn and requires replacing.[8] The impact of the 10.5 per cent budget cut levied by the Gillard government in 2012 is only now being understood. Maintenance, logistics, and training are underfunded. Some capabilities, such as tanks, have been effectively mothballed. Whilst the ADF looks largely the same, its preparedness has been affected with fewer platforms and capabilities at a level of readiness necessary to provide options for government. This is particularly risky for a small and already finely calibrated force. In 2012, the then defence secretary issued a stark warning: 'as things stand I don't think we are structured or postured appropriately to meet our likely strategic circumstances in the future.'[9]

The ADF may have already reached a point where short term savings measures have caused some military capabilities to decline below their regeneration point for

expected conflict warning times. The army, for one, has already signalled that without further augmentation it will not be able to concurrently sustain separate brigade and battle group sized deployments, as mandated by government.[10] The inefficient defence estate, paucity of naval engineering capability, and underdeveloped national defence infrastructure are also jeopardising current capability and future force modernisation plans.

Defibrillating Force 2030

In recent years both sides of politics have shared essentially the same vision for a future modernised ADF – Force 2030. Unveiled in the 2009 Defence White Paper, and largely reaffirmed in the 2013 Defence White Paper, Force 2030 has been envisioned as 'a stronger, more agile and harder-hitting defence force' with the 'necessary combat weight and reach to be able to operate with decisive effect against credible adversaries.'[11] This force structure was largely seen to reflect concern about the power of a rising China,

How many are needed? F-35 JSF STOVL with lift-fan open (Defence Industries)

5   Department of Defence, *Defence White Paper 2013*. Canberra, Commonwealth of Australia, May 2013, p 15.
6   Christine Duke and Cameron McKean, *Alternative methodologies for projecting defence spending*. Economic Roundup, (2) 2008: http://archive.treasury.gov.au/documents/1396/HTML/docshell.asp?URL=01_Defence_spending.htm.

7   Department of Defence, *Defence White Paper 2013*. Canberra, Commonwealth of Australia, May 2013, p 14
8   For example, the army's fleet of light armoured vehicles has seriously deteriorated after a decade of constant use in Iraq and Afghanistan, see LTGEN Morrison comments on ASLAV fleet in Parliament of Australia, Hansard transcripts, *Senate budget estimates*, 13 February 2013, p 62: http://www.aph.gov.au/Parliamentary_Business/Senate_Estimates/fadtctte/estimates/add1213/index
9   Duncan Lewis, *Talking dollars and strategy: the challenging link to defence planning*. Speech to Australian Strategic Policy Institute Annual Dinner, 23 August 2012.

10 Land Warfare Development Centre, *The Army Objective Force 2030 Primer*. Puckapunyal, Commonwealth of Australia, 2011 states 'In order to meet the requirements of strategic guidance – to deploy and sustain a brigade sized force engaged in combat operations for a prolonged period of time while simultaneously deploying a battle group sized force – the AOF 2030 will need to restructure and augment the current force. In the absence of augmentation, the AOF 2030 will be unable to sustain the concurrency as detailed in strategic guidance', p 42. Available at: http://www.army.gov.au/Our-future/~/media/Files/Our%20future/Publications/Army%20AOF%202030.ashx
11 Department of Defence, *Defending Australia in the Asia Pacific century: Force 2030, Defence White Paper 2009*. Canberra, Commonwealth of Australia, May 2009, p 63.

and anticipated the acquisition of about 100 advanced 'fifth-generation' strike aircraft, 12 submarines, and a large number of surface ships armed with land-attack cruise missiles. This vision of the ADF has been repeatedly resuscitated over the past four years, by both sides of politics as well as by much of the security establishment.

Force 2030 has been estimated to cost up to $275 billion to build over the next two decades - requiring more than $146 billion in additional funding beyond anticipated annual defence budgets.[12] Yet in the four years since Force 2030 was announced, only $18 billion of funding has been committed to new defence capabilities. This is partly because the Defence Department has lacked the institutional capacity to process such a bow wave of spending. But, critically, it is also because under short-term political pressures the Rudd and Gillard governments began deferring much of their own plans to modernise the nation's military, delaying or cutting more than $20 billion in defence investment.[13] Most security experts believe that Force 2030 is now unachievable – one estimates that in the next decade alone an additional $33 billion beyond current defence budget projections will be required to meet the capability aspirations of the 2013 Defence White Paper.[14]

Part of the challenge is that each year the latest defence equipment becomes more complex and more expensive, so deferring modernisation to save money in the short-term makes it more costly in the end. The acquisition cost of modern defence equipment grows at approximately 4 per cent.[15] Even if Australia were to increase defence funding in line with long-term GDP growth rates (calculated at 2.7 per cent a year), for each year that the construction of Force 2030 continues to be deferred the scale of underfunding will be magnified.[16]

In the 2013 election, the main defence 'promise' made by both sides was to increase defence funding from 1.6 per cent to 2 per cent of GDP, presumably to fund the core capabilities of Force 2030. The Coalition promised to 'cauterise the hemorrhage' caused by Labor's 2011-12 cuts, and then 'return to the aspiration of 2 per cent of GDP and 3 per cent real growth in the Defence Budget.'[17] Then opposition leader Tony Abbott subsequently promised that 'defence spending will be 2 per cent of GDP' within a decade.[18] The then prime minister, Kevin Rudd, committed Labor to 'sustained defence expenditure at 2 per cent of GDP', but without giving a timeframe.[19]

Though Force 2030 has remained the vision for Australia's future military force structure, deferral and underfunding is making it look more like a mirage. Neither side of politics has fundamentally revisited either the rationale for Force 2030's force structure or its feasibility should increased defence funding not eventuate.

Three steps to tackling tough defence choices

This pattern of delay and denial is not a sustainable basis for the nation's defence policy. Australia must face up to some tough defence choices. As our allies and partners are already learning, when it comes to defence you cannot have it all. New Zealand has accepted a smaller, value-for-money military structured around a joint amphibious task force. The United Kingdom and France have reduced their expeditionary forces and even begun sharing some capabilities. Canada is reconsidering large purchases like the Joint Strike Fighter and trying to redefine its area of strategic interest. The US Quadrennial Defense Review next year is expected to be 'radical and reformist,'[20] and a just-completed US Strategic Choices and Management Review lays out an austere choice for defence planners – reduce military readiness or investment in new capabilities.[21]

Yet in Australia few of these types of tough defence choices have been discussed, much less made. Few Australian politicians show a sustained interest in defence. There is presently no distinct school of defence thinking on either side of politics, unlike

12 Department of Defence, Answers to questions on notice, *Senate budget estimates,* 3 - 4 June 2009, p 28: http://www.aph.gov.au/Parliamentary_Business/Senate_Estimates/fadtctte/estimates/bud0910/def/index
13 Mark Thomson, Defence funding in 2013: means, ends and make believe. *Security Challenges* 9 (2) 2013, pp 51-58.
14 Mark Thomson, *The cost of defence: ASPI defence budget brief 2013-2014.* Canberra, Australian Strategic Policy Institute, May 2013.

15 Christine Duke and Cameron McKean, *Alternative methodologies for projecting defence spending.* Economic Roundup, (2) 2008: http://archive.treasury.gov.au/documents/1396/HTML/docshell.asp?URL=01_Defence_spending.htm.
16 The Treasury, *Intergenerational report 2010.* Canberra, Commonwealth of Australia, 2010, p 4: http://archive.treasury.gov.au/igr/igr2010/report/pdf/IGR_2010.pdf.
17 Senator David Johnston, Speech to the Lowy Institute for International Policy. Sydney, 29 April 2013: http://www.lowyinstitute.org/publications/coalition-defence-policy-speech-lowy-institute.
18 Tony Abbott, *Campaign launch speech.* 25 August 2013: http://www.smh.com.au/federal-politics/federal-election-2013/tony-abbotts-campaign-launch-speech-full-transcript-20130825-2sjhc.html#ixzz2d4Lxa9nd.
19 Kevin Rudd, *Transcript of Prime Minister Kevin Rudd, question and answer session.* Lowy Institute for International Policy, Sydney, Australia, 27 August 2013: http://www.kevinrudd.org.au/latest4_270813.

20 Squeezing the Pentagon: the wrong way to cut America's military budget. *The Economist,* 6 July 2013: http://www.economist.com/news/united-states/21580460-wrong-way-cut-americas-military-budget-squeezing-pentagon.
21 Chuck Hagel, *Statement on Strategic Choices and Management Review.* US Department of Defense, 31 July 2013: http://www.defense.gov/speeches/speech.aspx?speechid=1798

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previously when Labor was associated with the 'defence of Australia' doctrine while the Coalition placed greater emphasis on expeditionary operations. Over the past six years of Labor government, only Kevin Rudd showed an active interest in shaping military strategy. Despite the release of a National Security Strategy and a Defence White Paper in 2013, neither former defence minister Stephen Smith nor prime minister Julia Gillard offered much by way of their views on the strategic purpose of the nation's military. In the last parliament, the few occasions when defence was discussed were dominated by relatively trivial issues such as travel leave for soldiers, ministerial movements on the air force VIP fleet, the carbon footprint of the ADF, and the future of part-time military bands.[22] Even debate on military involvement in Afghanistan was overly focused on platitudes and tactics. There has been a bipartisan lack of political focus on the priority decisions needed to build and maintain an effective military force.

There also seems a reluctance to face up to the gathering weight of risks and expectations in the changing strategic picture, and the challenges of crafting a defence and strategic policy to match. Policy statements, public speeches, and published official assessments are optimistic or euphemistic about the region's future, exuding confidence that the United States and China will manage their differences and that there will be warning time for major strategic change. Continued neglect of military strategy at a time of great change, uncertainty, and complexity in the regional and global geopolitical landscape amounts to a needless accumulation of risk. This is not only about hedging against the strategic risk of a breakdown in the peace. It is also about hedging against the political risk of being caught without options when national interests are at stake.

Historically most Australian political leaders have only engaged on strategic military issues in reaction to a crisis or strategic shock. This neglect has often proved risky. The 1999 East Timor experience of being caught with a defence force unprepared to deploy still resonates deeply. Then, prime minister John Howard and defence chiefs were able to use tactical fixes to 'adapt rapidly and get it "right on the night"' in what the current Chief of Army has called 'a triumph of improvisation rather than professional mastery.'[23] But in the years since, warfare has become more technologically complex, and more reliant on interoperable systems and weapons that take years to develop and master. During the Howard era Australia had a high degree of flexibility about when and what niche military contributions it could contribute to allied campaigns. Strategy was set in Washington, not Canberra. In an Asian century and with the US rebalance to Asia, Australia's future possible military deployments alongside the United States are more likely to be in its region and therefore will be more strategic. Australia's military deployments with the United States will also be less discretionary than those of the last decade, in which Australia had great flexibility in choosing what forces to contribute and when. Under such circumstances, capability shortfalls within a hollowed defence force will be more apparent. Tactical fixes will no longer suffice.

Prime Minister Tony Abbott's views on defence policy are almost entirely unknown to the public, and appear largely unformed at this stage. Defence Minister David Johnston possesses deep knowledge of technical and personnel issues, but is only beginning to articulate views on strategic-level military issues, such as what the ADF and major assets like its new amphibious assault ships should be used for and why.[24]

So what then should the new government focus on when it comes to defence policy? Our recommendations are threefold. First, before deciding on how much to spend on defence the new government should decide what it wants the ADF to be able to do in the decades ahead. This will help determine whether a substantial change of direction of force structure from *Force 2030* is in order. Second, the new government should commit the additional funds necessary to chart a credible path towards *Force 2030*, or alternatively make the tough decisions to reduce the ADF's force structure and capabilities to match what it is willing to spend. Third, some deep thinking on the future direction of the US alliance is required, including to shape America's rebalance to Asia in ways that suit Australia's interests.

What should Australia's military be able to do?

Senior military leaders and defence civilians have privately made clear that more detailed military strategic guidance is needed from politicians. In the end, only political leaders can choose what military options will be

22 Philip Ruddock, *Support for army reserve bands*. Motion in the Australian Parliament, 18 June 2012: http://www.philipruddock. com/BerowraElectorate/Speeches/tabid/78/ articleType/ArticleView/articleId/1647/ Motion-Support-for-Army-Reserve-Bands-18-Jun-12.aspx.

23 Lieutenant General David Morrison, *Seapower Conference 2012*. Address to the Royal Australian Navy Seapower Conference, Sydney, Australia, 31 January 2012: http://www.army.gov.au/Our-work/ Speeches-and-transcripts/Seapower-Conference-2012.

24 David Wroe, War footing: Minister eyes next hotspot. *Sydney Morning Herald,* 21 September 2013: http://www.smh.com.au/ national/war-footing-minister-eyes-next-hotspot-20130920-2u5dm.html.

required to pursue national policy goals. Rather than just discuss what major weapons systems the ADF should acquire, a more detailed discussion is needed at the political level of what contingencies those capabilities may actually be needed for.

There are some reasons why politicians may be reticent to discuss military contingencies: to protect diplomatic relations; to preserve secrecy for national security; or because military professionals are better qualified than they are to formulate strategy. However, none of these stands up to scrutiny. There are ways of publicly formulating policy on the hypothetical use of force without causing undue diplomatic harm. Though secrecy about capabilities is understandable, secrecy about strategy must have limits in a democracy. And military professionals can only make effective contingency plans to the extent they have a clear sense of what the nation and its leaders might want them to achieve.

The Abbott government has promised a new defence white paper. This would provide an opportunity to take stock of Australia's national interests and the changing strategic environment, and on that basis formulate a new military strategic vision for what the ADF should be able to do. This ought to include a cool-headed and unprejudiced appraisal of the 2009 and 2013 white papers and the classified work that supported their judgments.

A truly first-principles review is needed rather than a process that modestly adjusts inherited capability choices and endorses pre-decided constraints. The basic structure of the ADF has remained essentially unchanged since the Menzies era and should be critically assessed alongside the ongoing appropriateness of *Force 2030*. What might now

seem radical and imaginative options for the ADF, such as a step-change investment in unmanned systems, must be considered. The new white paper should incorporate thorough independent analysis, in a similar fashion to the US Quadrennial Defense Review, and conclusions should be publically justified against other alternatives. At the end of the defence white paper process, the political leadership should be able to clearly articulate what military options it expects the ADF to provide, and in what range of contingencies. Here are some credible scenarios where the government will need to consider its military options.

Like most militaries the ADF needs to be able to respond to a range of contingencies, from major state-on-state conflict at one end of the spectrum, to limited policing or humanitarian missions at the other end. Short of a highly unlikely direct attack on Australian territory, the ADF's most demanding missions are most likely to be those in support of its key ally, the United States. Given our history of fighting alongside one another, the convergence of our interests in upholding a stable and rules-based regional and global order, and the obligations of our alliance treaty, it is difficult to imagine an Australian government refusing to provide military support of some kind in response to an American request under a range of plausible scenarios of confrontation or conflict in our region.

Though the chance of war between the United States and China will continue to be small, it would have an extremely high impact on Australian interests even if Australia were not directly involved. Recent maritime tensions between China and other Asian countries, notably Japan, the Philippines and Vietnam, have the potential to escalate. There would

be particular pressure on the United States to assist its allies, Japan or the Philippines, should this occur. Many conceivable crisis scenarios in Asia involve coercion being brought to bear on a US partner or ally, leading to one of three outcomes: the coercion is not resisted, in which case a troubling precedent is set in the regional order; the United States supports its partner or ally, leading to an armed confrontation or face-off that is managed without war; or there is escalation to war. All such outcomes would have implications for Australian interests, and in the second or third possibilities the United States would almost certainly seek Australian support, such as through the provision of a naval taskforce including submarines and major surface combatants.

Not all the high-intensity conflict scenarios in Asia would directly involve China as an adversary. A crisis in North Korea could generate US expectations of an Australian military contribution, and not only because Australia is party to the UN Command in place since the 1950-53 war. There would also be specific roles for Australian combat troops (particularly Special Forces) to help US and South Korean forces secure North Korea and its nuclear weapons in the event of a regime collapse.

Below the level of major regional conflict, there is a high probability of Australia being called on to lead humanitarian or stabilisation activities. Most such missions would be small. One exception would be the remote possibility of being asked to restore order in Papua New Guinea – something beyond the current capabilities of the ADF. The need for the ADF to undertake humanitarian, disaster relief and evacuation missions further from Australia's region is also expanding as Australian nationals

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and corporate interests increase their presence across the world. Allies, partners and the Australian public will expect the ADF to continue playing a role in the fight against terrorism, even after the deployment to Afghanistan ends. Australia might also be called on to provide forces to distant US-led stabilisation operations, including in the Middle East or Africa.

Restore defence funding or make drastic cuts

The government must set out a credible and detailed long-term defence budget plan that commits the additional funds necessary to fund *Force 2030* or its revised force structure. There are several problems with the government's current defence-spending aspiration of 2 per cent of GDP, beyond the fact that it may be deferred until the end of the decade.

For a start, it may not be enough to restore the funding trajectory for *Force 2030.* It does not account for the impact of the past four years' delay in funding defence acquisitions. Second, just because 2 per cent of GDP has historically been European NATO's aspirational spending target, this does not mean that Australia's alliance 'dues' should be the same. Australia's strategic circumstances are entirely different from those of European NATO countries. Australia lacks the strategic depth provided by proximate allies with advanced militaries. Moreover, the findings of a new defence white paper process or increasing demands for alliance burden-sharing may mean that the cost of a credible ADF would be higher than 2 per cent of GDP.

Even assuming that an increase to 2 per cent of GDP provides sufficient funding to fix defence, finding this money will be challenging for the Abbott government. Defence's share of government outlays has shrunk from 5.8 per cent to 4.9 per cent over

the past five years.[25] Across most portfolios, government spending increases over the past decade have outstripped GDP growth, but in defence the opposite has been true.[26] This trend is set to continue in the next decade – rising health costs alone are forecast to account for an additional 2 per cent of GDP by 2023.[27] Increasing funding for defence will conflict with the Abbott government's stated intention of restoring the federal budget to surplus, and other expensive new schemes such as paid parental leave. The Defence Minister will find it difficult to secure increased funding.

If the government is not really willing to increase defence funding, or cannot begin doing so soon, then it must start contemplating deliberate capability cuts in order to avoid the ADF becoming a hollow and, in the worst sense of the word, incredible force. As the United States has learned through sequestration, capability cuts that seem unthinkable can fast become a reality. It is better to minimise the damage by thinking ahead and identifying worst-case cuts according to a strategic and political logic than to have them occur in an abrupt and arbitrary way when the gap between budget and ambition becomes impossible to paper over.

If funding for defence remains less than 2 per cent of GDP, significant cuts will need to be made to ADF capability. The following examples illustrate the scale of the cuts that would be necessary. The cost

figures and calculations below are necessarily crude and should be taken as indicative of the scale of savings only. We are also not recommending that these cuts should be made, but list them to highlight the strategic and political risks that would accompany reduced funding of Australia's defence capability:

- *Freeze the salaries of civilian and military staff for one year*: This could save more than $2.5 billion over the next decade, but it would undoubtedly be politically sensitive to freeze the salaries of serving military personnel, some of whom may have only recently returned from duty in Afghanistan.[28]

- *Cut back on the 'hardened army':* The Army's planned fleet of new armoured vehicles is estimated to cost in the range of $10-16 billion.[29] A 25 per cent reduction to the future armoured vehicle purchase could save $3 billion over the life of the project, but would mean fewer armoured vehicles for deployed troops, exposing them to greater risk.[30]

- *Reduce fighter aircraft and flying hours:* Australia plans to purchase at least 72 Joint Strike Fighters (JSF) to complement 24 Super Hornets and 12 'Growler' electronic warfare aircraft. Australia could reduce the readiness of existing fighter squadrons and purchase one

25 *Defence economic trends in the Asia-Pacific 2013*. Defence Intelligence Organisation, May 2013, p 57: http://defence.gov.au/dio/documents/DET_13.pdf.
26 John Daley, *Budget pressures on Australian governments*. Grattan Institute, April 2013, p 15: http://grattan.edu.au/static/files/assets/ff6f7fe2/187_budget_pressures_report.pdf. Grattan includes spending on the Australian Federal Police and intelligence agencies as well as defence operational supplementation in the category of defence spending.
27 Ibid. p 71.

28 Author estimates based on a low inflation environment and modelled over the ensuing decade with no subsequent wages catch up. It should be noted that there would be procedural difficulties in implementing this freeze given military remuneration is set by an independent tribunal and defence civilian salaries are linked to other government departments.
29 Department of Defence, *Defence Capability Plan: public version*. Canberra, Commonwealth of Australia, 2012, p 203.
30 Author estimates based on total project cost of $13 billion and nominal savings from 25 per cent reduction in planned vehicle numbers for Land 400.

fewer JSF squadron, bringing the JSF purchase down to just 48 planes. This would be out of step with regional trends (China for example is increasing fighter readiness and numbers), but may save between $3 and $4 billion.[31]

- *Shrink the Defence Materiel Organisation* (DMO): DMO has 7440 staff, three times more than the Department of Foreign Affairs and Trade (DFAT) and larger than both the Australian Federal Police and Customs.[32] Reducing DMO personnel by 13 per cent may save $1 billion over the next decade, with a corresponding impact on the organisation's procurement and sustainment functions. Fundamentally cutting back the role and structure of DMO so that personnel numbers could be halved would save around $4 billion over the same period.[33]

- *Buy fewer submarines:* Australia has committed to modernising and doubling its submarine fleet at a cost that is currently unknown, but has been estimated at $36 billion. The government could decide to build fewer submarines, for example eight, potentially yielding long-term savings

31 Author estimates based on purchasing 24 fewer JSF and immediately reducing flying hours for existing fighter squadrons on a rotating basis.
32 DMO personnel figures from Department of Defence, *Defence Annual Report: 2011-2012.* Canberra, Commonwealth of Australia, 2012, p 285. DFAT personnel figure (2480) from Department of Foreign Affairs and Trade, *Annual Report 2011-12.* Canberra, Commonwealth of Australia, 2012, p205. AFP figure (6543) from Australian Federal Police, *Annual Report 2011-12.* Canberra, Commonwealth of Australia, 2012, p 173. Customs figure (5222) from Australia Customs and Border Protection Service, *Annual Report 2011-12.* Canberra, Commonwealth of Australia, 2012, p 19.
33 Author estimates based on current DMO civilian and military personnel costs.

in the vicinity of $9 billion.[34] This would mean giving up the strategic weight that a larger submarine force would provide, and shouldering less of the alliance burden of submarine and anti-submarine operations. Any of these crude cost saving options would be politically difficult, and could seriously add risk to Australian interests – and even lives – in future security contingencies. There would be material consequences for Australia's ability to carry its alliance burden and thus influence alliance strategy. But these options at least illustrate the scale of the challenge facing a government unable to fund existing defence modernisation plans, let alone recurrent defence spending at 2 per cent of GDP. The government would need to implement all of these policy measures, including the enormous decision to halve DMO personnel numbers, in order to make up only a portion of the long-term shortfall in defence funding, which may be as high as $33 billion in the next decade alone.

If the government were to make these sorts of cost savings in defence, it would need to re-evaluate the mission set of the ADF. For instance, instead of being prepared to lead any stabilisation of South West Pacific states, the ADF might only be able to contribute elements to such tasks. Rather than maintaining maritime surveillance in the Eastern Indian Ocean, South Pacific, and the South China Sea,

34 Author estimate of nominal savings assuming that costs for the final four submarines are below an estimated average $3 billion per-unit cost for 12 boats. The cost of the eight to twelfth boat in the future submarine project cannot at this stage be accurately projected. It is possible it could be as low as 60-80 per cent of the cost of the first hull, but each hull would not necessarily be cheaper than the one before, depending on decisions to incorporate new technology in subsequent building blocks. See Sean Costello and Andrew Davies, *How to buy a submarine: defining and building Australia's future fleet.* Canberra, Australian Strategic Policy Institute, October 2009, p 21.

Australia might have to choose just one of these areas in which to operate. Australia might want to ease off on its defence diplomacy so as to reduce the expectations of what we can do for friends and partners such as Japan. Canberra would need to decline most future requests to join peacekeeping or stabilisation operations beyond the near neighbourhood. Above all, Australia would need to reset the expectations of its ally, the United States.

Time to think hard about the US alliance – and take the initiative

Even if it wants to be ambitious in its defence policy and strategic goals, the new government will need to think deeply about the US alliance. The US alliance remains critically important to Australia's security, given that Australia cannot protect and advance its expansive interests single-handedly. Yet a defence policy that relies single-mindedly on what the alliance can do for Australia is unsustainable. A strengthened alliance and good regional defence relations are complements, not substitutes, for ensuring that Australia possesses strategic weight of its own.

If Australia appears less than serious about its own security, or about shouldering a portion of the security burden in a changing Asia, it will be difficult to maintain credibility in the eyes of the United States, itself struggling to follow through on its declared 'rebalance' to Asia. Conversely, the differences within Washington over the future of its Asia strategy – what it is for, how it will be resourced, what is the right mix of military, economic and diplomatic levers – offers an opportunity for a smart ally to play a disproportionate role in shaping the rebalance.

There is no doubt that the alliance brings great benefits to Australia, including high-level access to strategic

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deliberations, exceptional intelligence sharing, access to advanced military technology and a set of explicit and implicit security guarantees. These have long reduced the incentive to build what would be an enormously costly military deterrent commensurate with the size of our territory or the security challenges of our region.

But transformative strategic change in Asia will reshape the alliance, whether we like it or not. So in tandem with reinvigorating Australia's own defence strategy, and increasing funding, the new government needs to take the initiative to shape the alliance. It is better to ensure the alliance is adaptable and politically robust now, when it is not under strain, than to test its resilience in the thick of some future crisis.[35]

Some changing dynamics in the alliance need to be closely examined and understood by the Abbott government. One is deepening military integration, which the past few Australian governments have pushed a long way without much prior parliamentary or public discussion. Serving Australian officers and civilians have recently been appointed to senior positions within US Pacific Command and US Central Command. A US Marine Air Ground Task Force is establishing a forward presence in Darwin. US combat aircraft may well soon stage from Australia's northern airfields, and a US space-tracking radar is due to be positioned in Western Australia. Other initiatives have

been floated, including enhanced US naval access to Australian ports as well as intelligence, surveillance, and reconnaissance cooperation from Australia's Indian Ocean territories.

It might be tempting for a cash-strapped Australian government to volunteer further strategic real-estate as its main contribution to the alliance. But a greater US forward presence in Australia is predicated, more than any time in the past 50 years, on a credible ADF, able to protect and fund defence facilities on its sovereign territory. It is not clear who would pay for the infrastructure US and Australian forces would need as a result of the rebalance to Asia, such as improved airfields in northern Australia or on the Cocos Islands. In the aftermath of sequestration, it is hard to imagine the US Congress releasing major funds to make up for an ally's unwillingness to provide infrastructure for the enhanced US military presence that same ally wants.

An expanded US military footprint in Australia would also bring its own strategic complexities requiring close political attention. This includes the possibility of US units staging future military action from Australia, as well as managing the sensitivities of Australia's neighbours. On all of these fronts, policy should be driven by political leadership, rather than emerging from habitual discussions between officials or through the momentum of existing military connections and enthusiastic staff planning.

Another dynamic relates to demands on Australia as a force contributor as the United States rebalances its military and diplomatic posture in Asia, and looks to recalibrate military burden-sharing with its allies. Australia has grown used to providing niche military capabilities and broad political support

for US global military campaigns. That does not mean this is the only or the wisest way for Australia to approach its alliance commitments in its own region.

There is much Australia can contribute to the US alliance beyond serving as a location for American military assets and providing moral or political support for US military operations. Australian contributions can and should include leadership on security contingencies in the South Pacific; major responsibility for shared situational awareness in the eastern Indian Ocean and the core Indo-Pacific zone of maritime Southeast Asia; undertaking tailored engagement with countries that the US military is legislatively prohibited from engaging deeply with (including China); and providing military intelligence, planning, and wise strategic counsel in the event of regional crises. But Australia's effectiveness in all of these roles requires credible and properly funded military capabilities of our own, underpinned by clear thinking on our own strategic and diplomatic goals.

Facing up to the challenge

Ultimately, the defence decisions the new government will need to make must connect with a vision of Australia's future national interests. The country's political leaders will need to level with the public about the strategic challenges and choices ahead, from the defence budget, to the alliance, to the strategic realities of the Asian Century. Political leaders will need to engage more deeply and proactively with military strategy to determine what military options Australia needs in the decades ahead.

The context of Australian defence policy has changed. The tactical alliance contributions, guaranteed defence funding increases and reactive big-ticket capability purchases of the

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35 The Lowy Institute's opinion polling indicates that an overwhelming majority of Australians (82 per cent) consider the alliance to be important to Australia's security, and 61 per cent support the basing of US forces in Australia. However, according to the poll only 38 per cent of Australians would want to see their country supporting US-led military action in Asia. Alex Oliver, *The Lowy Institute poll 2013*. Sydney, Lowy Institute for International Policy, June 2013: http://lowyinstitute.org/publications/lowy-institute-poll-2013.

Howard era are no more. Gone, too, are the contradictions of the Rudd-Gillard era, a combination of brief strategic flourishes with prolonged political inattention , and budget cuts and deferrals. The new government has a responsibility to set a new course. If Australia is to have strategic weight in a more challenging region, it must start facing up to risks and make difficult choices on defence policy now. 🖎

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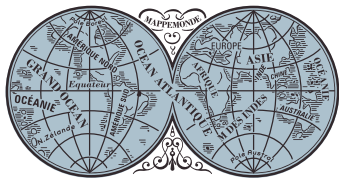
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BY DR NORMAN FRIEDMAN

The intelligence disaster wrought by Edward Snowden carries important lessons about the character of the digital world we now inhabit. Intelligence agencies, and indeed anyone who relies on information security, is far more vulnerable than in the past. At one time a spy was lucky to bring home a film cartridge from a Minox camera, with copies (which might not be terribly good) of a few pages of some secret document. Obtaining those few copies might take as much as 15 or 20 minutes, during which he was vulnerable to detection. A spy with legitimate access to a classified library might manage to obtain information from 10 or 20 documents in a day, assuming he knew what he wanted. Jonathan Pollard apparently obtained a few hundred sensitive documents, which he carried to his masters to be copied. He was limited to what he could carry in a briefcase. In each case, the damage was significant, because even one sensitive document might well contain crucial information.

Snowden's theft was on an altogether vaster scale. Because he was a system administrator, he could override the settings on computers which prevented them from dumping data into thumb drives. He was acquiring data at the rate of millions of bytes per second. That might be thousands of pages per second, depending on how documents were stored. Current thumb drives are rated in the tens of gigabytes of data. A gigabyte is roughly a thousand million bytes, which is on the order of half a million pages. Snowden's system administrator status almost certainly made it possible for him to override any firewalls within the systems he operated. The only real limit on Snowden might have been ignorance of the relative values of the documents he was stealing.

It is, moreover, nearly impossible to enforce restrictions such as 'need to know' in an Internet-style data base such as we currently use. Moreover, any such restrictions go against the need to 'connect the dots' so as to detect and thwart terrorist operations. Who can be sure of exactly what information is relevant? That is particularly the case when the distinction between foreign and home-grown terrorists seems to dissolve. How do you classify those who carried out the Boston Marathon atrocity? What is the appropriate relationship between law enforcement, which seeks to identify and penalize those who have already committed crimes, and defense against terrorist threats? Without knowing a great deal more about how well we have done, we cannot say how worthwhile defense has been.

Enormous effort has been expended to find better ways of protecting sensitive information against those attempting to penetrate our networks. Every time you use a password, you make use of such security mechanisms. Snowden is a key example of a very different problem: a human threat, or perhaps the threat of human engineering (did he reach his ideology on his own, or was he helped?). We have been seeing such examples for years, and often ignoring them. A major technology company found out accidentally that someone had been rummaging its files. It seems likely that the break in its security came when some of its senior executives visited China, leaving their laptops in their hotel rooms. Maybe the convenience of on-the-go connectivity was a bit too convenient. There is also the classic approach: cash. Every so often we read of a massive loss of personal data due to the corruption of a low-level employee. Should we believe that the same thing does not happen to corporate or military data?

We do not know enough about Snowden to say when or why he decided that it was his mission to collect secret information which could later be used against the U.S. government. It does seem that he began working this way as a contractor for the CIA, before moving over to contract work for NSA. The CIA went so far as to warn NSA that he was showing undue curiosity - electronic libraries do register who asks for what and when. As a system administrator, Snowden should not have been using the data on his networks; his job was to ensure that the networks functioned properly. Snowden may have been affected by the various Wikileaks scandals and by the US reaction to them, or he may have made his decisions well before they broke, perhaps in connection with the Wikileaks project or with the 'Anonymous' hacking group. No one knows, apart from Snowden himself.

It does seem obvious that Snowden benefited from a series of devastating human failures. The first was that he was granted a very high clearance in the first place. That may have been tied to the mobilization of homeland-security operations in the wake of 9-11. Suddenly large numbers of computer experts were needed, to create and to maintain systems for sharing and analyzing intelligence data. It was also suddenly necessary to extend the military clearance system into law enforcement. This requirement seems to have collided with a decision made during the late 1990s to largely

or completely privatize the clearance system. By that time massive human losses due to the end of the Cold War had badly damaged the government system which had been developed to handle the mass of contractors involved in classified work. The other problem, in Snowden's case, is that NSA seems to have failed to convince him that what it was doing was for the public good, rather than for some evil purpose.

The pool of potential computer system analysts is not large, and most of them are probably snapped up by private industry at high salaries. NSA and other government entities badly needed whoever was available. How many administrators would happily drop a talented computer analyst because he seemed to be acting oddly? How easy would it have been to obtain a replacement? To wait while the replacement navigated the clearance process?

The public cry to 'connect the dots' so that information already in our hands could be used to prevent atrocities translates to 'use all the data we can have in an effective way,' which in turn requires that data be shared at every level. That means reducing it to digital form and creating data bases which can be exploited. In theory, a terrorist operation on American soil produces an identifiable signature. If that signature can be detected, it may be possible to trace back to those involved and neutralize them.

That is largely the modern form of a classic signals intelligence technique, traffic analysis, which NSA has undoubtedly used for decades. Even if the enemy's codes cannot be broken, careful analysis of who talks to whom (and when) yields enormous dividends. For example, in the interwar period the US Navy had key Japanese codes, and used them to follow the major Japanese fleet exercises. Its signals

analysts wondered what would happen if the Japanese woke up and changed their codes (as they did in 1941). They decided to rely entirely on traffic analysis to follow the 1930 maneuvers. To their surprise, the technique worked perfectly. Among other things, it revealed the unhappy fact that Japanese observations of earlier US maneuvers had revealed US Pacific strategy to them. The Japanese had developed effective countermeasures. One consequence was that the CNO had to tell President Hoover in 1931 that the US Navy could not do much about the Japanese attack on Manchuria that year. Another was a dramatic change in US naval strategy, from the 'through ticket to Manila' to the step by step strategy executed very successfully during World War II.

Put this way, it is unsurprising that NSA has been collecting phone and E-mail records, in terms not of what was said but of who called whom and for how long. Once a potential threat was identified, the agency had the authority to concentrate on the individuals involved. We don't know whether it worked, but we can see it as something more than government greed to ruin our privacy. If we have some idea of how well it works, we can decide whether the loss of privacy is justified. Snowden did not care to reveal anything about how well (or poorly) the program worked. Perhaps it worked too well for his taste.

NSA operations were international

because the Internet (like terrorism) is borderless; it is non-local. You experience that every time you go instantly onto a foreign web-site: for example, there is literally no difference between going on the US version of amazon.com and going on the Japanese one (assuming you know what you want in Japanese). In better times this made the Internet a wonderful way of learning about the rest of the world. In worse times it makes the Internet a terrific form of communication across all boundaries. Thus far the only barriers have been those set up by foreign governments, like the Chinese, who fear free communication. The international character of the Internet makes it very difficult, and perhaps impossible, to split domestic from foreign communication in any meaningful way. Since the same cables may often carry voice traffic, it is not so clear how any communications can be split

Snowden also revealed the shocking (shocking!) reality that NSA has been listening to the communications of foreign leaders, including our allies. After all, such interception (to protect us from surprises) is its great responsibility. NSA is also responsible for protecting

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us from foreign eavesdropping, but Snowden apparently did not consider it worthwhile to reveal what anyone has done to us. It is just a bit rich to read of Chinese outrage at American eavesdropping in the light of extensive Chinese penetration of sensitive US computer systems – which was doubtless revealed partly by NSA's penetration of Chinese communications. Allied leaders' outrage that we were listening is presumably for public consumption: their own intelligence services would be remiss if they were not trying to eavesdrop on us. Perhaps there is a universe in which different countries do not have their own interests, and hence attract intelligence notice, but it is not the one we currently live in.

The damage Snowden has done is the classic damage of a signals intelligence disaster: he has let the opposition know what it needs to know to evade detection. Cries from leading Internet companies to kill NSA's programs are really cries to let their clients know they are safe from surveillance of any kind. To most citizens, such safety is a reasonable expectation of privacy. To a terrorist, safety means safety from detection.

What happens now? First, to the extent that Snowden revealed details of NSA operations, many of those techniques are no longer going to be effective. NSA will develop alternatives, but that will take time. We can expect our enemies to take advantage of that window of opportunity. They have already shown considerable awareness of the danger NSA and similar agencies represent. NSA's exploitation of the Internet will cause hostile foreign governments to work harder to wrest Internet control from the United States, and also to create their own censored Internets; China, for example, is already doing that. The freedom of the Internet, about which Snowden claims to be passionate, will evaporate. ⚓

Norman Friedman's latest book is The Naval Institute Guide to World Naval Weapon Systems

The ship's company of HMAS Melbourne gathered on the flight deck for Christmas lunch in the Middle East Area of Operations.

Reflections on four decades in the profession of Naval Engineering - and Jacky Fisher got it right!

BY REAR ADMIRAL DAVID HOLTHOUSE, AO, RAN (RTD)

Instead of an obituary for RADM David Holthouse, who died earlier this year, the Naval Historical Society reprinted in a recent edition an article he wrote some years ago which is an excellent memoir of his naval career.

The editor of the Naval Historical Review, Walter Burroughs, has very kindly agreed to it being reprinted in Headmark. We acknowledge further the co-operation of the Admiral's son Captain Guy Holthouse RAN, and his sister Victoria Holthouse.

David Holthouse entered the Australian Naval College in 1950, just a few days after his 14th birthday. He had an outstanding career as a Marine Engineer, culminating is his appointment as Chief of Naval Engineering. His management skills were further acknowledged by appointments as Chief of Naval Personnel and Flag Officer Naval Support Command. He was appointed an Officer in the Order of Australia in 1991. He retired from the Navy in 1993, taking on a number of senior business roles before he and his wife Isobel became farmers, settling on a property outside Braidwood. David died in May 2013, with Isobel having predeceased him by two months. In September 2009, David gave a presentation to the Naval Historical Society, in which he reflected upon his four decades of naval engineering. As those who knew him will recall, David was never short of a few words; accordingly his presentation has been edited to fit a magazine format and has been approved by his family.

FROM THE PILBARA TO JERVIS BAY

The title of this presentation might give the impression of something about Jacky Fisher's secret life as an engineer. But no, my plan is simply to reflect on my own more than four decades service in the business which saw an interesting range of propulsion systems. From fire tube boilers and steam reciprocating engines, wet steam and superheated steam turbines with steam pressures ranging from 300 psi to 1200 psi. Then came medium and high speed diesels; gas turbines and of course combinations of most of them: COSAG, CODAG, CODLAG and more.

As a youngster hailing from farming stock in the then very remote Pilbara, life at the naval college was at first strange, but I soon settled into the routine. Like most of my contemporaries, I joined with good eyesight, suitable for any branch. We didn't have to decide which branch until well into our fourth and final year. In my third year, I developed myopia in my right eye. I didn't need glasses then and scarcely need them now but the Navy was inflexible. I could be an Engineer or Supply Officer and I didn't know much about either. I am not even sure that I had firmly decided on the Executive Branch but the sense of exclusion was real, and I was old enough to know what 'non-executive' meant. I said 'no' and my father wrote to the Navy seeking my withdrawal. After careful consideration it was agreed that I would be an Engineer but I must admit to being a reluctant starter.

Not long before this, the flagship *HMAS Australia* visited Westernport and as was customary, my year (Cook) went out by boat to tour the ship. Gathered in the stern sheets was a group of ship's officers returning on board, one of whom was a lieutenant (E) resplendent in what must have been his best No 5 uniform. Shiny new stripes, rich purple velvet between them and best of all, pilot's wings on his left sleeve. Perhaps I could be like that and the die was cast. I did learn to fly, when in command at *HMAS Nirimba*, but only with a private licence. It was on that visit to *Australia* that I asked what seemed to me to be the all-important question about engineering. In 1952, all Chief Stokers had seen service in WW II, and as we descended deeper into the bowels of a boiler room with one such Chief, I asked what it was like down there, when the ship was under fire: 'Safest place

DAVID HOLTHOUSE (Courtesy Guy Holthouse)

A young David Holthouse. (Courtesy Guy Holthouse)

to be son, with all that water out there to protect you.' This Chief Stoker was happy to expand on his philosophical theme to a group of 15 year olds: 'It's all about what you're used to' and went on to tell us about an experience he'd had in the Mediterranean. His ship, one of the Scrap Iron Flotilla, had taken some soldiers on board when she came under air attack. Those on deck hit the deck and he found himself lying beside a big Scots sergeant who was terrified: 'You see, he couldn't shoot back and he couldn't dig a hole. Put us ashore and he'd be in his element; brave as a lion and I'd be jelly'.

OVERSEAS: *DARTMOUTH* AND *MANADON*

Customary in these times, most college graduates went to *Dartmouth* to complete their training and then for experience in Royal Naval ships. The competitive environment must have suited me as I came away with the unusual distinction for an engineer of being awarded the Queen's Sword. After which it was off to sea in the training ship *HMS Triumph,* followed by professional courses at the Royal Navy Engineering College *HMS Thunderer* (RNEC *Manadon*). I was here when purple stripes vanished from RN wardrobes overnight but Commonwealth officers continued to have the designator (E) attached to their rank and purple stripes attached to their sleeves, for another year in the case of Australians. I'd become used to the distinction by then and perversely kept engineers' purple on a working uniform for years to come.

I learnt a lot about main condensers as a Midshipman (E) in *HMS Glory,* in 1954. We were resupplying the British forces in Malaya during the Emergency with people, stores, guns, aircraft, and, on the way back via Malta, Lord Louis Mountbatten's polo ponies stabled in 'A' hangar. The passage was via Suez

and the opportunity was taken to resupply the British garrison in Egypt. This necessitated pulling out of the southbound convoy in the Great Bitter Lake and missing a turn whilst stores were unloaded into lighters. As we manoeuvred to join the next suitable convoy, we hit the sandy bottom and stuck fast.

A high tide, de-ballasting and discharging precious water over the side got us off, and tugs towed us to deeper water. We couldn't get underway, however: the main circulators had sucked up sand and shellfish and choked the main condensers. Turbo generators and fire pumps had similar problems. Anything that relied on sea water for cooling was in trouble. Not that this particular seawater was cool. The main condenser doors had to come off, a big task at any time but in this case really testing. Hot machinery and hot spaces in a hot climate. The work involved shoveling what seemed like the whole of the bottom of the Great Bitter Lake out of the condensers and carting it by bucket up to 3 Deck and over the side, flushing out, jetting condenser

tubes, sealing and replacing the doors. In those days the RN employed Chinese Stokers, perhaps in the same way that we used to take on Chinese laundrymen when operating on the Far East Strategic Reserve. No prize for guessing who got the job: the Chinese Stokers and the midshipmen (E) of course, three of whom were Australians.

ENGINEERING CAREER STRUCTURES

Since the days of sail, the Navy's officer structure has been unproductively skewed in favour of the Deck, Executive or Seaman Branch. A critical outcome, it has been argued, was that the Royal Navy was slow to adopt technological advance and ill-prepared, therefore, for the two great wars. Jacky Fisher's far-sighted plan to effect much needed change, embracing integration and casting out separation, struck the rocks of entrenchment and prejudice. The 'Great Betrayal' of the early 1920s saw the end of the Fisher-Selbourne Scheme, and it was not until the Admiralty Board's adoption in large part of the Mansergh Committee's

HMAS Hobart leads Stuart, Swan and others in the 1986 Review (Courtesy RAN)

Reflections on four decades in the profession of Naval Engineering - and Jacky Fisher got it right!

recommendations, that anything resembling Fisher's new democracy re-emerged, in Admiralty Fleet Order No 1 of 1956 (AFO 1/56).

Subsequent arm wrestling distorted Admiral Mansergh's General List and the Post List disappeared altogether, arguably to the grave disadvantage of non-seamen. Meanwhile the evolving nature of the Fleet and the consequential absence of engineering hierarchies at sea have reintroduced the need for fundamental change in the officer structure. Fisher's principles are still valid, but for Australia's new navy it is time to look elsewhere for how best to give effect to them.

So how do we think AFO 1/56 worked out? No doubt there are those who would argue that promotions in the General List are competitive and that, by and large, these figures represent the competitiveness of candidates. So what happened to the engineers? Did their four year degrees fry their brains or their personalities? Or did career paths to Commander, largely confined to in-branch postings rather than General List postings, 'smoke stack' them for future employment? Or did the engineers themselves write their own epitaphs, by seeking only in-branch postings as junior and middle-ranking officers? Certainly Engineers are not blameless in this. Admiral Mason acknowledged that the Engineering Branch was no less to blame with its tendency to 'class consciousness' and declared self-sufficiency. In his own career, he said, there were some incidents of which he was ashamed. I should stand with him I guess: there have been times when I felt that the best way to survive was to adopt the Merchant Navy model and run my department in as self-contained a way as possible, which may well have made my own captain's life difficult.

MY YEARS ON THE PLATES IN STEAM

Except for a brief posting to a conventionally powered submarine, *HMS Anchorite*, my entire seagoing career, spanning some 14 ships, was spent in steam. Flexible, reliable and nimble schoolrooms, for the navy's very best craftsmen. Think back to the redundancies available to the engineer of a fully 'unitised' destroyer. Imagine what they were in a four unit ship. I served in one, *HMS Eagle*, as a midshipman and vividly recall when some disaffected sailor used the firemain to flood 'Y' boiler room to the level of the main stops whilst at anchor off the south coast of England. She still got underway and steamed home and continuing flying operations en route.

'Make a bastard!' was a wonderful expression I learnt from one Jackie Markham. Jack, a Senior Commissioned Engineer at the time (he retired an Engineer Commander) was my Sea Daddy during my first appointment to *HMAS Melbourne*, under training for my EO's Watchkeeping Certificate. He taught me many things for which I am still grateful, including the essentiality of pipe tracing; but perhaps the most valuable was his absolute conviction that if the bit you wanted wasn't in engineer's spare gear then you simply made one. I did my best to keep Jack's maxim alive in naval engineering circles thereafter but I fear that the demise of steam, as much as the demise of *Nirimba*, sent it off to the antique shop.

I was Chief in *HMAS Queenborough* in 1962 - 1963, Captain 'Chick' Murray in command and LCDR Frank Woods as First Lieutenant. Chick was 'Fox 1' and his other Heads of Department and some specialists like the Gunnery Officer, were senior LCDRs. In due course Chick took his thick black funnel band to new ship *HMAS*

HMAS Queenborough (Courtesy RAN)

Yarra, handing over to Frank Woods, and the Lieutenant Commanders were progressively replaced with Lieutenants. Under both regimes she was a wonderfully happy ship. Not all beer and skittles though.

At about 0400 whilst flashing up from cold after 24 hours or so at Christmas Island, a fire took hold under the after boiler. By the time I had been called, we had a threatening catastrophe and no successful means of dealing with it. Cumbersome Fearnought suits, Foam-making Branch Pipes, discarded fire hoses starting to block the airlock access, boundary cooling flooding seawater over the main deck and frantic efforts to raise steam forward hampered by the radiated heat from the blistering and buckling bulkhead between the two boiler rooms. I can remember lying on the plates in the after boiler room with my Damage Control POM(E) trying to direct the trickle from the latest FBP to come through the airlock at the dull red glow under the boiler. I had decided that we either got it out this time or we would stay down there with it. We might have had to anyway as the air at the top of the boiler room had become intolerably hot and the hand rails too hot to hold. Miraculously the red glow faded out.

With no Ordnance Engineer (OE) on board, the EO found himself responsible for the mechanical side of the main armament, the LO for electrics and of course the GO for

using it. How well I remember the succession of pipes: 'Gunnery Officer, Bridge! – pause – Electrical Officer, Bridge! – pause – Engineer Officer, Bridge!' when we failed to hit the target, or simply failed to fire. Of course on the one occasion when we shot down the drogue, *HMS Belfast* and the rest of the line having failed to do so, all we got was 'Well done Guns!' but we were all very pleased. In Singapore one time, the Chief OA and I agreed it was time to overhaul the recuperators on the twin 4 inch mount and we had the left gun out by the end of the day. The gun barrels were used to suspend the movie screen for evening viewing by the Dutywatch, men under punishment and those who couldn't raise sufficient breeze for another run ashore. The screen was too low it seemed, and some enterprising sailor decided to elevate the mounting. Gravity took charge, and at colours next morning the captain was less than impressed to find one and a half guns pointing pretty much vertically skywards. That day there was only one pipe: 'Engineer Officer, Captain's Cabin!'

I had three postings to *Melbourne*, the last one as Senior Engineer, under Commander Tom Fisher. I'd at first been disappointed about going back to the flagship when my contemporaries were having a nice time in destroyers, but eventually an important lesson emerged. Big ships have hierarchies of engineers and legions of very senior and experienced sailors whose knowledge rubs off. The ship was broken up into departments, with a junior officer in charge of each, and they move around. Officers keep watch. This was a wonderful environment in which to become competent and the opportunities that such ships provided for satisfying progression in the seagoing environment went a long way towards meeting the need that young engineer officers felt, or anyway this young officer felt, to be 'all of a company'.

HMAS Hobart was next, Vietnam and the fog of war. Battle damage and its control and repair provided useful lessons but I came away with three more lasting memories. First, whilst the Americans did not *run* these ships' engineering plants as well as we did, they had certainly *designed* them to be better than anything I'd served in before. The very simple example I like to give is the steam turbine thrust bearing. Renewing the thrust pads in a British design required skill and patience, each pad being blued and scraped and tried individually until at last all of them bore an equal load. In the DDGs the pads were linked in two semi-circular articulated collars, and replacements were simply removed from their packaging and dropped into place, self-adjusting to bear an even load.

Second, the steam generators and switchboards were in the main machinery spaces and our electrical Special Sea Dutymen mustered there. Indeed, there was a group of dedicated machinery space electrical ratings who became, for all practical purposes, part of the engineering department.

Third, in working up for Vietnam we trained for what we had always done: the EO ran the training and was the Damage Control officer but the XO was in overall charge as NBCDO. When we were hit, precisely the time when continuity is king, my damage control reports went to the Ops Room (CIC), to be sliced and diced for the Ship's Company. The Ops Room, however, was busy coping with lost sensors and the uncertain tactical picture, and the Ship's Company remained in the dark. Eventually the Captain asked me to provide summaries directly over the Main Broadcast, which made complete sense. I understand that this lesson was learnt and that now the MEO/Damage Control Officer has overall responsibility, with the XO and SO providing advice on a roving basis.

Three GLORY Midshipmen (Tom Lewis Collection)

In *HMAS Hobart*, during her second deployment to Vietnam, the crosshead on the port main engine Ahead Throttle operating gear seized solid during operations. Down to one engine and no spares for such a large, and you might think robust, bit of kit. We had detailed drawings and, surprisingly a billet of what looked like suitable material (nickel steel) in the Bolt Stave store. Importantly, we had suitable people to work it: Engine Room Artificers, ERAs. This was not kids' stuff, a 2-start left hand buttress thread on a spindle which my mind's eye tells me was about 2 inches in diameter, with the female threaded crosshead traveler to match. In a simple lathe in a destroyer's workshop at sea. Half a day later up it went and I proudly marched my bemused ERA to the bridge to announce that the Port engine was back in business. Sadly though, I'd let him down. In the excitement of finding the steel billet I forgot Engineering 101. We used the same material for both the spindle and the traveler and of course when the crosshead was hot enough they seized. Bronze or even brass would have done the job.

Reflections on four decades in the profession of Naval Engineering - and Jacky Fisher got it right!

NUCLEAR PROPULSION

I was one of three RAN officers (Castles, Holthouse and Rourke) dispatched over a period in the late 1950s and early 1960s to study Nuclear Reactor Engineering in the UK. Both Castles and Rourke studied with the RN for some hands-on design experience at Y-ARD, but Admiral Rickover, USN, got wind of this arrangement between the RN and RAN before my nuclear training began, in 1964, and the RN reluctantly cut us off.

Instead I went to UKAEA at Harwell, Dounreagh, and the Birmingham CAT before heading off for 18 months or so of sheer delight at Y-ARD. Plenty to do but Rickover's long arm had reached the Clyde too, and I was excluded from the nuclear submarine design office and sent instead, to work on the next generation of steam frigate propulsion systems, the never-to-be built Y136.

The unwillingness of successive governments in Australia to encourage and participate in the nuclear energy debate has had a lot to do with blind-siding the general public on this important issue; and as we have seen from the plan for the *Collins* Class submarine replacement, this attitude is not going to change any time soon, or anyway, not soon enough. Much to my chagrin, the influential submarine lobby, made up largely of former RAN submariners, who in my view should know better, has been content to go along with this, for what I can only assume to have been tactical reasons. But Rickover played his part too, by restricting allied access, other than for the RN, to even the most basic information and creating the impression of a black art.

STAFF APPOINTMENTS AND AS DIRECTOR GENERAL FLEET MAINTENANCE

I was fortunate to be posted to the Royal Naval Staff College Greenwich next, and I had a fantastic year at that wonderful place. We mourn the loss of places like 'Tresco' but think how the RN must mourn the loss of the Painted Hall. Here I received the Director's Prize for the best Service Paper on Defence Policy, which I particularly enjoyed. Shortly before departure by sea for London, the Engineering poster, Commander Bert Stapleford. rang to say that there was a vacancy on the Joint Services Staff Course and since I was now a Commander it had been offered to me. There was a catch of course; the JSSC was a 6 month course only and therefore not 'married accompanied'. I turned it down and Bert was horrified: 'This is a real privilege' he said and 'Engineers seldom get an opportunity like this'.

After an interesting stint as DFM at Navy Office including a short secondment to Prime Minister and Cabinet and as equerry to the visiting King of Nepal, I found myself practicing what I preached. I had expected to go back to *Melbourne* as Chief but she went to someone else and for the first time I initiated a call to the Poster. 'You don't have to go back to sea' said Bert. I'd been promoted in *Hobart* so it counted as my Commander's job: 'Well there's *Supply* but you wouldn't want that would you?' *Supply* was a very satisfying experience and in taking charge on the RAS deck I got closer than I had ever been to a General List job at sea. She had many tricks and treasures which had fallen into disuse and it was enormous fun, for all of my team I hope, to restore them to operation. She had a riveted hull and, after converting her cargo capacity from FFO to Dieso, time spent in harbour with a full cargo was nightmarish. The only way to sleep easy was to transfer fuel around until all tank levels were lower than the sea outside.

Supporting the RNZN off Mururoa was not the highlight of my life at sea but keeping the engine turning for a month straight was satisfying, though not much compensation for missing out on RIMPAC and a visit to Japan. And to be fair, we'd had a fascinating deployment with *HMAS Perth*, to the Seychelles, Mombasa and Mauritius the year before. Then there was the Boxing Day departure for *Darwin* to help out with the aftermath of Cyclone Tracy, including sitting on the Board of Inquiry into the Patrol Boat losses. The SAILSTRUC model had been approved by now and I had both MTP and MTH sailors in the Department. But where were the MTLs? I don't remember exactly when High Power was eventually transferred to the MEO but it was not in my time at sea.

Leaving the ship was a wrench but the two best engineering jobs at Fleet Headquarters, FMEO and CSO(T), helped me get over it. From a professional naval engineering view point, the near continuum from CMDR (E) at sea through FMEO, CSO(T), *Nirimba* (RANATE) and DNOP to DGFM was magical. Managing people, their conditions of service and their careers is a very satisfying thing to do. I dragged my poor family out to Quakers Hill, forcing them to commute by train back to Sydney for school and work, but for me at least it was a very satisfying experience. SAILSTRUC Phase 2 training started whilst I was there and seemed to be well accepted. Three or four females were in the intake and in those early days of integration we over-killed on segregation and security. We fitted out a very comfortable annex for them in the hospital, well away from the 800 or so young men and boys on the base with whom they trained by day. So why were they so unhappy?

I was DGFM in 1984 when a Naval Reserve Cadet died on board *HMAS Tobruk,* and it was my task to establish what went wrong. It was a sad business but very satisfying to untangle the chain of causation. I don't want to get into the detail here but there were a couple of important lessons to be learnt. Seeking to mitigate effect, rather than to establish cause, is a potentially dangerous course to pursue and, losing sight of underlying design principles can end in disaster. Being a naval engineer is not solely about 'how?' The Navy has well trained operators and technicians who should know all about 'how'. It is 'why?' that justifies the continued employment of the professional engineer. Having said that though, it has always been my contention that professional engineers should apply themselves to 'how' sufficiently well, at least, to be credible to the operators and technicians whom they lead. Part of it is taking the can for other people's honest mistakes.

After DGFM came a posting to North America as Naval Attaché in Washington and Naval Adviser in Ottawa, providing first hand exposure to how the USN and RCN employed engineers. The Americans didn't know what to make of me. Ever courteous, they afforded me flags and car pennants when I visited USN establishments. Sometimes it was the Line Officer's white star on a blue background and at other times it was the Specialist Officer's blue star on a white background. The RCN was still much the same as us, despite Canada's largely unsuccessful early experiment with a unified Defence Force.

NEW INITIATIVES IN TECHNICAL SAILOR TRAINING

Some healthy initiatives were undertaken in the training of technical sailors. In 1969 I co-authored the review of naval technical training which led to the introduction of SAILSTRUC, the sailor structure which replaced RATSTRUC. One recommendation was that technical sailors' right arm category titles include the word 'Technician' as in, for example, Petty Officer Marine Propulsion Technician (POMTP). 'Technician' is a noun and it accurately describes the role and capabilities of the sailors concerned. MTP was accepted by the Board but on the advice of the Second Naval Member of the day, 'Technician' was far too grand and 'Technical', an adjective, was substituted. 'What is a Marine Technical?' one asked without response.

The study that led to SAILSTRUC provided the opportunity to right some of the wrongs that pervaded the engineering sailors' career paths and, at the same time to do something about shifting high power electrics to the MEO. Artificers were not seen as real POs and Chiefs by the rest of the ship's company, sometimes justifiably. Stokers became skilled plant operators

and useful mechanics, but received no recognition for it when they returned to 'Civvy Street'. Within the marine engineering community too, they were second class citizens. *Nirimba* graduates had to learn operating skills before they could be employed usefully as Artificers and they often became disillusioned by this. Too much training too soon could be a negative in retention terms. Rank and Skill pyramids matched each other, close enough; and finally, the 'Mechanician' provided a good model. These are still valid principles but things have gone off the rails a bit since SAILSTRUC was introduced, perhaps mainly because of the contracting out of training and the complexities of civilian recognition.

RISE TO THE TOP - CHIEF OF NAVAL ENGINEERING AND OTHER APPOINTMENTS

When I took over as CNE an important task was merging the Technical Services Division with the Supply Division and assuming the role of Assistant Chief of Naval Staff (Logistics). This was a sensible move, involving the transfer of most in-service support functions to the Naval Support Commander in Sydney whilst retaining a credible Design and Production capability in Canberra, along with the Policy role. My final posting was to be as Flag Officer Naval Support Command and the new arrangement looked as sensible from that end as it had from Canberra.

An opportunity arose in 1990, whilst I was Assistant Chief of Personnel (Navy) – ACPERS(N) to strike a blow for the General List. The Chief of Naval Staff agreed to examine officers' career paths with a view to broadening the employment of non-seamen. The study was called ROCS, RAN Officers Career Structure. I am unsure what became of ROCS but the part that should have interested me, didn't. It proposed a form of dual career streaming wherein

officers could qualify in more than one specialisation, say PWO and Marine Engineering. So much time under formal training; it was never going to work and I am cynical enough to think it was never intended to.

The full integration of women into the RAN, as opposed to the WRANS, kept coming my way: at *Nirimba*, as DNOP which was my next posting, and later as ACPERS(N). It was something the Navy really wanted to do and do well but it became political and Navy was pressed to move faster than we would have wished, particularly in getting women to sea and into command positions. There were some stumbles but by and large I think it went well and today we think nothing about it with female marine engineers now reaching senior ranks.

I had hardly settled into the Assistant Chief of Logistics (Navy) – ACLOG(N) chair when further change loomed, this time to merge Logistics and Materiel into a single Division embracing in-service, logistics policy, design, production services and acquisition. I had a real concern for the continuing support of what became known as the Fleet-in-Being, particularly as the spotlight was being turned more and more on the acquisition process.

Who was to be Navy's Design Approval Authority once the Design Authority function had been contracted out, and ACLOG(N) had gone? Surely not the same authority that was charged with acquiring the new kit? And who were to be heads of corps for the Engineers and Supply officers? How would the Engineers react to a career path truncated at the one-star level?

ONWARDS AND UPWARDS

What I have been advocating is an evolution in the training, employment and progression of the Navy's officer corps, not a revolution. If we do it, Drake's 'All of a company' will merge and have real meaning in the technology based service which we all wish to see sharpen its sword for the defence of our nation. And I am not downhearted. A New Generation Navy has already tackled some of the inequities in the present structure and I am aware that a strategic review of naval engineering is underway. It has been a wonderful four decades – onwards and upwards!

OBITUARY – Eternal Patrol –
Commodore Bryan Cleary, RAN (Rtd)

BY CAPTAIN CHRIS CHURCHER CSM, RAN

Regrettably I advise of the passing of Commodore Bryan Cleary, RAN (Rtd), who died of a heart attack on Sat 7 Dec 2013.

Commodore Cleary joined the Navy as a recruit in 1942 through *HMAS Cerberus*, but was quickly identified as an officer candidate and by Nov 1942 was a Midshipman in the RANVR.

After doing specialist training at *HMAS Rushcutter* (beginning his long association with *Rushcutter*), he was posted to *HMAS K9* (a former Dutch submarine, tendered to *Rushcutter*) as an acting Sub Lieutenant in Aug 1943. His association with submarines continued for the rest of the war serving with the Royal Navy's 3rd, 7th and 8th Submarine Flotillas. Hhe also served in *HMS Elfin* (a TRV) and *HMS Maidstone* a Submarine Depot ship.

Bryan transferred to the RAN in mid-1945. Post-war he was promoted to Lieutenant in Jun 1946 and briefly commanded *HMAS Air View* before posting to *HMAS Manoora* the same year. He subsequently served in HMA Ships *Rushcutter* (again), *Quickmatch* and *Tobruk*, before posting to the UK in 1951 to undergo specialist training as a TAS officer. Once qualified he served on exchange in *HMS Porchester Castle* during 1953.

On returning to Australia in Jun 1954 he posted to the Naval Ordnance Branch in Navy Office. In Feb 1956 he posted to *HMAS Tobruk* as the TAS remaining there until posting to *HMAS Melbourne* for the Admiral's Staff as the Fleet TAS. In Jan 1958 he was sent to the Training and Staff Requirements Division of Navy Office for 12 months before attending JSSC in the UK during 1959. Promoted to Commander while on Course he returned to Australia to assume command of *HMAS Quickmatch* at the end of 1959. In Oct 1961 he posted to *HMS Terror* (Singapore) and on return to Australia was made the Deputy Director of Intelligence in Navy Office in May 1964.

After two years in Navy Office Bryan joined *HMAS Watson* as OIC TAS School in Apr 1966, before briefly serving in *HMAS Rushcutter* (yet again) in mid-1968. Temporarily promoted to Captain he posted to the Top End in Nov 1968 and took over as NOICNA (later NOCNA); he was confirmed in rank in Jun 1969. In May 1970 he returned south and became the Director Nav and Naval Dockyard Police Branch. This job lasted until Sep 1972 when he assumed command of *HMAS Penguin* and 18 months later moved on to assume command of *HMAS Nirimba* in March 1974. Returning to sea he posted in command of *HMAS Supply* in Dec 1975.

Promoted to Commodore in Mar 1977 he was made Chief of Staff to FOCEAA from where he retired, subsequently to become a barrister in Sydney.

Commodore Cleary's association with the Navy, *Rushcutter* and K9 continued after he left the permanent Navy. As part of the Naval Association he was involved with the RANEL (later RANRL) Association links to *Rushcutter* and was active in ensuring the name of *HMAS Rushcutter* is not forgotten, being closely involved with the plaques that were unveiled at the site in Mar 2009. Similarly he kept an interest in the *K9*, which after being transferred back to the RNLN, near the end of WWII, ran ashore after breaking its tow line off the NSW coast and grounded at Fiona Beach (Seal Rocks). ⚓

The Australian Navy Fleet Review and Future Intentions

BY GEOFFREY TILL

The Australian Fleet Review held in October 2013 was certainly a spectacular example of the type. It commemorated the arrival, exactly one hundred years earlier, of the so-called British-built (but in large measure Australian paid-for) 'Fleet unit' which more or less started the Royal Australian Navy. It involved 19 Australian ships and another 18 from other countries. There was an inspecting sail-past for the Governor-General (plus Prince Harry); fireworks, several days of ship-visits, much conviviality, a dramatic *son et lumiere* show in Sydney harbour, a grand march-past of the participating naval contingents, a big naval arms fair and several international conferences. Over one and a half million people are said to have participated in the event or watched it first hand. There was huge excitement – and of course some opposition. On the 7th October, the *Sydney Morning Herald* ran its letter page under the heading 'Navy spectacle glorifies war and wastes our money' although, to be fair, most of its letters did not support that view.

Fleet reviews have a long history. Once, these were occasional, formal occasions in which the Sovereign inspected the fleet in order to assess its current capability for future operations. As ways of confirming fleet readiness, they were a form of quality control. The last time there was such a purely functional review was arguably in May 1944, a secret one, held just before the Allies invaded Normandy. But fleet reviews soon took on other characteristics and justifications too. Whether put on to commemorate a significant event or just for the sake of it, they became a means of showing the public what the Government was spending their taxes on, and of eliciting their support for further such efforts. As one commentator described the Sydney event they were a means of binding the navy and the community together. They were, and are, also designed to convey strategic messages to the outside world, most often as a display of military might (and technological prowess) intended to impress and to encourage respect from other powers.

Starting perhaps in the Indo-Pacific with the Indian Navy's 'Bridges of Friendship' fleet review off Mumbai in 2001, such naval gatherings have also sought to illustrate the benign aspects of naval power by providing a practical display of <u>international</u> togetherness. 'Look,' they seem to say, 'at how cooperative we are, and how much we contribute together to humanitarian operations, to keeping shipping safe and to preserving your peace and

HMAS Sydney leads HMA Ships Darwin, Perth, Parramatta, Bundaberg, Gascoyne, Diamantina and Huon into Sydney Harbour for the International Fleet Review 2013.
(By LSIS James Whittle, Navy Imagery Unit - East)

The Australian Navy Fleet Review and Future Intentions

prosperity'. A few weeks later indeed some of the navies (and indeed some of the ships) involved in the Review were proving the point in humanitarian activities in the typhoon-hit Philippines.

Whatever their motivation and impact, Fleet Reviews as very public and discrete events are important and attract a lot of interest both for what they tell us about the international environment and about the country that hosts and organizes them. Aficionados of such issues can spot who's in and who's out, can compare technologies and capabilities between the participating navies, can speculate about the priorities of the organizer and deduce the domestic and international reaction.

What the Review Told Us

So what did it tell us about the international context? Some clues emerged from who was there and who wasn't. People noticed that the Russian contingent pulled out at the last minute, perhaps because of their current focus on Syria-related deployments; they noted that the Chinese ship's company were not allowed ashore; they sympathized with the Canadians whose two ships collided with each other on the way and had to withdraw. They got the significance of the presence of the Spanish navy's replenishment oiler *Cantabria* currently part of the Australian fleet (Spain has a central part in Australia's fleet construction program). They will have noted the perhaps surprising presence of the Nigerian frigate *NNS Thunder* seeing it as perhaps an indication of a navy on an upwards trajectory in response to a deteriorating security situation in the Gulf of Guinea. Naval technologists and capability 'spotters' (and let's be clear there were a lot of professionals doing this in the various participating ships' companies!) looked at and compared platforms and systems in the assembled fleet and reviewed the

stands in the huge naval arms fair. Many of them were especially interested in *HMS Daring,* a modernistic cruiser masquerading as a destroyer, (now in Singapore) clearly a different generation to everything else in the review, and according to Britain's current First Sea Lord symbolizing its 'naval renaissance'.

Shedding light on Australian Intentions

But of course, the main issue is what it will tell us about Australia. No-one could have missed the pride of the Australian navy in its past and its determination and confidence in its future. It has a very ambitious building program that includes two large amphibious assault ships, 'the most capable ships ever operated by the navy', advanced air warfare destroyers, a frigate and patrol boat replacement program and of course the much-discussed 12 strong submarine project. Very significantly, on top of all this, at one of the connected conferences, Lt General David Morrison, Chief of Army (a position not normally associated with 'dark blue' thinking) went out of his way to endorse Australia's adoption of a thoroughly 'maritime' strategy in the wake of its Iraq and Afghanistan experience. He spoke of the Army's determination to work closely with the Navy's current and projected power projection fleet in order to build up a substantial amphibious element, perhaps illustrating something of a shift away from its traditional 'continental' and counter-insurgency mode of thinking. If all this comes to fruition, it would contribute significantly to an Australian strategic policy of forward engagement in Southeast Asia, the Western Pacific and the Indian Ocean.

But it is a big 'if'. Some wonder whether the money needed to support such aspirations will actually be forthcoming, pointing out that while the new Abbott government has promised an uplift in Australian

defence spending it has remained vague about by how much and when. Others wonder at the capacity of the country's defence industrial base to deliver the capabilities needed, or of its military system to grow the necessary skill sets – despite all the external help the country is getting. Still others wonder about the impact of future governmental changes, shifts in key personnel and, most obviously of unpredictable international events. Only time will tell, but for now, to judge by this review at least, Australia's naval aspirations and current intentions are clear!

Australia's two recent Defence White Papers have signalled a strategic shift towards a forwards oriented defence posture within Asia, and a further move away from its previous focus on a 'near abroad' comprising the waters to its immediate north and to the troubled island states of the South Pacific. How much this forward policy turns into a strategic reality will depend in large measure on how much and how soon the country's current naval program is achieved. ⌁

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The Second World War and the Impact of Modern Amphibious Warfare

BY MIKE FOGARTY

The successful application of amphibious warfare was a key determinant in the Allied victory of World War II. Japan had an early edge in doctrine, strategy and tactics but the Allies reclaimed the necessary initiatives from late 1942 and sustained the momentum to defeat Japan in 1945.

Assault from the sea proved that naval forces, augmented by air power and land armies, could overcome island defences. One modern doctrinal view on an amphibious operation defines it as such: "A military operation launched from the sea by a naval and landing force embarked in ships or craft, with the principal purpose of projecting the landing force ashore tactically into an environment ranging from permissive to hostile." [1]

Several differing approaches were adopted. The Japanese preferred night actions. Both sides accepted that they could not always risk their carriers to protect a landing force. Both opponents were adaptive in acknowledging vulnerabilities. Feints in attack fronts also distracted their enemy. The absence (or delay) in applying air strikes, or ship to ship bombardment, could stall the momentum. At Borneo in mid-1945, Mallett evidenced that "the Australians were relying on the Japanese adhering to their doctrine of not opposing landings on the beach." [2] Gatchel contradicts that optimistic assumption. "Japanese army doctrine still directed commanders to annihilate an amphibious attacker at the beach." [3] Commanders preferred weak salients

yet they had to confront defended positions to seize their objectives.

The first US amphibious landing in WWII was made at Guadalcanal in mid-1942. In 1960, Admiral Turner RK Turner reiterated a key doctrine. "As soon as the action ashore changes from amphibious warfare, the Army relieves the Marines." [4] However, the Marines continued to fight major battles inland, advanced far from a secured beachhead. The Japanese allotted her Army for its amphibious role yet also complemented the force with specialist naval units. The Americans relied on an organic amphibious force which also accommodated the Army as their resources became available. Joint (combined) warfare thus emerged.

Tarawa in 1943 educated both protagonists. Those lessons included: naval gunfire support, air bombardment, logistics, intelligence, communications, harmonious inter-service relationships, adequate shipping and local knowledge. [5] Submarine

and air reconnaissance, coupled with underwater diving teams and raiding parties, also shaped the battles. The misplaced assumptions on the tidal conditions at Tarawa were telling. Many Marines died for want of an extra foot of water when their craft could not surmount a reef in a misjudged tide. [6] McKiernan noted that their LCVP craft drew four feet of water. An expected neap tide of five feet did not eventuate. At the coral fringe, many landing boats were stranded as only four feet of water covered the reefs. From that planning error, the technology adapted to the threat of littoral obstacles. [7] Many islands were veritable anvils as they crushed opposing sides, when the ability to manoeuvre was equally constrained. Tim Bean criticises the campaign on Okinawa (which) "was conducted in an unimaginative attrition

Amphibious assault vehicles transporting U.S. Marines and soldiers from the Malaysian Army 9th Royal Malay Regiment pass the amphibious dock landing ship USS Harpers Ferry (USN photo)

1 Ministry of Defence, *British Maritime Doctrine, BR 1806* (3rd edition), HMSO, London, 2008, p. 238. This definition is synonymous with present USMC doctrine.
2 Ross Mallett, p. 127. This article notes the procurement and acquisition of craft for Australia.
3 Theodore L. Gatchel, *At the Water's Edge: Defending against the Modern Amphibious Assault*, Naval Institute Press, Annapolis,

4 George Carroll Dyer, *The Amphibians Came to Conquer, The Story of Admiral Richmond Kelly Turner, USN*, Department of the Navy, USGPO, Washington, 1971, volume II, p. 225.
5 Dyer above, passim. In this two volume edition, the author reiterates these inter-related themes. While costly, seizing the

Gilberts had positive benefits. See p. 729. Tarawa was another stepping stone
6 Patrick L. McKiernan, *Tarawa: The Tide that Failed*, in Bartlett, *Assault from the Sea*, p. 210-218. McKiernan surmised that hydrographic intelligence was sufficiently accurate. The high US casualty figures indicated the contrary. See p. 216.
7 Bernard Ireland, *The Illustrated Guide to Amphibious Warfare Vessels*, Hermes House, Leicestershire, 2011. The author describes the craft involved, including: LCM (Landing Craft, Mechanized), LCVP (Landing Craft, Vehicle, Personnel) and LVT (Landing Vehicle, Tracked).

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mode which played into the hands of the defenders." [8] The Japanese were fatalistic. In their desperation, they gave the Allies few options. The Americans prevailed amid their own sanguinity.

Drea stressed that (the) "allied ability to read Japanese army radio messages definitely shortened the ground war in the Pacific."[9] The author observed that the supreme commander MacArthur often chose to ignore or downplay key intelligence intercepts. Drea has conflated ULTRA. He did not cite the USN success in breaking Japan's JN 25 naval code, Purple.

The roles and relative operational advantages of naval and land forces and of naval and land-based air power invite perspective. Ashore, armies are conditioned by topography. The sea is its own highway. Dyer qualified air power. "Naval air could not be substituted for land-based air because, as Fleet Admiral Nimitz later said (in the fall of 1943) the Navy lacked the carrier strength to provide the necessary air power." [10] The Allies needed air bases to shorten the concentric operational arcs. The amphibious fleets also required air cover to both protect the invading force and undertake air strikes. All aircraft wanted alternative and emergency landing strips. [11]

Amphibious forces enabled a multiplier effect with a potential to either attack or bypass islands and coasts alike. Those 'storm landings' were mostly contested by an equally determined enemy. Amphibian forces segued to form a subset of sea, land and air power. This integrated combat

armoury created and served specialist functions. The USMC, as shock sea soldiers, discharged discrete roles.

Von Lehmann noted that "among the most important preconditions of large amphibious operations were air and sea superiority."[12] Their inverse proportionality invited defeat. Frontal assaults on defended beaches demand the maximum exercise of force.

Louis Morton has summarised the strategic and historical significance of amphibious warfare. "What distinguished the Pacific from every other theatre of operations in World War Two was amphibious warfare. The Pacific was the one theatre where assault from the sea was both customary and normal." [13]

Forty years after Gallipoli, WWII showed that, when adequately resourced, seaborne landings could subdue littoral redoubts. Foster found inspiration from Gallipoli in later doctrine.

"Yet Gallipoli saw much of interest in the development of amphibious warfare techniques, which were to come to fruition only in the Second World War. Specialised landing craft, dedicated bombardment ships, air spotting for naval gunfire, artificial harbours – all these and many other aspects of amphibious warfare now taken for granted were first experimented with at Gallipoli." [14]

Taafe noted: "the Japanese could not begin to match an American strategic mobility that neutralised the effect of their possession of interior lines." [15] By leap-frogging remote Japanese bases, the allies controlled the battle space. Tokyo's communications and support lines were cut and many Japanese

were taken out of the fight for lack of provisioning. This was manoeuvre warfare *sine qua non,* often done with stealth and surprise, with increasing dominance. Joseph Alexander cited the British military historian, JFC Fuller, who acclaimed the development of American amphibious power projection as "the most far-reaching tactical innovation of the war." [16]

Japan had over-extended its ambitions. By 1945, her ability to tactically prosecute all phases of warfare was being countered by the allies. She was unable to thwart a plethora of amphibious invasions against her possessions or to the fringes of her homeland. Japan succumbed to an enemy which re-mastered amphibious warfare. ✍

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8   Bean, in Lovering, p. 408.
9   Edward J. Drea, *MacArthur's ULTRA codebreaking and the war against Japan, 1942-1945,* University Press of Kansas, Lawrence, 1992, p. 232.
10 Dyer, volume II, p. 728.
11 Tim Bean, "Iwo Jima and Okinawa" (chapter XXXI), in Lovering, p. 396. Bean poses a specious argument. Fighters have a shorter range and bombers needed their own air cover for raids on Japan.

12 Hans G. Von Lehmann, p. 196.
13 Hans G. Von Lehmann, p. 220.
14 Simon Foster, *Hit the Beach!, Amphibious Warfare from the Plains of Abraham to San Carlos Water*, Arms and Armour, London, 1995, p. 205.
15 Stephen R. Taafe, p. 54.

16 Joseph H. Alexander, p. 6.

Moral Autonomy in Australian Legislation and Military Doctrine

BY LCDR RICHARD ADAMS

Abstract

Australian legislation and military doctrine stipulate that soldiers "subjugate their will" to government, and fight in any war the government declares. Neither legislation nor doctrine enables the conscience of soldiers. Together, provisions of legislation and doctrine seem to take soldiers for granted. And, rather than strengthening the military instrument, the convention of legislation and doctrine seems to weaken the democratic foundations upon which the military may be shaped as a force for justice. Denied liberty of their conscience, soldiers are denied the foundational right of democratic citizenship and construed as utensils of the State.

This paper critiques the idea of moral agency in Australian legislation and military doctrine. The paper is concerned with the obligation of the State to safeguard the moral integrity of individual soldiers, so soldiers might serve with a fully formed moral assurance to advance justice in the world.

Beyond its explicit focus on the convention of Australian thought, the paper raises questions of far-reaching relevance. The provisos of Australian legislation and doctrine are an analogue of western thinking. Thus, this discussion challenges many assumptions concerning military duty and effectiveness. Discussion will additionally provoke some reassessment of the expectations democratic societies hold of their soldiers.

Note: "Soldiers" is gender-neutral, referencing those who serve, regardless of rank, in each of the armed services.

This paper addresses the issue of moral autonomy in Australian legislation and military doctrine. The paper illuminates the obligation of soldiers to resign rather than to participate in operations they consider unjust. This obligation is not considered by Australian legislation, or by Australian doctrine. Examining the moral responsibility of soldiers and the obligations set out in legislation and doctrine, this paper will inform enquiry likely to follow from the Kampala Review Conference concerning the Rome Statute and the crime of aggression. Most prominently, the paper contributes to discussion about the expectations democratic society may rightly impose upon citizens who chose to serve in uniform.

This paper asserts that, in legislation and doctrine, allowance ought be made for soldiers to observe the calls of their conscience. Such allowance should enable soldiers to conscientiously refuse service in operations to which they harbour moral objection.

The study recalls the Stoic ideas of virtue, which find profound expression in the philosophy of Epictetus. Noted for his dictum, "bear and forebear," Epictetus articulates a philosophy which resonates with the profession of arms.[1] He argues that:

> There are two vices which are far more severe and more atrocious than all the others, want of endurance and want of self-control, when we do not endure or bear the wrongs which we have to bear, or do not abstain from, or forebear, those matters and pleasures which we ought to forebear.[2]

This position dovetails with Nancy Sherman, inaugural Distinguished Professor of Ethics at the United States Naval Academy, Annapolis. Recalling her tenure at the Naval Academy, Professor Sherman observes that:

> Most military men and women do not think of themselves in Epictetan terms. Yet, they do think of themselves, or at least they have idealized notions of military character, as stoic in the vernacular sense of the term. The traits that go with

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that stoicism are familiar: control, discipline, endurance, a sense of 'can-do' agency, and a stiff upper lip, as the Brits would say.[3]

Similarly, Michael Evans from the Australian Defence College argues that:

> Stoicism may seem redundant; yet to believe this is an illusion…. Stoic philosophy has much to offer today's Western military professionals. Nowhere is this truer than in the Stoic teaching that courage is endurance of the human spirit based on a resilience and steadfastness in which individuality is embedded within a larger community of comradeship that upholds a balance between the principles of public duty and private excellence.[4]

But, the nucleus of Epictetan argument is that "no man is free who is not master of himself".[5] Epictetus thus reveals Stoicism to be far richer than clichéd ideas of "'sucking it up,' (and) being stoic."[6] The real value of Epictetan Stoicism lies in hard-nosed ideas of integrity or independent moral agency. In this way, Epictetus presents a philosophy, which resonates with military ideals whilst challenging doctrinal argument that soldiers are "required to subjugate their will" even to the degree of fighting in a cause to which they have a moral objection.[7]

Epictetus would understand that soldiers might not control the government's decision to go to war. But, at the same time he would assert that soldiers control "*how* they are subordinate".[8] Ultimately, soldiers control their commitment to serve or to resign honourably.

Where doctrine stipulates (and legislation presumes) submission, Epictetus argues for unfaltering self-control. For Epictetus, vice is found only in the failure of individual character, and virtue only in its

flourishing. In address "to those who fail to achieve their purposes," Epictetus holds "…it is a contest for good and happiness itself. What follows? Why here, even if we give in for the time being, no one prevents us from struggling again…."[9]

Epictetus finds resonance in the argument of Mark Osiel, who has advanced virtue ethics as a position upon which the conduct of military members might be critiqued. Noting virtue to be "a property of our character, not our relation to others,"[10] Osiel observes that:

> The duties we owe to those we have detained as terror suspects should best be understood. . . as an inference from the duties we owe our fellow citizens to behave honorably, consistent with our identity as a people constitutively committed to the rule of law. [11]

Osiel's argument accords with concepts resonant in professional militaries around the world. Often tacit, the power and credence of the appeal to high-mindedness is made explicit in United States Army and Marine Corps counterinsurgency doctrine, which argues "lose moral legitimacy, lose the war".[12]

No soldier can act for justice yet commit to action he or she considers evil. And, no just society can expect the soldiers who defend its ideals to turn a blind eye. Volunteering military service, soldiers pledge -- or at least they should pledge -- to act conscientiously to advance just causes by just means. Soldiers therefore face a challenge in Australian legislation and doctrine, which is insufficiently attentive to soldiers' moral concerns, failing in particular to consider the dilemma of soldiers who are commanded to participate in operations they consider unjust.

Though, as Adam Smith observes, the idea of "right" or "justice" is

Magna Carta

equivocal and interpreted in several relevant ways,[13] the concept is foundational to the democratic ideal. *Magna Carta* offers celebrated expression holding, at Chapter 40, that "to no one will we sell, to no one deny or delay right or justice". Thus, in a democratic society, legislation and doctrine should operate to secure the background conditions within which the military can function well, as a just instrument and for justice. This is not to suggest that legislation or doctrine can be perfectly just. There is no chance of agreement on what such instruments would be like. Yet, manifest injustice -- such as the asphyxiation of soldiers' conscience -- can be redressed; and if it cannot be removed, at the very least such clear injustice can be minimised.

Considering ideas of social justice, the present paper is informed by the ideas of John Rawls who advanced the notion of justice as fairness, and whose basal concern was for the equal liberty of conscience: "one of the fixed points in [a] considered judgment of justice".[14] Rawls recognized that a just society will take the moral convictions of citizens seriously, and enable individuals to examine and to act upon these deeply held beliefs. In *Justice as Fairness: A Restatement*, Rawls described the equal liberty of conscience as a primary good

and constitutional essential.[15] He advanced a view of people as morally responsible and equally free to exercise moral judgment. The moral independence of soldiers is suppressed by Australian legislation and doctrine, which advance an argument typical amongst modern western militaries.

Exploring the arguments of Australian legislation and doctrine, which together operate to curtail the rights of soldiers, this paper accepts that just institutions, which advance individual liberty and fairness, are essential to just societies, which in turn are critical to global justice. The paper's importance derives from the fact Geoffrey Robertson observes, that "at the beginning of the twenty-first century, the dominant motive in world affairs is the quest -- almost the thirst -- for justice. [This thirst is] replacing even the objective of regional security as the trigger for international action".[16]

The paper is focused on provisions of the Australian Defence Act, and on argument advanced in military doctrine "pitched at the philosophical and high application level".[17] Doctrine, which is subordinate to legislation, "states the ADF's philosophical military approach to the operating environment".[18] Taken together, ideas set down in legislation and doctrine, are critically important as part of what Walzer called the *war convention*: the "norms, customs, professional codes, legal precepts, religious and philosophical principles and reciprocal arrangements that shape our judgments of military conduct".[19]

Though focused on the "conventions" of Australian thought, this paper identifies and critiques a thematic approach to military service, typical of many western powers, and deserving academic scrutiny.

A Dilemma

Soldiers may, in some situations, be faced with dilemma: should they abide by command or personal moral conviction? Rhetoric suggests soldiers should act with independent conscience and disregard morally abhorrent orders to advance unjust operations. Yet, the convention of Australian legislation and doctrine suggests otherwise.

At odds with military ideals and democratic principles, the Australian convention demands the *subjugation* of soldiers.[20] But even if this word were not used -- and it is used in doctrine -- the effect of the convention would be the same. Obsessively realist, neither legislation nor doctrine is sufficiently attentive to the obligations of *jus in exercitu*, the responsibility of the democracy to ensure "right in the army". Appreciating the claims of soldiers to justice, this idea underpins the contract between the democratic state and the citizens who volunteer in her defence. But realist to the core, the Australian convention construes soldiers as instruments and neglects to secure background conditions which safeguard their individual rights and interests. In this way, legislation and doctrine form the basis for prodigious consequential wrong. Disregarding the inalienable rights of soldiers, the legislative-doctrinal convention undermines the democratic foundations of the military instrument.

The effect is to compromise the military as an instrument of justice. Most evidently, this is because soldiers denied the liberty of their conscience and compelled to prosecute action in a cause to which there is conscientious objection may, in the words of Jonathan Shay, be morally "ruined".[21] To take such advantage of citizens is *malum in se*. On the parallel plane of *jus in bello,* soldiers denied the liberty

of their conscience and conditioned to obey without question, may commit crimes of obedience: acts "performed in response to orders from authority that [are] considered illegal or immoral by the larger community".[22]

Opposed to realism, the present paper looks to the "logic of appropriateness" posited by the constructivist school of international relations. Investigating ideas of security ethics, Mura Sucharov explains that the logic of appropriateness "stresses the role of actors' own identities, and the rules and norms that permeate the given system, in shaping decision outcomes".[23] Tending to correspond with a more ethically responsive and informed military, the "logic of appropriateness" connects to Stoic ideas of moral autonomy and to Rawlsian ideas of individual responsibility and social justice. A compelling counter to realism, the constructivist logic of appropriateness is echoed by Robert Bolt who, in his play *A Man for all Seasons*, has Sir Thomas More say: "when statesmen forsake their own private conscience for the sake of their public duties… they lead their country by a short route to chaos".[24]

Moral Autonomy

For the Stoic, the decisive characteristic of virtue was the absolute resolve and autonomy of the individual will.[25] The Stoics -- like Kant some centuries later[26] -- understood man to be a moral agent and recognised that the "achievement of good character call(ed) for the most arduous efforts".[27]

For the Stoic, only virtue had intrinsic worth,[28] and a virtuous life was directed deliberately toward the perfection of an individual's nature.[29] This position accepted that

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people were obliged to fulfil certain socially derived duties,[30] in which regard, Stoicism recognised the social and political obligations Cynicism rejected.[31] But the Stoic did not argue that the individual needed to subjugate himself or surrender moral choice in the way that Australian doctrine and legislation command.

These ideas are typical of Epictetus, whose philosophy of self-mastery is amplified and complemented by awareness of civic duties and responsibilities. So, Epictetus does not profess a self-obsessed philosophy, but holds that we should acknowledge duties because: "I ought not to be unfeeling like a statue, but should maintain my relations both natural and acquired, as a religious man, as a son, a brother, a father, a citizen."[32]

Recognising public duties, Epictetan stoicism acknowledges the "domain of the appropriate"[33] to be more than a narrow philosophy of endurance without hope. But still, the case-hardened influence of Socrates and Diogenes the Cynic[34] is tangible in powerful emblematic ideas of moral autonomy, integrity or self-control. "In our power" claims Epictetus, "are moral character and all its functions".[35] Famously, he writes that people must be responsible for themselves "even in dreams, or drunkenness (in) melancholy (or) madness".[36] Emphasising ideas of integrity and self-discipline, the thinking resonates with military ideals and the philosophy that:

> The ethical man must above all remain the agent of his own fate. (As a soldier, such a man) must bring to bear his own reasoning powers, and he must shoulder ethical responsibility for what he chooses to do in given circumstances.[37]

These ideas of individual moral autonomy and responsibility are essential as well to democratic society which, Locke argued, rests upon the premise:"Men being…by nature, all free, equal and independent, no one can be put out of this estate, and subjected to the political power of another, without his own consent."[38]

Locke explained how individuals are free and equal by nature. He argued that people have inalienable rights independent of the laws of any particular social order. For Locke, political society entailed a contract by which people devolved some of their independence to the government, so as to assure their enjoyment of liberty and property. But he was mindful that this devolution was conditional, and did not entail the impoverishment of individuals, or the surrender of inalienable individual freedoms.

These ideas are prominent in the work of John Rawls, who explained the obligation of social institutions to impose nothing more than the obligations to which people would assent voluntarily. Illuminating justice as critical to human activity, Rawls argued, "laws and institutions no matter how efficient and well-arranged must be reformed or abolished if they are unjust".[39] He maintained that each person:

> Possesses an inviolability founded on justice that even the welfare of society as a whole cannot override. For this reason justice denies that the loss of freedom for some is made right by a greater good shared by others. [Justice] does not allow that the sacrifices imposed on a few are outweighed by the larger sum of advancement shared by many.[40]

In a just society, Rawls argued that individual moral freedom is paramount.[41] This idea resonates within modern democracy which, in the words of Robin Williams, is more than a system of government and might be understood as "a culturally standardised way of thought and evaluation, a tendency to think of rights [and] a deep aversion to acceptance of obviously coercive restraint".[42]

Jus in Exercitu

These ideas are significant, because the character of western arms should reflect the character and aspiration of western ideals. Serving to protect the democratic liberties of individual conscience, justice, to restate Rawls, should be the first virtue of the military institution. This is regrettably not the case.

Neither Australian legislation nor doctrine is sufficiently attentive to fundamental democratic ideals and dignities, the ideas of *jus in exercitu*, or "right in the army". The legislative and doctrinal convention is unrealistically realist, and blind to the actuality that when people fight under duress they are denied the opportunity to commit or to assume an obligation

Bangladeshi soldiers use a stretcher to unload a shipment of bottled water delivered by Marines of Marine Medium Helicopter Squadron (Courtesy of US Navy)

voluntarily and thus, "their battles are no longer theirs".[43]

Even in the non-ideal world, certain minimal ideas of justice can be acknowledged and advanced. As a minimum, legislation and doctrine should enable soldiers to conscientiously refuse. As it is, soldiers are expected to "subjugate (their) will to that of the Government"[44] and fight in operations against which they may hold deep moral objections. Neither society, nor the military instrument, is well-served by this logic which perpetuates, as Wilfred Owen would have it, "that same old lie"[45] for those who "die like cattle".[46]

Legislation and Doctrine

"Australia's Defence Act of 1903 was the first national legislation to grant total exemption from military service on the grounds of conscientious be1ief".[47] Under Section 61A (1A) of the Australian legislation, persons conscripted to the Australian Defence Force may be exempt from service on the basis of either a universal, or a specific, conscientious objection. But, according to section 61C (c) of the Defence Act, citizens who have volunteered to serve in the Defence Force and who come to acquire a conscientious objection, are not able to exercise the entitlement of conscientious refusal either to service in general or to service in a specific operation.

Australian Defence Force doctrine maintains the argument of legislation to which it is subordinate. Thus, doctrine does not address the question of citizens who, having volunteered for military service, develop moral concerns about participation in conflict.

This paper asserts that there ought to be both a legislative and a doctrinal allowance for soldiers to abide by the calls of their conscience. Such allowance ought to enable soldiers to refuse service in operations to which they harbour conscientious objection. In some circumstances, the reasonable course of action may be that soldiers are enabled to resign honourably when their conscience precludes their committed service.

Taken together, ideas set down in legislation and doctrine, are critically important as part of what Walzer called the war convention. The phrase acknowledges how ideas become established and predictable within the collective order of military thought. But beneath the amalgamated sense of a "convention," the interconnection between legislation and military doctrine is subtle and significant.

Where national or government policy states, "what is to be done," military doctrine articulates "how military operations should be directed, mounted, commanded, conducted, sustained and delivered".[48] Military doctrine both establishes and reflects philosophical principles by which military forces guide their actions in support of national objectives.

But military doctrine is richer than mere "officially sanctioned, formalised and written expression of institutionally accepted principles and guidance about what armed forces do and how they do it".[49] Though doctrine reflects legislative provisions to which it is subordinate, in many ways doctrine is a richer instrument, with a cultural presence and influence the legislative arrangements do not have.

Taught within a group as its "corporate beliefs, principles or faith,"[50] doctrine expresses ideas which are foundational to the military ethos and codes of conduct.[51] Doctrine is powerfully intrinsic to military culture. As a deep-rooted part of the military psyche, doctrine is "imparted by corporate ambience as much as by explicit teaching".[52] This means that ideas can be doctrinal without being written down. But, when ideas are written down, there is reciprocity between formally articulated argument, and unstated belief. Beyond the provisions of legislation, doctrine gives expression to tacit cultural motifs whilst, at the same time, informing these unspoken shared ideas. Doctrine shapes -- and is in turn shaped by -- a Kuhnian cultural gestalt[53] within which distinctive bodies of belief derive from and epitomise characteristic and predictable patterns of action. This means that doctrinal argument is metaphorically and meaningfully entwined within the fabric of cultural practice and belief. Doctrine reinforces routines and, as part of the collective institutional order, exerts a broad and significant practical effect.

Just Cause, Just Acts

The Just War tradition provokes critical questions concerning the justice of war. The justice of war is considered in the combination of two parts: when it is right to go to war -- *jus ad bellum* -- and what may be considered a right act within the situation of war -- *jus in bello*. Under the umbrella of *jus ad bellum*, questions are asked regarding the justice of the cause. The modern *jus ad bellum* discourse continues to be richly informed by Thomas Aquinas (1225 – 1274 AD). In *Summa Theologica*, Part II, II, at Question 40, Aquinas advances the argument that only a sovereign authority might identify a just cause and declare war legitimately.

This is the basis upon which the present paper engages with just war thinking. The present paper does not debate the elements that make war just or not just, but calls into

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question the idea that only a sovereign or State might determine the justice of conflict. The present paper makes the claim that soldiers have relevant and important ideas about just cause. Soldiers enlist in order to advance the cause of justice by just means. They deserve the chance to fight, and perhaps to die, with the fully formed moral assurance that their cause is just. If soldiers come to the moral conclusion that a cause is not just, then legislation and doctrine should acknowledge their right of conscientious refusal.

Though mindful of positivist legitimacy, the convention of Australian legislation and doctrine is largely indifferent to the justice or *rightness* of military action. Neither instrument is sufficiently attentive to the obligation of the military to advance and to harbour justice in the army or, more broadly, in the world. Recognising a singular unidealistic premise: that military success is the triumph of the strong over the weak, legislation and doctrine each build an instrumentalist reasoning, which misses the deep human significance of military service and conflict. Unrealistically indifferent to the sacrifice of human life and the abdication of human ideals, neither legislation nor doctrine is satisfactorily alert to the issue of moral conviction. In consequence, the legislative and doctrinal argument minifies the concept of military service and dehumanises conflict more generally. In legislation and doctrine, soldiers are construed impersonally as military implements, their purpose to serve political strategy costumed in the language of national interest.

The realist argument of the Australian legislative–doctrinal convention does not appreciate that soldiers fight as citizens committed to high ideals. Soldiers are presumed to

serve without moral agility, without a mind to justice or human dignity, as morally mute instruments in *any* cause.

The peril of this approach was put in a nutshell by General George Marshall. Serving as Secretary of State in 1948, Marshall argued before the General Assembly of the United Nations that "[g]overnments which systematically disregarded the rights of their own people were not likely to respect the rights of other nations and other people, and were likely to seek their objectives by coercion and force in the international field".[54]

Australian soldiers are expected to be concerned with "the ethical pursuit of missions".[55] But they are expected to close their minds to *jus ad bellum* thinking, which contextualises individual martial acts and informs the moral commitment of soldiers to serve at all. The upshot is that so long as Australian soldiers abide by positivist rules of engagement, they shall be presumed to have done enough. This position is difficult because it presumes that any fight is the same and that soldiers will take life and risk their own lives just because they are told to.

The philosophical quandary is illustrated by Shakespeare [*King Henry V*, Act iv, scene 1] when he has King Henry V going secretly amongst his soldiers on the eve of Agincourt.

King Henry V [in disguise]: 'Methinks I could not die anywhere so content as in the King's company, his cause being just and his quarrel honourable'.

Michael Williams [a soldier]: 'That's more than we know'.

John Bates [a soldier]: 'Ay, or more than we should seek after; for we know enough if we know we are the King's subjects, if his cause be wrong, our obedience to the king wipes the crime of it out of us'.

Henry V

But the Australian convention forgets the caution of Michael Williams, who reminds Bates: "Tis certain, every man that dies ill, the ill upon his own head, the King is not to answer for it". The moral sensitivity of this Shakespearean soldier resonates in the modern democratic state, where citizens who bear arms accept the obligation to bear arms justly *and* for justice.

Absorbed by legalist ideas of justice *in* war, the Australian convention articulates only a partial moral reasoning, failing to contemplate the justice *of* war. Australian soldiers are presumed to be uninterested in the justice of acts, which are contextualised by the rightness of the cause. Both the legislation and the doctrine deny the tragedy and reality of contemporary military operations, which have been impaired by political deceit and dissembling. Expecting soldiers to obey government direction without demurral, both instruments establish conditions, which enable the military to be mired in political cupidity and seduced away from ideas of justice. Even worse, the doctrine enables soldiers to be taken for granted, and denied proper expression of their conscience.

The line of reasoning followed by the legislative and doctrinal instruments would be enriched by the

fusion of logically distinct *ad bellum* and *in bello* perspectives. Understood together, these separate yet connected perspectives frame what the Australian-born British General, Sir John Winthrop Hackett, called the "unlimited liability" of the profession of arms.[56] *Pace* Osiel, this is more than a soldier's commitment to "risk death for his country,"[57] and more than "the individual commitment to almost unlimited service".[58] Hackett identifies the unlimited *moral* liability, to which Australian legislation and doctrine is indifferent. Hackett understands soldiers must be principled, and resolve to advance just causes by just means. He expects soldiers to be unwaveringly responsible and argues: "What the bad man cannot be is a good sailor, or soldier or airman".[59]

Hackett expects soldiers to be high-minded and upstanding. His reasoning coincides with the *Crito* [47b – 48b] where Socrates asserts the importance of a rational conscience, arguing one ought to do what is morally right or "just" and seek to avoid that which is wrong, "unjust" or "shameful".

Both Socrates and Hackett would agree that soldiers are very far from unvoiced machines without capacity for responsible decision. Soldiers are not heedless sheep; they are citizens who choose to serve. Connected to assumptions of personal excellence and moral responsibility, military service is saturated with stoic notions of integrity: "more or less on the same plane as conscience, [which] presupposes moral autonomy".[60]

But these ideas are muffled by conventional argument that soldiers be unmindful of the cause and merely do as they are told. The logic of the Australian legislative–doctrinal convention coincides with the argument of Walzer who argues:

The moral reality of war is divided into two parts. War is always judged twice; first with reference to the reasons states have for fighting, secondly with reference to the means they adopt….
The two sorts of judgement are logically independent. It is perfectly possible for just war to be fought unjustly and for unjust war to be fought in strict accordance with the rules. But, this independence, though our views of particular wars often conform to its terms is nevertheless puzzling.[61]

But more than puzzling, the technical separation of *jus ad bellum* reasoning from *jus in bello* thinking is deceiving, operating to emphasise the idea of the State and to understate the moral responsibility of citizens who choose to serve as soldiers.

As a political entity, *the State* affords an expedient excuse. *The State* is a device that somehow justifies passive acceptance among soldiers who see no realistic prospect that they might exert constructive moral influence upon policies they enact. Walzer himself refers to reasons *States* have for fighting and the means *they* adopt. His anonymous phrasing obscures people and the moral obligations of individuals and underlines the artificial separation of states from soldiers, as he puts it: "the protagonists of war, and of combat, its central experience".[62]

The moral reality of war must take in the theoretical wholeness which informs soldiers' moral decisions. Acknowledging this theoretical unity, Rawls argued that justice of the cause affects the means with which war can be prosecuted.[63] Similarly, Walzer argues that, in cases of supreme emergency, utilitarian calculation can sustain the escalation of force, though some principles are inviolable.[64] Ideals of justice and gallantry, central to the

profession of arms and the decisions soldiers make, bridge the separation between *jus ad bellum* and *jus in bello* thinking which is unduly conspicuous in the arguments of Australian legislation and doctrine.

Operating in precarious and ambiguous situations, soldiers do best when empowered to determine and apply intricate standards of proportionality. Sometimes definable, these standards are typically indeterminate and understood as matters of honour intrinsic to the profession. They are standards which concern proportionality and *rightness*, and they are linked unavoidably to the cause beyond the immediacy of the fight. Soldiers appreciate this; they are not morally inert. Yet the Australian convention denies soldiers must make moral judgements framed by the justice of the cause; ultimately declining to fight when holding conscientious belief the cause is unjust.[65]

Choosing to serve, volunteer soldiers freely embrace martial ideals and social obligations. But volunteers retain citizenship and the rights of citizens. Volunteers are not indentured in military servitude, their lives are not nationalised. Soldiers do not surrender the right to refuse service in a cause they find unjust, and they retain the right to decline morally insufferable orders. Soldiers volunteer [or at least they should volunteer] to advance the cause of justice, *justly*.

There is a morally questionable side to these ideas, as David Kennedy has addressed in his book *The Dark Sides of Virtue: Reassessing International Humanitarianism.* Kennedy's thesis is that the idea of just cause may be distorted to demonise the adversary and his cause. Additionally, the humanist discourse confronts the pragmatic analysis, which has shaped the vocabulary of international

affairs since the end of the Second War. These issues, however, are rather beside the point of the present paper, which reasons, in the words of Michael Walzer, that "democratic states suffer whenever conscience is coerced".[66]

Taking this point, the present paper reasons that the espalier of Australian legislation and military doctrine would be enriched by consideration of *jus ad bellum* issues. The present paper contends that the rights of citizenship are not surrendered by the assumption of military obligation. Citizens do not surrender the liberty of their conscience upon enlistment. This is not to suggest that soldiers should be utterly autonomous, faux-mercenaries who decide for themselves what they would prefer to do, and what not. Volunteer soldiers accept that the discipline of the State will -- and must -- be imposed. But State authority can only go so far. The State's obligation to maintain order does not mean the State has licence to do whatever it wants. As Cesare Beccaria argued in his 1764 *Essay on Crimes and Punishments*, the protection of public security does justify some measure of imposition, but "every act of authority of one man over another for which there is not an absolute necessity, is tyrannical".[67] Thus the smallest encroachment beyond that which is strictly necessary is "abuse, not justice".[68]

Democracy and the Legislative –Doctrinal Convention

The convention of Australian legislation and doctrine construes the soldier as an utensil standing to the army as his weapon does to him. This position is unsafe, because soldiers must make morally significant decisions, applying complex criteria of proportionality and necessity. Du Picq argues famously:

> It often happens that those who discuss war, taking the weapon for their starting point, assume unhesitatingly that the man called to serve it will always use it as contemplated and ordered by the regulations. But such a being, throwing off his variable nature to become an impassive pawn, an abstract unit in the combinations of battle, is a creature born of the musings of the library, and not a real man.[69]

Du Picq acknowledges that soldiers are not impassive creatures of the military bureaucracy. Soldiers are soldiers, but also people who retain absolute responsibility for what they do. Military enlistment does not confer an excuse, but rather an obligation to act deliberately for justice.

Underlining this idea, McMahan asks rhetorically:

> How can certain people's establishment of political relations among themselves confer on them a right to harm others, when the harming or killing would be impermissible in the absence of [those] relations? How could it be that merely acting collectively for political goals, people can shed the moral constraints that bind them when they act merely as individuals….[70]

Australian legislation and doctrine takes for granted that democracy's public legitimacy increases the State's coercive influence. The argument presumes *jus ad bellum* concerns are purely political, and that soldiers do well enough if they obey orders and comply with *jus in bello* protocols. Emphasising the coercive power of the State, the Australian legislation and doctrine ignore the complex moral narrative which informs western democracy and the western military tradition. The Australian convention chokes the moral agency of individual soldiers, and neglects the obligation of democratic government to protect the liberty of citizens' conscience.

The legislation and military doctrine of a democracy ought to preserve the equal liberty of conscience. In debate concerning the Vietnam War, Dr. Cairns advanced this logic in the Australian Parliament:

> There must be room in a free and civilized community for an individual to decide for himself what's right and wrong…. If conscience is to amount to anything, the individual whether he happens to be wrong or right according to my standards or those of the Government… should have his right to exercise his conscience protected. If conscience is to mean anything, it must be based upon the right of the individual to say what he believes is right and wrong…. [71]

In the Senate fifteen years later, Senator Tate argued similarly that:

> As legislators we ought to be reinforcing the individual conscience - an activity which culturally marks us as a free society where the common good cannot be relentlessly pursued by means which destroy the individual's personality.[72]

Similarly, in 1985, the Report of the Australian Senate Standing Committee on Constitutional and Legal Affairs held, regarding conscientious objection, that: "Australia, as a democracy, even when engaged in armed conflict [should recognise] conscientious belief in order to protect the integrity of the individual against the coercive power of the State."[73]

Following the 2010 Review Conference of the Rome Statute,

which was held in Kampala, these ideas have an additional piquancy. The Kampala Review Conference has paved the way for the International Criminal Court to exercise its presently dormant jurisdiction over the crime of aggression. Acknowledged by Article 5 (d) of the Rome Statute, the crime of aggression has been defined in Kampala as:

> The planning, preparation, initiation or execution, by a person in a position effectively to exercise control over or to direct the political or military action of a State, of an act of aggression which, by its character, gravity and scale, constitutes a manifest violation of the Charter of the United Nations.[74]

The Kampala provisions will be translated into the domestic legislation of States Party to the Rome Statute -- including Australia. Conspicuously, the provisions underline the issue of criminal liability. But at a deeper level, the Review Conference acknowledges ideas of individual merit and moral responsibility, highlighting that no soldier can act for justice yet commit to action he or she considers evil.

Volunteering military service, soldiers promise -- or at least they should -- to act conscientiously to advance just causes by just means. They must resist the coercive power of the State, which would turn them into mere instruments, and remember that military success is not Melian triumph of the strong over the weak. Military accomplishment depends upon moral legitimacy, and relies upon soldiers whose idea of service is informed by commitment to societies, to their protection and to their ideals. The soldier who achieves success will recall the Stoic ideal, and associate ideas of duty and service with concepts of justice, civic obligation, and individual excellence. Thus, it is

crucially important that the legislation enables, and the doctrine encourages, individual soldiers to exercise moral sensitivity and responsiveness.

But the Australian convention vitiates soldiers' conscientious decision and right to fight with a fully formed moral assurance. The Australian instruments thus impair the military as an instrument of justice. At the institutional level, senior commanders acculturated to obey government direction without question, enable and conduct morally dubious operations. Retired Australian Major General, John Cantwell, illustrates this point.

The commander of Australian forces in Afghanistan in 2010, General Cantwell was quoted in *The Age* newspaper of April 17 2012. He said; "at the human level [operations in Afghanistan] were not worth it". Rejecting "the dirty ugly world of international relationships, where 'it's you scratch my back, I'll scratch yours'… [where] lives become less important," the General said it was wrong to forfeit the life of any soldier for ill-conceived political purpose.[75] But this is exactly the *realpolitik* of the legislative–doctrinal convention, which holds that soldiers, insensible to the cause, must subjugate themselves to Government bidding.

Equally insensible to moral responsibility, and acculturated to obey without demurral, Defence officials squander public treasure. Citing Australian National Audit Office reports, and the Australian Senate Foreign Affairs, Defence and Trade References Committee, David Ellery explained, in the *Canberra Times* newspaper, how a "compulsory culture of consensus" has been instrumental in the dissipated frittering of billions in mismanaged Defence procurement projects.[76]

Democracy and the Duty to Obey

Presuming individually responsible judgment, and the ultimate right of conscientious refusal,[77] Rawls did not hold that people should be wanton or heedless of civic obligations, but that people should be properly mindful of moral responsibilities. He maintained that individuals are "always accountable for their deeds," and unable to divest themselves of responsibility and transfer the burden of blame to others.[78] In this way, Rawls coincides with the ideas of Stoic self-sufficingness and Kantian duty. Rawls acknowledged the importance of self-respect and personal virtue, and the importance of acting so as to avoid moral shame.[79] To refuse an unjust law would, for Rawls, be justified only in order to advance the greater cause of justice and to avoid moral shame; not for hedonistic or egotistical reasons.

These notions, which informed Rawls's ideal theory, also inform our understanding of the obligation to obey. Conflating ideas of ethical rightness and legal compliance, the Australian convention presumes soldiers will do well enough if they do as they are told. Harking to outworn and ethically constricted ideas of military service, neither Australian legislation nor doctrine acknowledges the obligation of the State to safeguard the moral integrity of individual soldiers. And, neither instrument addresses the foundational obligation of soldiers to act *conscientiously* to advance the cause of justice in the world. This model must be reformed.

No longer may States presume that soldiers ought trust their superiors uncritically and obey them unthinkingly. Doctrinal argument must respond to the proclivity of officials and politicians to use moral language whilst avoiding the burden of

moral responsibility. As Pogge writes, in modern politics:

> Moral language is all around us--praising and condemning as good or evil, right or wrong, just or unjust, virtuous or vicious. In all too many cases, however, such language is used only to advance personal or group interests. The speaker expresses the narrowest judgment that allows her to score her point while avoiding any further normative commitments that might encumber herself now or in the future.[80]

Amplifying this point, the infamous 2002 September dossier demonstrates the sort of deliberate deceit, which makes it difficult for soldiers to place unquestioning confidence in the political-military establishment. This report revealed that intelligence agencies are adept in the fabrication of crooked evidence, whilst senior authorities are not above calculated deception.

Doctrinal argument must enable the responsibility of soldiers to ensure that their important decisions can be morally justified. Doctrine must recognise that when public officials habitually demonstrate moral insolvency, the burden upon soldiers to be morally responsible is increased. Doctrine must reflect the moral obligations that accompany military service in the modern age.

In Practice

Doctrinal argument should enable soldiers to conscientiously refuse service in morally dubious causes. Citizens who volunteer military service are likely to respect this autonomy, and unlikely to shirk duties. In *Political Liberalism*, Rawls argues in support of this point, that:

> Citizens have a reasonable moral psychology…[and a]… conception of the good [and] a capacity to acquire conceptions of justice and fairness and a desire to act as these conceptions require when they believe that institutions or social practices are just….[81]

Enlisting with their eyes open, citizens expect to fulfil onerous and complex duties. But they do not expect to serve an unjust cause. Presently, doctrine restricts the frontier of soldiers' moral thinking artificially and unduly. Much as Mary Wollstonecraft lamented the disadvantages borne by women, denied access to education and condemned in consequence to a deferential life, soldiers are infantilised by doctrine, which ordains *jus ad bellum* concerns to be beyond their moral interest. Wollstonecraft writes: "Standing armies can never consist of resolute, robust men; they may be well-disciplined machines, but they will seldom contain men under the influence of strong passions, or with very vigorous faculties."[82]

Wollstonecraft does not anticipate that soldiers will be much more than obedient and dutiful. She does not expect ethical resolution or integrity sufficiently robust to conscientiously refuse service in an unjust cause. Legislation and doctrine must expect more of soldiers. The legislative-doctrinal convention must acknowledge that no soldier can act as a force for justice, and commit to action, which he or she considers evil. Soldiers, who have enlisted to advance justice by just means have a moral duty to decline service in causes they consider villainous. Thus the Australian convention ought recognise that when a soldier comes to the conclusion that a course of action is unjust, that it is wrong to participate. In some circumstances an additional conclusion may be that resignation is the honourable course.

In conclusion, this paper argued against the provisions of Australian legislation and doctrine that soldiers subjugate their will to Government. Denying soldiers access to their conscience, the Australian convention was seen to be unworkable and wrong. The example of Commodore Richard Menhinick RAN, cited in *The Age* newspaper of July 12, 2012, illustrates the unsafe nature of the Australian position.

The newspaper describes how, when commanding officer of HMAS *Warramunga* in 2001, the then Commander Menhinick defied direction to abandon asylum seekers at sea. Finding his orders neither "sensible nor ethically prudent," Commodore Menhinick declined to follow legal command. Refusing to be subjugated, the Commodore is quoted as understanding "the importance of acting with integrity and in good conscience".[83] This principled officer reveals the absurdity of legislative and doctrinal provisions that assume military service entails soldiers' moral quiescence, and demonstrates what Walzer calls the "long tradition" of officers who "protest commands of their civilian superiors that would require them to violate the rules of war and turn them into mere instruments".[84] Acting deliberately as an agent of justice, the Commodore demonstrated the critical importance of conscience to the profession of arms, and the impossibility of the inelastic provisions within Australian legislation and doctrine.

Australian legislation and doctrine presumes that no-one can cavil, no matter how iniquitous the pretext for action. Reinforcing the coercive power of military institutions, the legislative-doctrinal convention is oblivious to the fact that atrocities soldiers commit are their own.

Crafted to uphold *jus in exercitu* obligations, the convention should

abandon the fable of unquestioning obedience. Debunked by the Nuremburg tribunal, this myth was made infamous by Himmler at Posen on 4 October 1943. On this occasion, in a speech to Nazi police fuehrers, Himmler argued that obedience to orders -- no matter how ghastly -- was a mark of honour.[85] The Nuremburg testimony of SS Gruppenfuehrer Otto Ohlendorf illustrates how this impossible dogma was accepted. Formerly leader of the Einsatzkommandos, Ohlendorf admitted calmly to the murder of 90,000 Jews. Despite confessing to pangs of scruple, he said, "it was inconceivable that a subordinate leader should not carry out orders given by the leaders of the State".[86]

We need to think differently so as we might apply military power more wisely. Legislation and military doctrine need to acknowledge that soldiers who believe orders to be *immoral*, not merely illegal, have a duty to refuse. Alastair McIntosh writes:

> For the first time in history we have at our fingertips utter destructive power, but matched to it, all the possibilities for greater understanding opened up by globalised communications. Now is the time to press the reset button at many levels of depth.[87]

This is not the time to be comfortably complacent, to assume familiar ideas will serve into the future. A new position must be endorsed, and with it, a new way of understanding military service, military ideals and military functions. No longer must the legislation or the doctrine perpetuate notions of subjugation, which dehumanise soldiers and degrade the democratic foundations of the military instrument. These ideas place the world in peril of crimes of obedience, committed by morally repressed soldiers unable to discern an alternative.

The war convention must recognise the moral justification for disobedience afforded by the conscience. Legislative and doctrinal instruments must acknowledge that the duty to obey is not absolute, and that the moral obligation to disobey may be prompted by more than manifest illegality. ✢

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Australia's second and final Landing Helicopter Dock Ship (LHD) has entered Australian waters on its way to Melbourne. The second LHD (to be known as HMAS Adelaide once commissioned) is being transported from Spain to Australia by heavy lift ship Blue Marlin.
Blue Marlin has travelled 10,000 nautical miles and the trip has taken eight weeks to complete.
The LHDs are the largest ships ever built for the Royal Australian Navy (RAN) and will provide the Australian Defence Force (ADF) with one of the most capable and sophisticated amphibious deployment systems in the world.
The Canberra Class LHDs are bigger than Australia's last aircraft carrier HMAS Melbourne. They are more than 230 metres long, 27.5 metres high and will weigh around 27,500 tonnes once completed.
The LHD hull will be unloaded and moved by tug to the Williamstown dockyard for consolidation of the superstructure and other critical fit out work.
The vessel is expected to be introduced into RAN service in 2015. (Courtesy RAN)

Confuse or Conceal - The Art of Camouflage in His Majesty's Australian Ships during World War II

BY LIEUTENANT JOHN NASH

Camouflage is a surprisingly new term, only entering the English language in the last 100 years.[1] Especially on ships, camouflage is a little explored topic of historical inquiry with a relative dearth of secondary literature. Yet serious resources were devoted to research on the subject during World War II across all services and the process of painting an entire warship in a complex colour scheme is not something done on a whim. A great deal of historical research has been carried out on other technologies of war, from weapons systems and armaments to radar and sonar, and it is perhaps due to its seemingly inconsequential and dull nature that camouflage has not been explored much in the historiography. Few works have been written on wartime camouflage and they make little reference to warship camouflage, and it is very much worth exploring why this might be the case.

I will firstly explore the organisation of camouflage research in Australia during the Second World War for ships, including the challenges faced and the differences between camouflage as applied to ships of the Royal Australian Navy (RAN) and as applied to the Army and the Royal Australian Air Force (RAAF). Through this examination, it will explore what part camouflage and the associated research played as part of the war effort, examining such issues as the use of model ships in research and the elaborate testing done for the Fairmile class of Motor Launches. Finally, the effectiveness of ship's camouflage will examined, through observations during testing and trials.

DP Mellor's volume of Official History of the Second World War contains one chapter on Camouflage, civil defence and mapping. Its 19 pages devote a mere three paragraphs, half a page, to camouflage of Royal Australian Navy ships during the war.[2] This brief treatment of the subject sets the scene for camouflage's obscurity in history, with the next book on the subject coming over 50 years later. Ann Elias' book on camouflage in Australia during the war makes a relatively thorough exploration of the topic, and a general theme which emerges is the tension between the camouflage organisation and the Army and RAAF, with very little mention of the Navy.[3] Examples given in her book are exclusively concerned with the Army and the RAAF. Reading through Dakin's correspondence shows cordiality with naval officers that is not present in Army correspondence, with Dakin frequently addressing Admirals as 'My dear Admiral', in contrast to the stiff and formal addresses to Army Generals.[4]

Not to make too much of an argument *ex silentio* (or from letter writing salutations), but these omissions in the historiography do help illustrate that pre-war thinking, experimentation and experience saw the Navy more willing to listen with respect to camouflage research than the other services when war broke out.

In her book, Elias reinforces the view that Professor Dakin seems to have made much of the clash between camouflage and the military, especially the army, and the view that camouflage went against the masculinity of war through deception and hiding.[5] Whilst this may have held some truth for the army and RAAF, the navies of the world were far more accepting of outlandish paint schemes if this could give them some sort of fighting edge. For instance, Captain Louis Mountbatten as commander of the Royal Navy's 5th Destroyer Flotilla made unofficial experiments painting his ships in a pinkish-grey colour. The colour, which became known as Mountbatten Pink, was thought to make ships less visible during sunrise and sunset, the most likely time of

HMAS Sydney on return from the Mediterranean during WWII, depicted in camouflage scheme. (Courtesy RAN)

attack by U-Boats.[6] It was discontinued through lack of effectiveness but its use does highlight a creativity and willingness to try different colour schemes, with seemingly little regard for any considerations of 'masculinity'.

Interest in naval camouflage before World War II meant that it faced fewer challenges than the other services, and far less is made of tension between *camoufleurs* and the RAN than the other two services. The Admiral commanding the Australian Squadron in Sydney submitted a report for consideration to the Naval board concerning painting ships in wartime based on a 1932 trial conducted in the Mediterranean, with orders that ships be painted in accordance with the testing at the outbreak of a war.[7] A later 1935 memo then outlined the amount of paint to be carried by RAN destroyers, with special consideration for the larger *HMAS Stuart*, which amounted to each ship carrying a combined total of 5 CWT of light and dark grey paint (8 CWT for *Stuart*) – issued in 1935 to be carried at all times in the event of war breaking out.[8] This was aided by the increase in paint production in Australia during the 1930s as the chemical industry expanded.[9] Early in the war a Camouflage Paint Committee was set up and meetings arranged with the Paint Manufacturers Association to discuss paint testing systems.[10]

Interest in military camouflage post-World War I increased further in the years just before the outbreak of the next World War, with a group of 30 men of the arts and sciences as well as military personnel forming the Sydney Camouflage Group. The leaders of this group were the artist Frank Hinder and Professor of Zoology William Dakin, who would later become the Technical Director of Camouflage during the war. It would take many years, until April 1941 in fact, before the group

would get official recognition and an official camouflage organisation established.[11] One of the first major projects was the production of Professor Dakin's *The Art of Camouflage*, published in 1941 and in a second edition as a Secret (official use only) document the year after.[12] In this book there are several pages on marine and ship camouflage (pp. 52-5), one of the first attempts at centrally collecting and disseminating ship camouflage knowledge.

Before this point much of ship camouflage painting was done on an ad-hoc basis, without scientific experimentation and devised by officers and crew aboard the ships themselves.[13] A classic example is the camouflage paint scheme applied to *HMAS Perth* in the Mediterranean in 1940. The ship's company was asked to devise a paint scheme, and the winner was Ordinary Seaman Ross Birbeck, a former hairdresser, whose distinctive design resembled the arches of the Sydney Harbour Bridge.[14] Soon after all warships and naval staffs were issued with a set of regularly revised policy orders known as *Confidential Admiralty Fleet Orders (C.A.F.O.)*, with C.A.F.O. 1112/42 issued 11 June 1942 being the second but definitive set of orders for camouflaging of all ships.[15] These camouflage orders culminated in a full book, *The Camouflage of Ships at Sea*. The perceived importance of camouflage on ships is summed up by the front cover: 'It is vitally important to the fighting efficiency of the Fleet and your Ship that every facility be given to ratings concerned to study this book'.[16] From ad-hoc and small beginnings the camouflage

HMAS Perth 'Sydney Harbour Bridge' scheme, late 1940. (Courtesy RAN)

organisation in Australia arose during the War, and it remained important to the war effort throughout with research conducted constantly, and then published and disseminated until the end of the war.

Camouflage is a discipline that brings together both science and art; a fact alluded to in the first paragraph of Dakin's *The Art of Camouflage*.[17] The research required scientific knowledge and experimentation, and artistic flair in execution. This can be seen through the assignment of Professor Dakin as the Technical Director, and the choices made for the Deputy Directors of Camouflage in each state, amongst whom were included architects, town planners and artists, including two directors of art galleries.[18] Dakin was scathing of those who could not see the importance of science as it applied to warfare through camouflage research, a post-script in one of his letters saying: 'One of the examples quoted above provides an indication of how completely the position of Science (which Germany and Japan are using to the utmost) is still completely misunderstood in Australia.'[19]

This letter gives a glimpse of one of the problems Dakin and the camouflage organisation encountered in that the services, mostly the Army, did not view camouflage in the light of science. US General Douglas McArthur, Supreme Allied Commander in the Pacific, directed

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all naval, air and land forces to regard camouflage as an instrument of war, and directly referred to Dakin's Defence Central Camouflage Committee (DCCC) as a key source of technical camouflage advice and direction.[20] Mellor points to wartime camouflage efforts as an example of the difficulty of coordinating scientific efforts with military and civil defence.[21]

Though the experiments and basis of the camouflage painting were basic, they nevertheless demonstrated forward thinking on behalf of the Admiralty. The director of Naval Stores was asking after details of paint availability in a letter dated 4 September 1939 – mere days after the outbreak of war in Europe.[22] Before the official camouflage group was stood up, Professor Dakin was conducting his own experiments on ship camouflage in 1940 and 1941, using his yacht and the training ship *HMAS Kybra*. These experiments particularly interested Rear Admiral Sir John Crace, Commander of the Australian Squadron.[23] In contrast to the Army, Admiral Crace actively sought the advice and aid of the camouflage directorate, asking Dakin to prepare a camouflage schemes for *HMAS Adelaide* and *Australia*, which he did in May 1942.[24] Of particular importance was Dakin's realisation that naval camouflage of World War I did not take into account the need for ships to be camouflaged against not just surface threats, but from aerial observation as well.[25] Though naval camouflage started out as rudimentary and was applied in a very ad-hoc manner, the camouflage research that informed naval uses was ahead of that for the other two services, and there seemed to be less tension between the official camouflage organisation and the RAN. Rear Admiral Muirhead-Gould was able to secure funding for the camouflaging of naval magazines and

oil tanks at Chowder Bay and Garden Island in early 1941, the first large-scale camouflage project undertaken in Australia.[26] Though not concerned with ship's camouflage, it is illustrative of the RAN hierarchy being concerned with camouflage as useful during the war, and once again places RAN thinking ahead of the other services in this respect.

The camouflage organisation stood up in Australia was concerned with camouflage of all military assets and each type of unit required special consideration, perhaps none more so than ships, which posed (and still pose) unique challenges. Firstly, ships are large and require a large investment in material and men to paint; a light cruiser such as *HMAS Perth* had an overall length of 169 metres requiring painting on two sides, plus the upper decks and superstructure. In order to paint it, the ship must be at a port or at anchor in very calm seas, and obviously in friendly waters. A large section of the ship's company was needed to paint the ship. Time spent painting was time not used in training, maintenance or rest and it was hot, dirty work and was often found to be distasteful and pointless to many of the sailors who had to do the job.

The decision to apply new paint schemes, and especially complex patterned schemes, was not one taken lightly. A ship's camouflage scheme, much like that of a RAAF aeroplane or Army tank for instance, was dependent on the operating environment. Planes and vehicles required different schemes for desert or jungle, and ships needed different colours for different maritime environments. However, whereas RAAF and Army units were usually painted before being deployed, ships were tasked and re-tasked constantly – a ship's great mobility being one of its inherently useful characteristics as a weapon of war. Even when camouflage

Model ships used during camouflage research behind the Hotel Canberra. (Courtesy John Nash)

patterns had been (relatively) standardised during the war, orders were still in place which ensured ships could change their schemes 'to meet changing conditions or special tactical situations', clear recognition that ships operated in a unique and ever-changing environment.[27] Camouflage research papers and Admiralty orders, such as C.A.F.O. 1112/42, all made distinctions between the different operating environments and which paint schemes were most effective. Camouflaging of ships was a dynamic activity, changing as new data provided better solutions and as ships ranged far and wide across different oceans and seas.

Illustrative of the effort expended towards camouflage of RAN ships during World War II is the use of scale models of ships for research and experimentation. A key to determining the effectiveness of camouflage was comparison, testing one scheme or a particular colour against another. This required two ships of similar design/shape/size; being difficult to arrange during wartime when ships were needed for combat duties, maintenance or training, Britain and soon after, Australia, turned to the use of models.[28] Tanks, aircraft and buildings could, of course, be tested in the field with relative ease, being far more readily available, whereas warships were much less disposable for such tasking. The use of models helps demonstrate the kinds of workarounds used in experimentation, as well as the time and effort expended on research specifically for ships. Whilst not as

prohibitive in time and money as using ships, models still required dedicated facilities and resources to create and use. The large testing facility in Britain at Leamington was described as 'costly', and some of the model set-ups used in Australia were elaborate to say the least.[29] Another factor was that these facilities could be hidden from enemy observation – Australian testing was done in a pond behind the Hotel Canberra, far from preying eyes.[30]

Far from being a small part of research, experiments using model ships provided much of the data used for camouflage research. Worth quoting at length is a comment from an Admiralty book on the conclusions reached on sea-going camouflage:

> Their validity has been checked by laboratory experiments on model scale under lighting conditions controlled so as to correspond accurately with natural conditions at sea... The results of observations at sea and in the laboratory have corresponded so closely with each other, that any major revision of the statement of the principles of camouflage for concealment at sea is unlikely to be necessary.[31]

Correspondence between Professor Dakin and the director of Scientific Research at the Admiralty in Britain makes constant reference to principles derived from model scale experiments. This includes attempts to confuse submarines attempting to judge the inclination of ships through a periscope, first tested in the lab on models and then backed up by observation from submarines at sea.[32] The use of model ships show to what lengths researchers would go in order to test out camouflage principles for ships, and far from being trivial side experiments, their use formed the basis of much camouflage knowledge applied to ships at sea during the war.

Despite the effective use of model ships, there was still a requirement to test out camouflage painting on actual warships at sea, using observations from the shore, other ships and aircraft. Further, scientific testing was conducted into environmental conditions, especially sun ratio readings. These readings were taken throughout 1943 from stations in Sydney, Darwin and Townsville, sometimes up to five times a day, every day.[33] Measurement of sun ratio helped determine the most effective tone of paint relative to the predominant lighting conditions of a particular area. This information was seen as important enough that the information collected by the UK and Australia was given Prime Ministerial clearance to be shared with the United States Navy.[34] In accordance with standing orders (namely C.A.F.O. 1112/42), reports on observations of camouflaged ships made from surface stations and from aircraft were required to be forwarded in a very specific format. Early observations of camouflaged ships were conducted by Dakin from the air off the coast of Sydney. One of the first was of the cruiser *HMAS Perth*, with a brief observation of the other cruiser *HMAS Canberra* in November of 1941. Coming back to the issue of the rarity of having two ship to observe, *HMAS Perth* was painted in two different camouflage schemes on the port and starboard sides, maximising the opportunity to test out different camouflage principles.[35] Despite the use of model ships, there was still no substitute for observations of real ships at sea, and the involvement of Dakin

Fairmile craft ML 814, one of the vessels used in testing. (Courtesy RAN)

himself is indicative of the importance of such testing to camouflage research.

A good example of the effort put into the camouflaging of RAN ships during the Second World War is the construction and camouflaging of the Fairmile class of patrol boats. A British design built in Australia 1942-43, the Fairmiles were a small patrol boat (or more correctly, a motor launch). Discussions of the camouflage scheme appropriate to the Fairmiles were conducted before the launch of the first vessel, with the Assistant Director of Engineering (Naval) requesting the final paint job of the vessels before launch be a camouflage scheme, having ruled out the practicality of fitting structural camouflage to the vessels.[36]

To return to a previous observation (see page 7), the use of models on water in testing was critical in developing the proposed paint scheme to be used.[37] However, it was decided that the first two vessels, M.L. 813 and 814, would be launched and then used in testing to

HMAS Melbourne (I) in dazzle pattern camouflage during the First World War

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evaluate the best camouflage pattern to be used. This experimenting was requested to be expedited so that the most effective pattern could be applied to later vessels. The testing was done one month later, with three vessels used and Professor Dakin himself taking the observations. Interestingly, as the policy regarding Fairmiles was one of trying to conceal rather than confuse, it was decided that a camouflage pattern was not appropriate, and a single colour scheme was chosen.[38] This did not, however, mark the final testing of camouflage for Fairmiles.

Testing was carried out using camouflage netting throughout the first three months of 1944, a year after the initial Farimile trials. Dakin's report found the use of nets impractical and of minimal value, and the Navy concurred with this assessment, discontinuing this policy.[39] It is also worth noting that in his report Dakin points to similarities in camouflage principles between awnings used for ships and Army tents used on land, a good demonstration of the broad range of camouflage testing undertaken by the Camouflage Research organisation.

The case of the Fairmile Motor Launches demonstrates the effort that was put into the camouflaging of RAN ships during World War II. From their inception tests were undertaken to determine the best camouflage paint scheme so that they might be painted before even being launched and testing was conducted throughout the war to ensure that the best possible information was available in order that they were painted in the most effective way.

One of the biggest questions which hangs over the issue of camouflage of ships during the World War II is the matter of effectiveness. There are mixed reports as to the effectiveness of camouflage patterns. Dazzle style of camouflage was popular during World

War I, and though its effectiveness was questioned, it continued to be used on merchant vessels as it increased the confidence and morale of the crews.[40] It is worth noting that recent research into the topic has found that dazzle patterns do, in fact, affect speed perception, and that the principles on which the painting was done were sound.[41] A report from mid-1941 relays how a RAAF officer, very experienced in coastal surveillance from the air, was warned that his flight would overfly *HMAS Australia*, and when he did so he was still unable to recognise her. Even knowing that the vessel spotted should be *Australia* he closed the ship in order to get a close observation and confirm her identity, reporting back that the camouflage made *AUSTRALIA* appear to be a small two-funnelled cruiser rather than a heavy three-funnelled one.[42] However, a report from eleven months later notes that the camouflage pattern *Australia* sported seemed to assist an observer in estimating inclination, a demonstration that camouflage could not do all things all at once; it needed to be tailored for a specific role.[43]

The United States Navy Littoral Combat Ship *USS Freedom* was recently painted in a World War II camouflage scheme, demonstrating not only continued interest in camouflage, but interest in Second World War camouflage.[44] These cases help demonstrate that the principles behind camouflaging of ships were sound, and that camouflage patterns on ships could be effective, provided

USS Freedom, painted early 2013 in 'Measure 32' camouflage pattern (Courtesy US Navy)

that there was a clear objective in mind; camouflage could help conceal or confuse, but it could not do both at the same time to any great degree.

The camouflaging of Royal Australian Navy ships during World War II is a little explored yet rich topic of historical inquiry. Explorations of camouflage in the defence industry and war histories are brief and often overlook naval camouflage. From rudimentary beginnings in World War I interest, though slight, remained in the interwar period with testing conducted during the 1930s and plans put in place for camouflaging of ships in the event of war. The outbreak of war saw ad-hoc measures put in place, and key people like Admiral Crace and Professor Dakin took an early interest in testing camouflage on ships, putting the research ahead of that regarding the Army and Air Force. The fact that less friction existed between the RAN and the official camouflage organisation aided in the effectiveness of implementing naval camouflage. The decision to paint ships in camouflage was not taken lightly, requiring much of a ship's company, both in time and resources, and the ever-changing conditions of the sea meant that schemes were constantly changing as ships changed operating environments.

The use of scale models of ships demonstrates the effort that was put into camouflage research and the level of detail that was implemented during experimentation.

The camouflage testing that was conducted on Fairmile Motor Launches is a very illustrative example of what was required for camouflage projects, from testing on scale models, to actual ship tests at sea and continued evaluation throughout the war to constantly keep the data relevant.

Finally observations, scientific inquiry and present day interest in ship's camouflage show that it was effective, perhaps not to the degree hoped for, but nevertheless providing aid to His Majesty's Australian Ships in time of war. From this it can be seen that the Art of Camouflage during World War II is a little known but important contribution to the war effort in Australia. ✍

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Sea Chaplains: Serving Their Country With Pride

BY REV DR MELISSA BAKER RAN

...the drenching spray as the ship thudded into each on-coming wave and then rose upon it, the loneliness amid the dull green or grey-black expanse of the ocean all around, the occasional appearance of the long black shape of a shadowing German bomber, the care that had to be exercised on the wet and rolling deck, especially by the torpedo tubes, where the guard rail did not exist, the smell of oil which in proximity to the galley was augmented by that of cooking, the nausea which, until sea-legs had been gained, caused every opportunity of remaining in the open to be gratefully accepted, and the abiding necessity of having to perform assigned duty.

Chaplain Gordon Taylor HMS Arrow, April 1941

Over centuries, Australians have served in the military through wars, terrorist threats, peacekeeping activities and natural disasters with chaplains standing alongside military personnel. The role of the navy chaplain, also known in ages past as the sea chaplain, has not changed much throughout history. Chaplains have provided pastoral care for the spiritual, physical and emotional health of their constituents, sometimes through difficult circumstances as described above by the Chaplain in *HMS Arrow* during World War II.

The etymology of the word chaplain comes from Medieval Latin 'capellanus'. Priests travelled with armies and would carry relics of the saints, including the soldier's cape known as Cappa St Martin, as they performed mass, heard confessions, assigned penances and provided last rites before men went into battle. Chaplains carried out the role of Almoner, which comes from the Greek 'eleimosyne' meaning pity, compassion, kindness and almsgiving.

The Bible recorded the earliest sea chaplain in 60AD, when Paul the Apostle led a communion service on board an Egyptian ship headed for Italy. It was during the midst of a 14 day storm that Paul broke bread and encouraged the 276 sailors onboard. As Christianity spread across the Mediterranean, the governments and rulers of the day provided sea chaplains to care for sailors and soldiers afloat by using the Word of God as their swords.

The rank of Chaplain is one of the oldest ranks in the Fleet, along with Boatswains and Gunners, dating back as far as 1298. The first named paid sea chaplain recorded in Royal Navy history was Robert of Sandwich appointed during the reign of Henry VIII on 6 pence a day, twice the pay of a sailor and half that of a Captain. It was not until the reign of Charles I in 1626 that a formal naval chaplaincy began when, by Royal Decree, no king's ship was to go to sea without a preacher onboard. At this stage, Chaplains were classed as Warrant Officers. Over this next century the number of chaplains increased and by 1793, there were 58 chaplains serving in the Royal Navy with their pay and status largely remained unchanged.

The Reverend Richard Johnson – Chaplain to the First Fleet

In keeping with the tradition of providing chaplaincy services to military units, John Newton (Church of England minister), William Wilberforce (politician and advocate for abolition of slavery) and William Pitt (Prime Minister) were instrumental in ensuring that an evangelical Christian would be Chaplain as part of the military establishment of the Colony of New South Wales. Thus the first appointed sea chaplain was a Church of England minister, the Reverend Richard Johnson (1753-1827). Johnson received a military style commission on 24 October 1786 and arrived as part of the First Fleet as an official along with crew members and marines and their families and convicts on 26 Jan 1788. From his letters it seems loneliness and frustration as a chaplain was a common theme.

The first chaplain to the Colony of NSW discovered much about himself in his ministry and other roles in education and social issues including the welfare of aboriginal people, through dangerous and hard conditions throughout his 12 years in the colony. Rev Johnson was a young man of 35 years of age, and had completed three years of Bible College at Cambridge and three years as a Church of England minister before taking on this role in new territory. A farming background certainly put him in good stead with the harsh land and food shortages: by sewing pips he obtained in Brazil he began the colony's first citrus orchard. Interestingly he named his first child from an aboriginal name, Milbah, which illustrated the love he had for anyone he met.
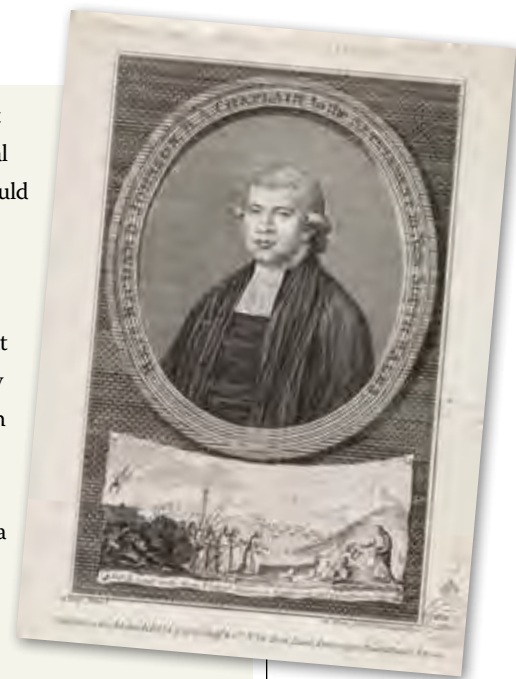
Rev Richard Johnson

In his first few years since leaving England by 30 Oct 1792, Rev Johnson had already performed more burials (854) than marriages (220) and baptisms (226) combined. He struggled to encourage others to take up the Gospel which he fervently lived by and eventually opened Australia's first church on 25 Aug 1793. The church was subsequently burnt down, although is remembered by a monument on the site at Richard Johnson Square on the corner of Bligh and Hunter Streets, Sydney.

Reverend Samuel Marsden (1764–1838, Anglican Minister) arrived 10 March 1794 as an assistant chaplain to Johnson. Seven years later in 1801, Johnson was in poor health, and sold his land at Ryde to return to England. Reverend Marsden settled and established a church in Parramatta, becoming a wealthy land owner, and rivalling John Macarthur in developing the wool industry. He was also a magistrate whom the Irish Catholics called the 'Flogging Parson' due to his excessive sentences of corporal punishment. In 1814, he made the first of many visits to the then lawless Bay of Islands and claimed to have conducted the first Christian service in New Zealand.

Gradual Changing Role of Chaplaincy at Sea

The role of chaplaincy at sea remained largely unchanged for many years as a Church of England sea chaplain from 1840 described his sea time similar to chaplains today serving their on board an operational warship:

A sea life is at best a life of privation; and a Naval Chaplain must naturally have his share of it. He is alone, as it were, in the midst of a busy world; he has no one of his own profession, as all around him have, with whom to converse; even the technical phrases whichever and anon meet his ear are, for some considerable period, as unintelligible to him … while he enters the service when it is all but too late to alter his habits so as to accommodate them to his new mode of life, without in some measure compromising his character as a Minister of the Gospel.

How the chaplain carries out his/ her duties is dependent on cultural social structures that are important to society at the time. Social structures are essentially where we draw our behaviour, knowledge and experiences, which includes aesthetics, ancestry, heritage, language, patterns, religion and traditions. One then tends to socialise within groups within the culture that has shaped our characteristics, such as age, gender, ideology, neighbourhood, religion, social class or work. This perhaps explains why sailors tended to socialise together as no one can ever quite understood what they go through other than another sailor.

Until recently, churches used to be a central connection place in the town where majority of people would attend on Sundays as their social gathering. This tradition carried itself on board naval ships where it was compulsory for the ship's company to attend church up until 1946 in the Royal Navy and the chaplain read prayers as part of the daily divisions. Today, chaplains at sea would be lucky to get ten sailors to attend church.

Chaplaincy in the RAN

Prior to 1901, chaplains were attached to naval and army units of the colonial forces, such as the Naval Artillery Volunteers of the NSW Naval Forces. Rev Isaac Armitage served for six years in this role and then was one of the few who carried on in active service into China during the Boxer Rebellion when he accompanied the Naval Contingent. Soon after the inauguration of the RAN in 1911 initiatives were undertaken to form chaplaincy drawing upon centuries of Royal Naval experiences. The task was not made easy with much scrutiny from the various churches with significant internal divisions between denominations.

In Melbourne on 26 Feb

Sea Chaplains: Serving Their Country With Pride

1912, Church of England Archbishop Clarke met with the Naval Board to formulate a chaplaincy proposal for the Royal Australian Navy. This resulted in an agreement being reached that each ship and establishment should have one chaplain and the system was to be ecumenical with the appointment of Protestant Chaplains of 'men who had no extreme views'. Other agreed terms included the appointment of five chaplains (three Church of England and two Protestant denominations) appointed for two years with a six month probation period, paid 15 shillings a day with only half the ration allowance of other officers. A committee was established representing the three largest denominations (Church of England, Presbyterian and Methodist) to make appointments of chaplains.

The Roman Catholic Archbishop Carr of Melbourne was disappointed with this decision and wrote to the Minister of Defence to ensure Catholic participation on the same footing as other denominations. A formal agreement on the appointment of chaplains with the Anglican and Protestant churches, and a separate agreement with the Catholic Church, were approved on 17 June 1912. The first two chaplains to serve in the Royal Australian Navy were the Rev Garnet Eric Shaw (Church of England) and the Rev Alexander Tulloh (Presbyterian) both of whom were commissioned on 8 Aug 1912. Chaplain Tulloh was the first to serve at sea in *HMAS Melbourne* in 1913, part of a new ship, a new navy and a new nation. The first Roman Catholic fleet chaplain, the Rev Patrick Joseph Gibbons, was appointed shortly after with a seniority of 16 Aug 1912; he also served in *HMAS Australia*. They were later joined by the Rev Vivian Agincourt Little (17 Dec 1912); the Rev Frederick Riley, a Church of England priest (4 Feb 1913) who served firstly in *Australia* and later became a Senior Naval Instructor; the Rev William Hall, a Church of England chaplain on loan from the Royal Navy and Naval Instructor (4 Nov 1912) who served at the Naval College then at Geelong. By the end of 1913, there were six full-time chaplains and 63 reservists, the latter attended land camps at their own cost, in most ports around Australia.

In keeping with their Royal Naval counterparts the new RAN chaplains wore no badges of rank. The RN dress code of chaplains introduced in 1891 was more in keeping with the dress worn at an English Victorian rectory and unsuitable to naval service especially afloat in varying climates. Over time this was unofficially modified by the wearing of plain naval jackets with a clerical collar being the only distinguishing feature. Early chaplains are often shown sporting mortar boards but this may have more to do with their often ancillary scholastic tasks. While naval instructors wore uniform from 1916 (which then included the Reverend Riley) it was not until 1929 that agreement was reached on uniform to be worn by naval chaplains. Interestingly chaplains wear a slightly different peaked cap and cap badge to other naval officers, said to have been designed by Winston Churchill when he was First Lord of the Admiralty. Their proud motto is "For God and Country".

Chaplain Tulloh and other RAN chaplains maintained the centuries-old practice: preaching and praying were a major part of the chaplain's duties as was the celebration of Holy Communion. If no chaplain was present on board, then the Captain, often twice daily, read prayers. Other activities sea chaplains included: taking charge of the ship's sporting clubs; running the seamen's library; visiting the ship's sick bay and cells; visiting the parent's homes in appropriate ports; answering letters from anxious parents and wives; organising ship visits; and listening to the sailors' and families' problems. From the beginning, RAN chaplains considered a major part of their role was the promotion of moral values, especially in dealing with the detrimental effects of the behaviour of naval personnel after excessive consumption of alcohol, marital stress caused by lengthy separation and grief counselling.

By the early part of the 19th century the pay of naval chaplains and schoolmasters had not increased and it was becoming increasing difficult to

Extract from 1913 Navy List

attract and retain suitable applicants. As a result in 1812 the so called 'Chaplain's Charter' was introduced whereby HM Ships carrying greater than 20 guns were entitled to carry a chaplain. There were significant increased salaries of £150, plus an allowance for a servant, provision of a cabin and messing with the officers. An added bonus of £20 was paid to chaplains willing to accept the additional duties of schoolmaster. While this was quite a handsome package many senior clergy took exception to a seemingly lower status of school duties. Every chaplain that served greater than eight years of actual sea service, and not absent more than six weeks, with recorded good conduct and moral behaviour by respective Captains, was entitled to half-pay or pension, which was five shillings per day.

Chaplains as Schoolmasters

Schoolmasters, who later became known as naval instructors, and chaplains coexisted for many years. The attached extract from a 1913 Navy List shows Chaplains and Naval Instructors listed together and it was not unusual for the former to be employed as naval instructors and where no instructor was borne the chaplain was obliged to fulfil these duties. As previously mentioned Chaplains Hall and Riley had done so. It can also be seen that Hall was listed separately to the other chaplains.

Even as late as 1918 the annual report of school instruction in the aged cruiser *HMAS Encounter* which in that year became a training ship (firstly without a naval instructor) was submitted by Chaplain Vivian Thompson and subsequently forwarded by the Captain without comment to the Naval Secretary. Within this correspondence Thompson says:

The work is hampered, too, by an inadequate stationery allowance. In a ship that carries a large number of Boys, as this ship does, I beg to suggest that the Stationery allowance be increased. I have supplied necessary items from my own pocket because they were not within the scope of the allowance.

Thompson had transferred to the RAN from the Army. He was a tall, thin man, who conducted services in a large clerical outfit which complemented the university graduate's gown. Perhaps this is how the Cassock, which Protestant and Anglican RAN chaplains receive today, was established. When Thompson joined the RAN there were fewer than 15 university graduates in its ranks. Naval chaplains were usually the best educated and continued to undertake the traditional functions of Naval Instructors long after they ceased to hold both titles formally.

Chaplain Tulloh's report from *HMAS Canberra* bears similarities to the chaplains' experiences of today. First, it was a two year posting as majority of our postings are now. Second, the progress report is recognisable in today's Naval Officer Performance Appraisal Report (NOPAR). Third, as described by the Captain, a chaplain's personality and interests in performing the role of a sea chaplain is not much different some 75 years on. One notable difference however is Tulloh had been in the service for 26 years and was still actively undertaking a full sea posting.

Working on a warship takes a toll on every sailor including the chaplain. Whether it was a century ago or today, the chaplain is alone in their role and it is also difficult to find quiet space to do counselling, worship on Sunday or deliver workshops. Space is at a premium with many competing

interests and chaplains need to make the best with what they have.

Chaplain Pendleton-Stewart who joined in May 1913, carried on with integrity through difficult work conditions on board *HMAS Encounter* without adequate space to care for and support men and conduct instructional classes. In his annual reported dated 18 February 1914 he writes:

There is no quiet place set apart within the ship where the men can meet for classes conducted for their moral and mental improvement. Under present conditions it is not possible for the Chaplain to conduct voluntary religious services or classes with any degree of satisfaction. I submit that more effective work could be done by the Chaplains in the Royal Australian Navy if they were granted a measure of independence in carrying out their efforts for the benefit of the men.

This is not too different to today from my experiences onboard warship

Sea Chaplains: Serving Their Country With Pride

HMAS Melbourne in 2013. It is certainly a balance game in finding the appropriate spaces as a chaplain on board a ship. You have to be a very good reader of people and decide advantageously what is the best direction forward on many things including where and when one sits, reflects, works, stops.

Chaplains on active service

Like their colleagues, sea chaplains have also entered battles, been killed in action during wartime and achieved courageous acts. The New Zealand Maori War called for an increased naval presence which included the 21 gun screw ship *HMS Orpheus*. In February 1863 making for Auckland she struck the bar at the entrance to Manakau Harbour on the west coast of the North Island where she broke up. Of the ship's company of 256 only 69 were saved. Among the dead was her chaplain Charles Haslewood, the first naval chaplain to die on active service in Australian waters.

Shortly after the declaration of WWI coded German signal traffic in the Pacific region was being intercepted. This was passed to Dr Frederick Wheatley, a Senior Naval Instructor for decoding. The task proving difficult the services of a naval chaplain the Rev Frederick Riley were called upon who helped decipher these important messages leading the Allies to predict the intentions of the German Pacific Fleet. Unfortunately for the church Riley became a full-time Naval Instructor.

CHAP Tulloh, serving in *HMAS Melbourne* at the time of the *Sydney/ Emden* engagement of 9 November 1914, was also employed as the ship's Intelligence Officer. The non-combatant roles of the clergy and the tasks assigned to both Tulloh and Riley, because of their foreign language skills, may have compromised their status.

A world away in the bleak and cold waters of the North Sea, *HMAS Australia* had been sent, unfortunately to be involved in a collision and unable to see action at Jutland. Her chaplain Patrick Gibbons was loaned to the battlecruiser *HMS Indomitable,* becoming one of a handful of members of the RAN to participate in this great naval battle in May 1916.

World War II was particularly severe on ships and men and, chaplains too, paid the ultimate sacrifice. Chaplain George Stubbs RAN died on 19 Nov 1941 on board *HMAS Sydney* with the entire ship's company of 645 men when the ship sank after a fatal engagement with the German raider *Kormoran* off Shark Bay in the Indian Ocean.

In March 1942 *HMAS Perth* was sunk in the Battle of Sundra Strait and with the 353 men lost was Chaplain Ronald Bevington. A few months later in August 1942 *HMAS Canberra* was sunk in the Battle of Savo Island. Her chaplain Lawrence Nash who had only been in the cruiser for three months survived on being rescued by a USN destroyer.

Another chaplain to lose his life in Australian waters was Ernest Laverick, an Army Chaplain, who was serving in the hospital ship *Centaur* when she was torpedoed and sunk off the Queensland coast on 14 May 1943.

One of the ironies of war occurred to Chaplain Keith Mathieson who was a passenger in *HMAS Perth* on his way to join *HMAS Hobart. HMAS Perth* refuelled at Batavia (Jakarta) on 23 February and when *Hobart* arrived a short time later a boat was lowered to take Mathieson and his gear to his new ship. Half way across the boat was recalled as both ships made for sea owing to an imminent Japanese air raid. Mathieson now once more in *Perth* survived her sinking but was captured by the Japanese and interned as a

prison-of-war serving on the notorious Burma Thailand Railway where he was affectionately known as the "Navy Padre". Here he demonstrated true courage and commitment in helping maintain morale and survival in deplorable conditions with under nourished men driven to hard labour and, suffering from disease, died in large numbers. Being a good communicator Mathieson sought out sympathetic guards and gained extra food to help the sick. He ministered to the many that fell ill and buried those who died with dignity. He maintained a diary and as a survivor when he later returned to Australia he wrote wonderful comforting letters of compassion to the next of kin of those that he had buried giving details of where they lay. Much debilitated by his experiences Keith Mathieson was an unsung hero of a cruel war.

RAN chaplains have continued to support their comrades in all wars and conflicts from both World Wars, through Korea and Viet Nam, Confrontation and Peacekeeping roles in which the RAN has participated.

Chaplaincy in today's Navy

Navy chaplains are expected to have completed three to four years of Bible College training with their church denomination, be an ordained minister, completed at least two years of pastoral experience, be deemed suitable by the appropriate denominational Principal Chaplain and be endorsed by the Religious Advisory Committee to the Services. It is through this extended process and the Officer Selection Board that the Royal Australian Navy can assess whether the chaplain will uphold the Navy values and be responsible leaders before attending the New Entry Officer Course at *HMAS Creswell.*

Essentially, sea chaplains are bridge builders and through being available they become a minister of presence

and peacemaker in a troubled world. Recently, whilst at sea, I reflected upon my role as a sea chaplain: 'What is it to be a chaplain at sea?' It is a hard gig for chaplain standing alone in a fortress of war trying to bring peace to young sailors who at this time are focused on a role that is sometimes beyond them. The young learn their weapons of war in peaceful times through aids and games, and wonder if it actually came to the crunch would they succeed? Everyone is doing something that trains towards one goal. Here the chaplain stands, but separated, providing whatever morale support to those on board so they can best attain their goals. But then there are special moments, in being in the right place at the right time, being there for someone when their world caves in. Giving advice or a suggestion to someone who is unsure which route to take – that's precious.

Not only do cultural social structures and learned behaviour dictate the way roles change over years, even in the various generations we see differences. For instance from my doctoral studies, the Baby Boomers, who are the majority of today's navy chaplains, believe that the way they look (ie their dress code) is more important than behaviour, whereas Generation X rates image to be the lowest denominator and the way someone behaves is far more important (ie morality). The majority of sailors today, Generation Y, will think differently again.

This in turn and the way society now connects with others, outside of the village church, has meant that ministers albeit chaplains need to think differently. New models such as emerging church and organic church are being constructed in some societies as a new phase in the community moving away from the traditional, and yet most chaplains in their seagoing service on a Sunday at sea continue to practice the old traditions of church that have been part of the navy since its inception, with the majority of sailors having NRel (no religion) on their ID tags.

In a rapidly changing world of increased personal freedom of multiculturalism in a largely secularised society, the conservative nature of the armed services and the church has to change in order to remain relevant. Chaplains remain an important part of the Armed Services, even though the culture of the church has changed significantly. Governments and hierarchy have seen the impact chaplains have made over time and they are just as integral to the system as other categories. In more recent times, women have been encouraged to join the ministry and we now have a chaplain from outside the Christian faith.

The sea chaplains' role is a lonely sometimes isolating task nevertheless with great rewards. Whether serving as a chaplain in the early RAN times, through World Wars or in today's new generation, chaplains have fought through hardships and difficulties, shared similar lonely experiences and difficult times sometimes at cost to their own lives. Today however we are better resourced and prepared for the tasks ahead. The chaplain stands as a secure and dependable friend willing to serve, care and support those in need. As we learn from our history the standards to which chaplains operate should never fall below the exacting standards set by our predecessors all those many years ago. ⚓

Chaplain Mel Baker, RAN, first joined the navy in July 2011 following seven years in NSW Police Force as Lead Chaplain in Post Trauma Support. She has accomplished working with New Zealand Police, and the Police Service of Northern Ireland, as well as a visit to the London Met and Hong Kong Police as part of her Doctor of Education in police chaplaincy and police trauma. In the RAN, Chaplain Baker has worked in submarines, including a month in HMAS Farncomb, in HMAS Melbourne and as part of the International Fleet Review team.

ON SANDY WOODWARD

BY JEREMY LARKEN

(Ed: I don't think we've ever published two obituaries of the same naval officer before, but this was such a great portrait of a fighting admiral that it was felt we should make an exception.)

I met Lieutenant Commander Sandy Woodward in 1965 on joining *Valiant*, the first all-British nuclear-powered attack submarine (SSN) building at Vickers at Barrow-in-Furness, as Navigating Officer. Sandy was XO, known as a supremely able submariner, for instance a founder member of the still-new *Porpoise* Class operators – indeed had been (I recollect) XO of *Porpoise* herself. Following Perisher, he had driven *HMS Tireless*, and recently for a short period (due to delays in completing *Valiant*) *Grampus*.

X branch officers appointed to the early SSNs took full General Service Warfare Course – in Sandy's case the Long TAS (Torpedo Anti-Submarine) Course; this because it was anticipated that SSNs would operate closely and directly with frigates in the ASW (Anti-Submarine) role, although things worked out differently in the event.

An awesomely professional role model, true to submarine standards Sandy expected me and colleagues to know their ship intimately system-by-system and valve-by-valve - a mountain to climb in this unique (at that time) submarine in terms of both size and complexity. I failed my first 'viva' with Sandy, passing on 're-scrub'.

Sandy was formidable socially as well as professionally. Contrary to his later austere public image, however, he was always entertaining. He belonged to an exceedingly bright genre of Naval Officers blessed with penetrating wit, perceptive of the bizarre and pitiless of poseurs. He could scarcely organise

a sentence without some irony or 'double entendre', be it illuminating, mischievous or just funny. At that stage of his progression one needed to be robust not to be intimidated. Brusque and caustic he could be, but always an excellent teacher, and beneath the banter kindly and caring.

Sandy's brisk mode of address to all and sundry did not always reassure. Always precise and to the point, beyond the wardroom this could take on enigmatic and indeed alarming dimensions. Later, as CO of *Warspite*, he was known as 'Dr Spock' – a nickname he reputedly quietly enjoyed. Nearing the final stage of build and with the ship's company complete, *Valiant* suffered a six-month delay due to a need to rebuild the emergency cooling system. This created awkward re-programming of the operations ('front-end') element of the Ship's Company who were not involved in this work. With X Branch colleagues, I attended whilst Sandy broke this news. He was severe and abrupt, and his address was received with some dismay. Amongst all his gifts, sensitive communicating 'downward' was not one – and I learnt richly from Sandy on this account also.

We all spent a fortnight or so sea-riding *Dreadnought* – the one-off *USN Skipjack* class with a Brit front end. It tends to be assumed that here was initiated an intimate professional relationship between Sandy and John Fieldhouse, then driving *Dreadnought* and the doyen of the emerging group of very able SSN COs. They were however never especially close as colleagues – indeed they had marked differences throughout their immensely distinguished careers, not least many years later serving together at the pinnacle of the UK Ministry of Defence (MoD).

Promoted early to Commander, Sandy was appointed as the CO (or 'Teacher') of the Submarine Commanding Officers Qualifying Course (COQC) – a highly prestigious elevation. He and I both left *Valiant* in Singapore in 1967 to fly home in the then long-range RAF trooper, the four-engined Britannia – deadly slow, imposing a stupefying 24-hour experience via a couple of refuelling stops, enlivened happily by Sandy's many dry interventions.

Since 1917 the Perisher had been the means by which submarine COs 'got their colours'. The Teacher was an outstanding CO in Commander's rank. Until Sandy's coming, however, it was treated as an intuitive art rather than a science, in addition to being by tradition a major alcoholic marathon. Sandy related how impressed he was that Sam Fry, his predecessor, could judge a minute to the second without consulting a stop-watch – but just wondered whether he had a source over Sandy's shoulder whilst demonstrating this!

Sandy set about revolutionising the whole business, establishing principles that I believe remain in place today, 45 years later. The course had continued until his coming to revolve entirely around the 'Periscope' element. This was based upon WWII tactics in attacking an escorted high-value unit (HVU), justified by the associated facility to embed safe submarine tactical handling in hazardous multi-ship conditions, timed to a precision of seconds. This Sandy preserved, whilst rationalising it with a mathematical logic which it had previously lacked, and helping students with associated mental aids – which needed by their nature to be personalised to individual brain functionality. He added a completely new Operational Exercise (OPEX) segment to

the course which, following successful completion of the Periscope phase, took students through realistic operational exercises in the outer Clyde areas and the north-west approaches to the Irish Sea – tricky waters.

I was privileged to be selected for Sandy's final Perisher in 1969. True to its reputation, the course is a life-changing experience, whether one passes or fails. Our team of six (three RN, three RAN) initiated our attacking instruction in the *Dolphin* (Gosport) 'Attack Teacher' simulator. After some weeks of this, we believed we were expert against any number of ships. All such illusions dissolved during our first day in Finwhale in the Clyde exercise areas east of Arran confronted by a single target – real submarine, real planesmen, real bad visibility, real sea washing over the periscope.

It was January. We were billeted in a ghastly hotel in Rothesay. Arising at 0500, we embarked in a motor fishing vessel at the pier which took us out to Finwhale at her buoy. Here our Duty Captain would get the submarine under way under Frank Low's fatherly eye whilst the rest of us settled for breakfast in the Wardroom (from which the luckless ship's officers were evicted, following an even earlier breakfast), thinking ourselves into the coming dramas of the day, poring over our notes whilst digesting fried eggs and bad coffee. After some hour and a half we would reach the diving position and submerge. Working in pairs through the day (my 'oppo' was my dear friend (and later eminent) Ian MacDougall, we would work through a succession of attacks on the forward 'Attack' periscope whilst Sandy controlled matters from the after 'Search' periscope – goading us with his inimitable stream of crisp and generally provocative 'Sandy' observations.

We desperately sought to be invisible to the frigates and destroyers that (from Week Two of this four-week inquisition) tormented us around the high-value unit (HVU) target, whilst Sandy ensured they knew precisely where we were and directed their hazarding manoeuvres to his prescription. After each attack Sandy debriefed us, sharp and uncompromising, whilst the next attacking run was prepared. At last light, exhausted one-and-all, we surfaced and Finwhale made her way back to Rothesay. A bottle of whiskey was placed on the Wardroom table, Sandy took his place at the head, and set about dissecting for us the follies of the day, laced with contextual perspectives and instruction for tackling the ever-increasing complexities with which we were to be confronted on the morrow.

I retain the most vivid recollection of these sessions. From my scruffy but treasured detailed notes, I could today recall almost where everyone was seated and what was said by whom, above all by Sandy. We would return to the hotel via MFV, again in total darkness. There in the very Scottish bar, I would add a Carling Black Label to the whiskey or three resident in my tummy, go to bed, sleep like a baby, and arise again at 0500 with brain 'as clear as a bell.'

Our course lost then one (RN) of the six after the periscope phase; an RAN member fell a fortnight or so later following

the OPEX under Sandy's successor Dick Husk. Sandy had meanwhile departed to prepare for *Warspite*, next off the Vickers line after *Valiant*. Later I was privileged with access to the Teacher's notebook This provided my first and most intimate insight of Sandy's custom of detailed daily note-taking – plainly a major element of his highly organised intellectual progression through issues, as indeed he later described it to me – and which I know he used, as ever, during the Falklands Campaign. It was enlightening to read his notes on my own Perisher – at least we got good marks for the quality of our pre-course preparations!

I was given command of *Osiris*, happily in parallel with Ian MacDougall in *Otter*. In the Faslane Operations Room, one day 'there was Sandy', having just taken command of *Warspite*, sitting on a table swinging his legs. "Not at sea then?" he quipped cheerfully. I was delighted some weeks later to read in the Operations Room 'Line Book' (= a record of entertaining daily happenings) the observation "Brand new CO to CO of some experience "Not at sea then?".".

Shortly after this (Spring 1971) the USSR mounted one of its most extensive major exercises – code-named OCEAN SAFARI – issuing in strength from the Barents to well south-west in the Norwegian Sea as far as the Faeroes. *Warspite* and *Osiris* were the two UK submarines deployed to survey this event. With her unlimited submerged endurance and sustained high speed, *Warspite* achieved some spectacular intelligence which greatly exceeded *Osiris*'s modest but nevertheless exciting and satisfying contribution. We were congratulated jointly for our efforts by the Flag Officer Submarines, the great WWII CO and now Rear Admiral Ian McGeoch. I do not recall discussing the saga directly with Sandy, but it was certainly an added happiness to have been his 'partner in crime' in a significant operational enterprise.

Many years later, having both left the RN and working together on Command & Control and Leadership for the major-hazard industry, Sandy spoke of some of the issues he had had to handle in *Warspite*. Under the command of his predecessor, *Warspite* had endured a traumatic experience in northern waters. This had shaken severely her ship's company, some of whom left submarines in consequence and several more were – in terms of nerve – never quite the same again. Sandy encountered a profound air of anxiety at any vigorous submerged manoeuvre – operationally unacceptable. With his XO James Laybourne, also newly joined, he arranged routinely (at first with due warning) lots of bow-down, bow-up and corkscrew manoeuvres to restore confidence.

The years passed. I recall that Sandy had been promoted at essentially the first opportunity to Captain and appointed as Assistant Director Warfare in the Directorate of Naval Plans. Here he cut his teeth as a ferocious advocate of the 'Naval Case' in the Ministry of Defence (MoD), and scourge of the RAF and the Air Staff's excessive inclination for deceitful MoD claims and politics – a formidable skill that he continued to contribute from without as well as within the RN for the rest of his life.

From there Sandy was appointed Captain Submarine Sea Training (CSST), a post in which he again succeeded Sam Fry. Sam had set up this new consolidated approach to submarine sea training following the sinking of an elderly submarine alongside at *Dolphin* (Fort Blockhouse) and the consequent Cook Report which identified the pressures that the nuclear SSN/SSBN programme had imposed and the inadequacy of the existing individual squadron training arrangements, with just a loose lead from the Third Submarine Squadron at Faslane.

SST was essentially a specialist squadron staff, populated skill-by-skill with personnel fresh from sea and well respected. Whether or not Sam was the ideal first Captain (SM), he was supported as Commander (SM) by a supremely able contemporary of mine: Hugo White. By the time I was appointed to relieve Hugo, Sandy was himself in the final year of his time as Captain (SM). He and Hugo had it all running 'like a sewing machine', and Sandy was definitely standing back. So the organisation was essentially mine to run whilst Sandy handled the strategy and, I suspect, was thinking ahead as his intellect, professional expertise and obvious potential for greater things portended.

It was certainly a year during which I've rarely worked harder. We were trainers, judge and jury, as is the RN custom. Lt Cdr Ken Armitage, then a staff member, wrote in *The Financial Times* on 17 August 2013 that Sandy "was positive, disciplined and determined to meet his stated objectives", setting standards and "always supportive and encouraging". I do not recall Sandy ever questioning any of my decisions in terms of whether or not a submarine was first safe and then ready operationally for full accreditation. He did however take a direct hand in high-end operational training and the new computer-driven command systems being fitted in SSNs, working directly with my Operations deputy Mike Boyce who later became a most able First Sea Lord and then Chief of Defence Staff leading up to and during the second Gulf War – pressing the Prime Minister on a range of issues, and being somewhat 'short toured' for his steadfast rationale and integrity. Sandy and I had many reflective discussions on training methodology which, working together later in the civil world during the 1990s, we both would have regarded as somewhat elementary – although Sandy invested the more penetrating thought to the matter. I delivered a hard greeting strapline to work-up COs: "I won't wish you luck, as luck is not a commodity in which we deal!" I recall Sandy suggesting that helping further our charges to succeed stage-by-stage would reinforce self-confidence, and enhance accordingly the outcome in terms of 'return on time and effort invested.' He was surely right. That said, I believe we did much more of this than we permitted ourselves to recognise – and I reflect anew on his huge gifts to me and many others then as when Teacher.

At the same time Sandy was working on a strategic tool, a matrix from which could be identified what he termed an 'Isolable Option' whereby a protagonist could overwhelm

an opponent by a single strategy – the German attempt to break the link between the USA and the UK during WWII, had they devoted sufficient U-Boat resources 1941-43, being a credible example. He submitted this for academic scrutiny, leading to advice that it needed more work. These many years later, having with a helping hand myself delved into strategic risk management at an advanced level, I know this was correct – but it offers an excellent example of Sandy's inquiring mind and intuitive grasp of mathematics and Operations Analysis, extending from such formal training in maths that BRNC Dartmouth had provided decades before. We continued to discuss this issue from time to time, our last exchange on the matter being autumn 2012.

From CSST Sandy was appointed as the second CO of the Type 42 guided–missile destroyer *Sheffield*. I had been appointed CO of *Valiant*, and we attended the same COs Designate Tactical Course at *Dryad*, of which the lively Conrad Jenkin was Director. I'm not sure how much Sandy enjoyed *Sheffield*. Like me with *Valiant*, he had his share of mechanical problems, including to one of his two propeller shafts. In exchanging views on some topic, perhaps the Isolable Option, he signed himself of as "Yours, from another Single-Shafter". He was certainly fond of her, and I know suffered a corresponding extra pang when she was mortally wounded.

From there Sandy moved to the key MoD post of Director of Naval Plans, where once again I served under him briefly. Nearing the height of his powers, for this final two years as a Captain he was immersed in major battles whereby the Conservative Government's Secretary of State for Defence, John Nott, was bent on Defence economies, of which the RN was to bear more than a fair or sensible share – as events were

shortly and unkindly to underline.

On promotion to Rear Admiral Sandy was appointed Flag Officer First Flotilla (FOF1), succeeding Conrad Jenkin. To complete the higher command picture, Admiral Sir John Fieldhouse was Commander-in-Chief Fleet Task Force Commander for Operation CORPORATE), Admiral Sir Henry Leach First Sea Lord, and Admiral of the Fleet Sir Terence Lewin Chief of the Defence Staff (CDS).

At the onset of the Falklands emergency Sandy was conducting a Spring Train (training exercise in the Mediterranean), flying his flag in *Glamorgan*. As part of his preparations for his FOF1 appointment, later he told me that he had been working at the USN Naval War College, Newport, Rhode Island on advanced Aircraft Carrier tactics directly relevant to what was to come. It was plain that any campaign to repossess the Falkland Islands would have a major amphibious element as well as such air cover as we could contrive.

I am not party to the full considerations whereby Sandy was appointed Commander of the Aircraft Carrier Task Group. FOF3 was the flotilla commander assigned both the Aircraft Carriers and the Amphibious Ships. Rear (soon Vice) Admiral Derek Refell, a fine and able officer and a previous Commodore Amphibious Warfare (COMAW), had recently succeeded Vice Admiral Sir John Cox in this post. He was, I understand, seen not yet to be fully 'worked up' in his new appointment; and there may have been thought as to whether to recall John Cox. Many assumed that a 'submarine mafia' factor influenced John Fieldhouse's decision, but I am confident that this was not the case. Sandy was a highly-regarded tactician. He was at sea and certainly 'worked up', both in terms of his personal operational readiness, and that of his staff and the ships already

deployed with him. He was also some 1300 miles towards the scene of action.

In support of this view, Conrad Jenkin wrote in *The Times* 8 August 2013:

I have always felt that submariners, in having to pass through the exceedingly fine sieve of the submarine Commanding Officers Qualifying Course followed by then having to sharpen their operational skills in all sorts of underwater skulduggery 'up north', end up with a sort of steely mental toughness that few if any of us surface ship officers ever achieved; and Sandy Woodward had that toughness in abundance. When the Task Force sailed I knew all the other Rear and Vice Admirals in the Fleet and when Admiral Fieldhouse put an end to any talk of replacing Woodward by some more senior officer, I am confident he made the right decision. As Sandy took over that job from me, I was convinced from the word 'go' that he would do it far better than I ever would have, as events proved.

Sandy's force of destroyers, frigates and support ships (Royal Fleet Auxiliaries (RFAs) – tankers, stores and ammunition ships) departed the Gibraltar areas for Ascension Island just south of the equator. From the UK sailed the aircraft carriers *Hermes* (Captain Lin Middleton – and to which Sandy duly transferred his flag) and *Invincible* (Captain Jeremy Black), the latter nursing some major engineering defects which were resolved at sea. My own part of the story was as Captain of *Fearless*, the amphibious command ship from which the detailed landings were planned and duly executed – host to the Maritime Amphibious Commander (Commodore Michael Clapp, and COMAW) and the Landing Force Commander (Brigadier Julian Thompson, and Commander 3 Commando Brigade) and their substantial staffs. The carrier and amphibious groups and their commanders were to rendezvous at Ascension Island at a fateful juncture mid-April.

The command structure under Admiral Fieldhouse was complex and changed several times. Sandy, Michael Clapp and Julian Thomson were for periods co-equal Task Group Commanders, whilst Sandy had degrees of primus inter pares status which varied and were by no means always clear to those concerned. Notwithstanding Admiral Fieldhouse's superb personal leadership of the campaign from his shore headquarters at Northwood, Middlesex, the consequent misunderstandings were serious.

Baroness Margaret Thatcher in 1992 wrote of Sandy: "There were those who considered him the cleverest man in the Navy. ……. He was precisely the right man to fight the world's first computer war."

Certainly his agile brain generated bright ideas at an alarming rate. At inception these were generally not ordered,

ON SANDY WOODWARD

and his hapless staff could readily be run ragged without stern prioritising by a firm deputy – which it had previously been my privilege to be in a number of posts. Michael Clapp knew Sandy Woodward only slightly and Julian Thompson not at all.

A meeting of these seagoing principals would almost certainly occur near Ascension Island where the small Carrier Group had assembled before us. Sure enough, as soon as *Fearless* was within range, a helicopter bearing the Admiral approached. The pressures from the Commander-in-Chief's headquarters at Northwood were already acute and there was a residual air of stress aggravated already by the ambiguities in the command structure. Some days before, I had decided to attempt to prepare my leaders for the type of intercourse such a meeting was liable to bring. I was anxious above all that they should recognise the inevitable barrage of Woodward ideas, some projected simply as a cheerful agenda for lateral-thinking debate.

Everything turned out as predicted, but my attempts to fix the chemistry proved in vain. My two champions were defensive, and dismayed and offended by Sandy Woodward's breezy and provocatively creative demeanour. This set a pattern of mistrust, almost adversarial, between the offshore Carrier Group and the inshore Amphibious Group – the two principal headquarters groups afloat. They rubbed along together. But it was a sadly raw relationship, fraught with misunderstanding and perceived offence.

I did go on trying to moderate these stresses and strains, with little success. I would only add that a bunker syndrome between command centres under pressure is the rule rather than the exception. Command centres quickly adopt personalities. The analogy of personal relationships to those between

command centres, with imperfect communications in stressful, threatened and entrepreneurial circumstances, is therefore a useful guide to their likely behaviour. As a redeeming factor in the Falklands Campaign, this was in some senses a creative tension, and it did not prevent our ultimate success.

There are vivid accounts of life with Sandy in *Hermes* through the campaign. His most delicate task was to provide all the air cover he could to the inshore operations whilst keeping risks to the carrier group at acceptable level, preventing above all serious damage to *Hermes* or *Invincible*. Not well known is that submariner Sandy and the Captain of *Hermes* and Sandy's de-factor Chief of Staff, Lin Middleton – older than submariner Sandy, and a fast-jet pilot of some renown – had radically different views on the matter. Elements of the debate still rumble, but I have no doubt that Sandy was correct and to a mathematical nicety

Jeff Tall, later Curator of the UK Submarine Museum, was in *Hermes*. Contributing to the BBC obituary 'Last Word' programme on Sandy, he provides a lively evocation of the titanic debates. The programme included extracts from a previous interview by Sandy himself on the need not visibly to be affected by bad news. My company uses today a quote from the great General Bill Slim: "When things are bad, there will come a sudden pause when [people] will just stop and look at you. No-one will speak; they just look at you and ask for leadership. You will never have felt so lonely in your life."

Sandy knew all about that, and drew such reflections into the talks he gave on Stress to our company clients later (see below). He recalled the *Hermes* Medical Officer insisting upon seeing him to express his concerns about stress around the ship and Sandy's team. Sandy, much preoccupied with major issues, had trouble giving his
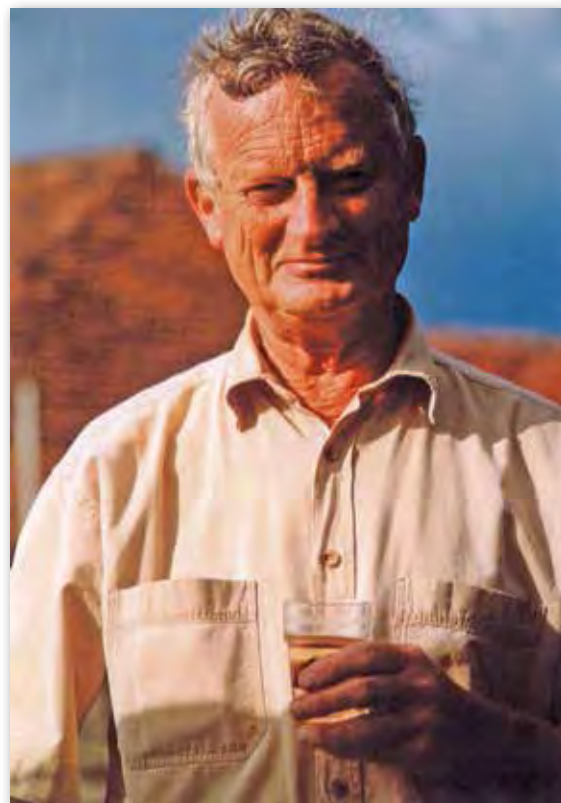
full attention. "Tell me" he said "what are the symptoms?" – suppressing a yawn with difficulty. "That's one!" said the Doctor.

Only after the surrender did Sandy manage to get ashore. He landed onboard *Fearless*, and with others I joined him for a helicopter-borne survey of some of the battlefield sites. I remember particularly the devastating scene at Pebble Island, the airstrip strewn with Pucara aircraft wrecked in the daring SAS raid. He was not in talkative mood, very sombre – and possibly still cross with me. Whilst he was still FOF1 however, I did call on him one evening in his assigned Terrace house in Portsmouth Dockyard. It was a gentle reflective occasion, and I sensed that any residual personal antipathy was easing. Perhaps two years later I called on him in his MoD office when 3* Deputy Chief of Defence Staff (Commitments). He was relaxed, and a touch mischievous on 'Head Office' matters.

In 1991 both of us had recently retired from the RN. In the wake of Lord Cullen's report on the Piper Alpha disaster, I had attracted the attention of senior managers in the UK North Sea hydrocarbon exploration and extraction industry. They encouraged me to form a company to help them with improved emergency command and control. My analysis was that training which synthesised the leadership elements of the Perisher (distilled, of course, to separate this core element from the substantive submarine-specific matters) would be a powerful medium. Who better to consult than Sandy? To my delight he responded enthusiastically, additionally agreeing to be a Non-Executive Director of the company.

Together we put together an eight-day course, later

distilled to five. The target clients were Offshore Installation Managers (OIMs) of Oil and Gas platforms. The principle was to assemble four or five active or trainee OIMs in a small vessel. This was not to impose maritime skills but to confine them together 24/7 in a manner that could not be achieved in a conference hotel suite. The curriculum demanded the hands-on management of complex practical time-driven problems, moving actual assets around and including the associated logistics. Each trainee was to be in charge for a period long enough to ensure he or she got tired and would experience elements of operational and personal stress. The area we selected was the Firth of Clyde; we knew it well, it lent itself to a fine and flexible business scenario, and it offered the great advantage of a large reasonably sheltered area – seasickness not being a useful feature.

Sandy developed a module on Stress. It was more than just stress; it was essentially his treatise on leadership, drawing deeply on his Falklands high-command experience, very personal, drilling down to the foundations of much of the self-examination laid out in "One Hundred Days". Profound, arresting, humorously self-deprecating, this was Sandy at his absolute best. It was a privilege to have such illustrious stuff presented under our banner. A Shell executive, e-mailing to me on reading of Sandy's passing, wrote:

> Although it is over twenty years now since we worked together I still remember many of his choice phrases ('who shall follow the trumpet if it maketh a wavering sound' and 'situate the appreciation') but in particular I remember the air of calm authority with which he spoke of his time in command. I have thought back to him during the (thankfully few) serious situations with which I have had to deal both on and offshore in the period since.

An event undertaken with Sandy was always exciting, especially as one never knew quite what was to happen next. The strategy was secure, but it was pointless to try to tie Sandy to a detailed game plan beyond a framework. Whereas his own module on Stress was carefully choreographed, a generic course module was for him quite another matter. By nature an interventionalist, he would interject remarks into a colleague's sessions whenever he felt inclined. Profoundly contrary to current 'correct' protocols of facilitation, this did need some management if client audiences were not to be disconcerted. Working with him was invariably fun, a good knock-about insightful show. I relished these fire-cracker episodes, as did our more interesting clients. Sandy helped enormously in articulating the purpose and direction of the new company. Our clientele expanded, including into the nuclear industry, where Sandy had every element of credibility.

His active time with us drew to a close as health concerns began to impinge. He continued to sail competitively in his yacht *Cry Havoc*, including Cowes week. From his modest and enchanting home facing the water at Bosham, Chichester he then turned to local radio-controlled model-yacht racing – and radio-controlled aircraft. Undaunted by contraints, amongst his fresh enthusiasms was the construction of Nelsonic era ship models to museum standards – work fascinating to watch with his now-arthritic hands. During the final weeks of his fatal illness, he set about establishing from scratch a model railway, of ingenuity and complexity growing to the last moment. For Sandy, ever the fresh endeavour!

To the last Sandy was an influential contributions to the future of the RN, advising at high levels confidentially, and leading two major submissions to the Westminster House of Commons

Defence Select Committee. The future aircraft carriers and their air-group composition were a central concern. His focus was not limited to the RN. A fortnight after he died I received this from Captain Timothy Brown, RAN:

> I got to know Sandy over the last six or seven years and we wrote and emailed each other quite frequently. I initially wrote to him as I felt I owed him the courtesy of letting him know how influential his book, *One Hundred Days*, was in providing an insight into his career as a submariner, rather than a story about the Falklands Conflict per se. From that point on we exchanged many stories about submarines and he let me know a lot about his favourite exploits (perhaps too much!). He taught me much about the strategy of submarines, for which he had insights and knowledge that was second-to-none.

In 2010, I was the Director of our Future Submarine Program and I spent the day with him and Prim down in Bosham where he was keen to share with me his experiences of the *Astute* program as it was ramping up. He hoped he could provide some valuable insights for the RAN and see us succeed in our endeavours. It was great fun!

I shall miss our regular emails, but feel privileged that he took the time to engage me. I remained amazed at his sharp intellect and memory.

At the 70th anniversary of the Battle of the Atlantic remembrance and celebrations at Liverpool last June, the CO of *HMCS Iroquois* told me that he presented a copy of Sandy's book *One Hundred Days* on his Falklands experiences to each quaifying OOW as the best treatise of which he knew of leadership under stress.

Within a day or so of his death Admiral Ian MacDougall e-mailed me:

"Thus passeth a great man"

Jeremy Larken joined RN in 1957, qualifying in both submarines and surface warfare. NO of Valiant on build, duly commanding Osiris, Glamorgan, Valiant, Third SM Squadron, Fearless (Falklands Campaign) and UK/NLPhibGru, with intermediate MoD posts. Retired as ACDS (Overseas) 1990, starting company in crisis & emergency management and associated leadership.

Unmanned Maritime Surveillance and Weapons Systems

BY FLYING OFFICER GARY MARTINIC

The rapid evolution of military robotic technology evident today has seen the emergence and growing acceptance of unmanned vehicles (UVs) across all three operating environments, air, land and sea. This has been due to the fact that UVs have consistently demonstrated their worth across a wide spectrum of current military operations and campaigns.[1]

Developed primarily because of their strong intelligence, surveillance and reconnaissance (ISR) capabilities, lower unit costs and reduced risk to the operator, the development of UVs has continued at an unprecedented pace. Not only can they be used for ISR missions, but they can also be used to provide the delivery of effective firepower as unmanned weapons systems (UWS), and they have grown smaller, faster and more sophisticated with each passing year.

Although the most pronounced use of UWS in today's theatres of conflict have used unmanned aerial vehicles (UAVs), both unmanned surface vessels (USVs) and unmanned underwater vessels (UUVs), are fast catching up to their 'aerial' counterparts due to advances in computing and robotics, navigation, communication, power supply, and propulsion systems. UWS are gradually though consistently replacing humans in many combat missions as they take their place as frontline naval weapons systems. Their mission applications are increasing to include maritime and port security, anti-terror/force protection, ISR, naval warfare and identification and defusing of underwater mines.

Aside from military uses, maritime UVs have also been widely used in a variety of civilian offshore applications including exploration of the Antarctic Ice Shelf, inspection of underwater oil/gas pipelines and international telephone cables, investigating the impact of subsurface oil plumes (spills), UUV deep dive missions to investigate deep ocean photographic surveys, and lastly in maintaining undersea facilities where oceanographic research is carried out. Today 'state-of-the-art' USVs and UUVs are fast becoming more prevalent, and they are being incorporated into the navies by an increasing number of nations due to their utility and effectiveness. This article describes the advances, capabilities and military advantages of USVs and UUVs.

Historical Background and Classification of Naval UWS

The naval use of UVs has a long history and refers to any vehicle that operates in the marine environment without a crew. Indeed naval UVs, such as torpedoes, underwater mines and target drones, have been in use and have been tested since WWII, while ballistic missiles and cruise missiles have been employed since the days of the Cold War and continue to be in use today. The demonstrated success of UVs, particularly naval UWS in conflict zones, have highlighted their combat effectiveness across a spectrum of naval applications. This in turn has had the effect of encouraging further development and expansion of their use in future naval operations. Indeed maritime UVs are valuable for both military and non-military missions as outlined in the introduction above, but they are also significantly cheaper compared to the construction of

maritime vessels and they are also more flexible than commercial-ship contributions, as can be observed via the use of 'Wave Gliders', which harness wave energy as their primary means of propulsion.[2]

With regard to the classification of naval UWS, USVs are unmanned naval vehicles which operate *above* the surface of the water. Under this category fall the unmanned patrol boats, whereas UUVs are unmanned naval vehicles which operate *below* the surface of the water. Examples of this class include various types of submersible vessels. Both of these naval UVs can be operated either completely autonomously, or alternatively via remote-control from a considerable distance away.

Unmanned Surface Vessels (USVs)

This group includes the autonomous and semi-autonomous, highly-manoeuvrable, and quick unmanned patrol boats. There are varied types of USVs available 'off-the shelf', however for the purposes of this discussion, only a few of the better known models will be discussed here.

Aside from their enhanced ISR and interception roles, one of the greatest advantages of USVs are their capabilities as low-cost 'force-levelers'

against asymmetric threats, making them excellent naval assets for ship force protection.[4] In essence, this allows them to be used as the first naval line of defence by employing them to inspect certain vessels of interest by naval operators far removed from potential danger zones. Furthermore, they can be reconfigured to various mission requirements thereby further increasing their utility.

Initially developed in the United States as far back as 2001, though first tested in 2003, the *'Spartan Scout'* (Figure 1) is an unmanned surface inflatable watercraft consisting of a rigid hull, that is capable of working autonomously and remotely.[3] Originally designed for surface surveillance and force protection missions in its 7m, 2 ton and 1,360 kg version, subsequent versions of the Spartan have produced an 11m USV capable of carrying a payload of around 2,267 kg.[4]

Both initial and subsequent versions of this USV came armed with .50 calibre mission guns as well as electro-optical sensors, infrared surveillance and surface search radar.[2] It can also be modified for mine detection or anti-submarine warfare, and when equipped with Hellfire or Javelin missiles, it has the potential to attack other surface vessels and can even effect precision strikes ashore.[3]

Another effective remote-controlled and semi-autonomous USV is the 'Protector' (Figure 2) which is manufactured by the Israeli Rafael Defence Systems company.[5] Specifically developed to counter terrorist attacks on Israeli maritime assets, the Protector has the unique distinction of being the first USV to be employed in operational combat service. With a V-shaped, highly manoeuvrable 9m inflatable rigid-hull, the Protector is both fast and stealthy. Its stealth capabilities are due to the

vessel's low-profile upper structure which is sealed and aerodynamic, and which also gives the vessel better stability and endurance (up to eight hrs of operation at a time).[6] Various mission requirements can be met due to the Protector's modular platform design which allows it to be easily reconfigured, and it's high speeds (92.6 km/h) are achieved via its single diesel engine which drives its water jets.[7] Furthermore, this USV is fitted with a Mini Typhoon Weapon Station, a TOPLITE electro-optic surveillance and targeting system (allowing day/night targeting capability via forward looking infrared), charge-coupled devices, laser rangefinders as well as a public address system.[5] Since 2012, the Israeli Navy has been operating a larger 11m version of the Protector, which has a greater range and a wider range of weaponry.[8]

Another more 'basic' USV is the *UAPS20 Unmanned Autopilot System* (Figure 3) which is manufactured by the SIEL company of Italy.[9] This USV has been purposely designed as a 'low-cost' USV which can operate in fully autonomous or remote-controlled modes, usually via the use of a operator control station. It is designed as 7.5m rigid-hulled inflatable boat with a 150Hp 4 stroke outboard engine with a speed of approx. 74 km/h. Despite its basic design, this USV can carry up to 2100kg of payload for various missions which range from harbour/port protection, mine hunting/

countermeasures, ISR with sonar/radar as well as UAV launch and control.

Unmanned Underwater Vessels (UUVs). This group includes the autonomous and semi-autonomous operated (controlled and powered from the surface by an operator via an umbilical or using remote-control), stealthy and long-endurance UUVs. There are a varied number of types of UUVs which are available 'off-the shelf', however for the purposes of this discussion only a few of the better known prototypes will be discussed here.

A system of classification of UUVs based on weight and diameter is in use by the U.S. Navy.[10,11] This system classifies UUVs by the following definitions; *'man-portable'* UUVs which weigh less than 45.2 kg, have less than 0.007 cubic m of payload and are between 7.6-23cm in diameter. *Lightweight* UUVs weigh up to 226 kg, can carry 0.03-0.08 cubic m of payload and are up to 32.4 cm in diameter. *Heavyweight* UUVs weigh less than

Figure 2.
The Protector USV

Figure 3.
UAPS20 USV

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1,360 kg, can carry 0.11 cubic m of payload and are 0.553 m diameter (same as USN torpedoes); lastly, *Large* UUVs can weigh up to nine ton, carry 0.42-0.85 cubic m of payload (plus external stores) and are up to 0.91m in diameter.

While the very first UUV to be developed can be traced back to the pioneers of this field, such as Stan Murphy and Bob Francois of the University of Washington as far back as 1957, todays UUVs are more versatile and significantly more sophisticated.[12] This early model UUV was used to study diffusion, acoustic transmission and submarine wakes and was known as the 'SPURV', being short for 'Special Purpose Underwater Research Vehicle.'[12]

Today, more recent examples of UUVs include the *'Remus'*, the *'Pluto-Plus'* and the *'BlackGhost'* models. The Remus, manufactured by the US Woods Hole Oceanographic Institute, was designed as a low-cost UUV, which is operated via a laptop computer and therefore is completely autonomous.[13] With several aluminium-bodied, torpedo-shaped vessels within this class of UUV, the smallest in diameter is the Remus 600 (Fig.4) measuring 32.4cm. Regardless of its small size, the Remus 600 can operate to a maximum depth of 600m[13] and due to its 5.2 kilowatt-hour rechargeable lithium ion battery, it can operate for up to 70 hrs and at speeds of 9.3 km/h.[15]

The next model in order of size is the Remus 100 UUV which measures 1.60m x 0.19m x0.19m and can operate to a max. depth of 100m. The largest model is the Remus 6000 which measures 3.84m in diameter. Many Remus UUVs were employed during the 2003 campaign 'Operation Iraqi Freedom' to detect underwater mines, which proved very successful,[16] they were also successfully employed in searching for and recovering the

'black boxes' from the wreckage of Air France flight AF447.[17] These later examples confirm the capabilities of UUV platforms for hydrographic reconnaissance, seafloor mapping, and shallow water mine counter measures, which also eliminate the need for larger vessels and costly special-handling equipment.

Purpose-built and designed by the Gaymarine Electronics company of Italy as a reconnaissance and mine counter measures UUV, the Pluto Plus (Fig.5) can be operated by a fibre-optic cable or a wireless link, making it suitable for hull inspections and for counter-terrorism operations.[18] This UUV weighs approx. 315 kg, has a payload weight (in air) of 100kg) and can dive to a depth of 300m+.[19] It is a battery-operated underwater vehicle with an operational endurance ranging from 2-6 hrs. Sensors include three separate sonars and TV camera, and its propulsion is supplied via two horizontal and one lateral thrusters giving it a speed of around 11 km/h.[19]

Originally built by an engineering team at Cambridge University in 2008, the torpedo-shaped 'Blackghost' UUV was designed to autonomously undertake underwater assault courses and to be able to be deployed through an ice bore hole for scientific research missions.[20] Since then this UUV has undergone many improvements including improved software architecture, a new battery module and enhanced thrusters. This lightweight UUV weighs 7kg and is 1200mm long, yet cameras, a battery and a 1GHz computer are stored within its small (100mm diameter) hull.[21] Propulsion is achieved via a 100W main motor. It has a rear propeller to drive it

Figure 4. REMUS-600 UUV

forwards and four internal vector thrusters for manoeuvring, arranged front and back, as two sets, one vertical and one horizontal. Computer processing power is supplied via a very small (100x72mm footprint) PICO-itx, containing a motherboard with a 1GHz processor which can provide up to 1GB of RAM and which controls accelerometers, gyros and pressure sensors, while a second 16-bit microcontroller controls the motors, autopilots and the ability to perform low-level control loops.[21]

What are the advantages of naval UWS for the ADF?

As a nation at the forefront of UWS R&D, the US clearly sees a 'big future' in the considerable warfighting benefits of these unmanned platforms, and as such the US continues to invest heavily in their development and enhancement. In fact, as far back as 2002, the Chief of Naval Operations of the US Navy requested that the Naval

Figure 4. REMUS-600 UUV

Figure 5. Pluto Plus UUV

Studies Board establish a committee to review the status of, experience with, technology challenges related to, and plans for development and concepts for UVs to be used in support of naval operations. Such was, and increasingly has been, the level of interest and enthusiasm across all service branches for these platforms, which the U.S. (and many other nations) see as holding great promise for increasing roles in future military operations, encompassing air, land, sea, and potentially, space.[22]

With respect to the advantages that these naval UWS can provide for the ADF, it is the powerful combination of the protection of the operator from direct enemy action, strong ISR capabilities as well as the ability to provide the delivery of effective firepower, along with characteristics such as high manoeuvrability, flexibility and speed (USVs), and stealth and endurance (UUVs), which are undoubtedly the main advantages of these naval UV platforms.

Underwater mines are considered the most serious threat to many critical waterways of the world. Although not considered sophisticated weaponry, they are effective and can destroy key underwater infrastructure assets including important oil and gas pipelines, international telecommunications cabling and surface and subsurface ships. The US Navy estimates that some 250,000 maritime mines are stocked by 50 various countries that could be rapidly deployed in any part of the world's oceans at any time.[23]

With such an insidious arsenal lurking in many waterways, many navies are constantly employing naval divers and dedicated ships to clear these dangerous mines and other obstructive debris from key seaways, so that ships can travel safely and dock at key ports unhindered. Although divers are traditionally the main 'protection' in this regard, by virtue of the fact that they are trained to locate, identify and defuse mines, UUVs, equipped with both sensors and cameras, have made this important job exceedingly easier and quicker.

UUVs such as 'Knifefish' (a variation of the Remus class) can scan both deep seas and comb shallow harbours for up to 16 hrs at a time, un-piloted, and with its stronger low-frequency sound signals, it can discern a mine from a refrigerator littering the ocean floor.[24] These new technologies are not only proving their worth in the area of mine ISR and identification, but also in the areas of port surveillance/security and civilian offshore research applications.

Though UUVs today are more advanced than in the past, problems still remain, for example, underwater communication difficulties exist between UUVs and satellite and GPS systems, due to the nature of the current-shifting, water-distorting and 'obstacle-rich' maritime environment. Other issues include operational endurance and the need for stronger power sources (without need for constant re-charging) thereby potentially increasing operability from 'days to months'. Lastly, the need for more UUVs to be armed and to have 'dual application' exists, so they can destroy enemy targets when required, not just spy on them. The US Navy is currently investigating all of these key future requirements and has stated that it expects to have them solved by 2017.[25]

Armed USVs are essentially *'lethal, unmanned patrol boats.'* With regards to patrolling the littoral environment, USVs are perfectly suited for this role. They have ideal characteristics in this task as they are quick, agile, highly manoeuvrable, have a long range and are also considered 'stealthy'. They are additionally versatile and can be easily reconfigured for a wide variety of critical missions, all the while protecting both the operator(s) and capital assets from potential risk of harm. According to the Rafael Defence Systems company, the 'Protector' can be fitted to work with UAVs, hence USVs could be considered as 'mini' integrated naval combat systems.[26]

Figure 6.
BlackGhost UUV

Israel, Singapore and a few countries in South America, currently operate the Protector USV for both naval operations and to protect their undersea natural resources. Of these, it is believed that only Israel has so far put their USVs to work in actual conflict zones, thus acquiring valuable 'unmanned' combat experience. Being a country that is surrounded by many hostile neighbours, and as such being involved in many continuous conflicts over a long time, Israel has obtained valuable operational experience with the use of many unmanned systems. This has allowed their defence personnel the opportunity to continually and innovatively develop, produce and perfect such systems for their own countries protection as well as providing valuable export opportunities.[26]

In summary, as an island continent, our international trade is overwhelmingly maritime, and as such the protection of our ability to trade is the very thing that underpins our national prosperity.[28] As well as Australia's sovereign land and her island territories, the RAN is also responsible for securing the protection of critical offshore infrastructure, which in the future may extend up to 648 km from Australia's shores.[28] To do this many miles from home, the RAN has a fleet based around two main
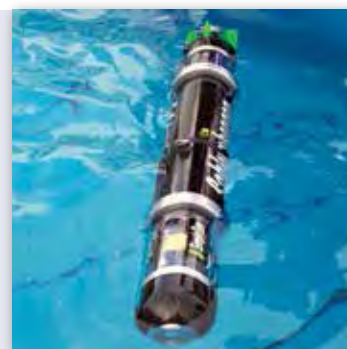
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types of surface combatant vessels which include the *Adelaide* class guided missile frigates and the *Anzac* class frigates, as well as a small fleet of diesel-powered submarines.[29] These fleets are capable of patrolling offshore open ocean regions around Australia, but they are not ideal for patrolling Australia's littoral environment. It stands to reason that both USVs and UUVs are well-placed for 'dual application' patrolling missions of Australia's littoral environment, both above and below the water's surface.

Apart from their low-cost ship force protection and ISR capabilities, the other important feature of these naval UWS is their ability to decipher the tactical picture surrounding them, known as 'Situational Awareness', which USVs and UUVs can provide above and below the water, as well as, in the near future, in the air (via use of USV/UAV integrated communication links).[30] USVs and UUVs can also complement the RAN's ability by assisting in its core mission requirements, particularly by safeguarding the state's shores and by providing littoral ISR capabilities. These technologies also have a lot to offer the nation in terms of low intensity patrolling operations such as illegal fishing, drug trafficking and smuggling, potential offshore terrorist activities, and as has been more evident of late, illegal 'people smuggling'.

Because of the success of UVs in recent operations, this has led to recognition of their broader utility and to calls for more UWS, and coupled with their low production costs and low-level of risk to the human operator, the future naval battlespace is likely to be dominated by completely autonomous UWS, comprising USVs and UUVs.[31] Once questions regarding the human-robot interface are solved, the effectiveness of naval UWS will be significantly increased, as will their

military capabilities. However, as with other UVs, and due to associated ethical and legal questions surrounding their use, it seems very likely that USV/UUV operators will need to be trained and skilled in strategic thinking and planning because their duties will be to plan autonomous missions which may not necessarily mean that they are controlling the USV or UUV in real time.[32] As changes in technology have always affected the characteristics of the men behind the machines,[32] it may be necessary in the future to survey the characteristics of the new naval officer who will operate these 'non-traditional' naval platforms, which are often heavily armed. This is because they will require a broader range of skills to do the job effectively including one, critical-thinking and rapid decision making skills which are semi-independent of higher chain-of-command structures, and two, and in-depth knowledge of the workings of and the maintenance and repair of these advanced technologies under their control, both being due to the rapid nature of UWS battlefield conditions. ✍

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Figure 2. Photo sourced from: http://defense-update.com/20120805_human_aspects_of_usv.html

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Service anchored in experience and skill

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- **Fleet maintenance and management**
- **Vessel and port services**
- **Integrated logistics management**
- **Marine systems support**
- **Vessel build and modification**
- **Maritime project management**
- **Maritime training**

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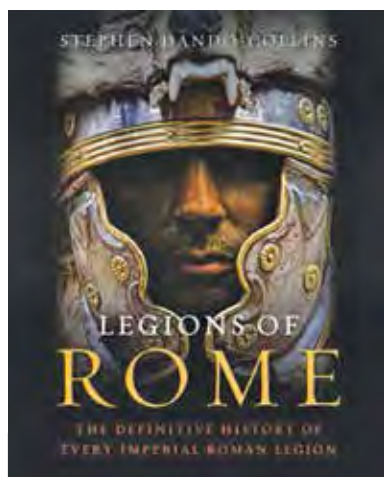
LEGIONS OF ROME
By Stephen Dando-Collins
St Martin's Press, New York. Hard cover; 607 pages

Reviewed by Dr Tom Lewis

This book's introduction puts its central theme best when it argues: "The long existence of the Roman Empire had everything to do with the legions. While the legions were strong, Rome was strong. Conversely, the disintegration of the Late Empire has everything to do with the disintegration of the legions as effective fighting forces." (p. 11)

In this hefty hardback author Stephen Dando-Collins, a well-known historian and novelist, sets out on the enormous task of charting the individual Roman legion histories for hundreds of years, from the formation in the fifth century BC of just four groupings, to the eventual dissolution of Rome when not even these highly capable military formations could save the Empire.

The work is divided into several parts. First we are given an overview of the men and their equipment. This is all-embracing, from outlining legionaries' pay to their weapons, including their food and their organisation on the march and in camp. The examination is finely detailed: for example there is a discussion of the number – five – and types of helmets; their swords, spears and armour. The detail is more than sufficient for the average reader well-schooled in military history. For example Roman swords changed over time, including on which side of the body they were worn; their weight and length – all of these aspects are examined. The book does not get down to the exhaustive finer detail demanded by some: for example the outline of the Roman catapult weapons is good, but not so detailed as to see the finer workings of wheeled gears.

Along the way any reader new to the concept of the Roman armies will surely take away perhaps an inadvertent impression of how formidable they actually were. The sheer physical demands made on the humans who constituted the forces is the first indication: the weight requirements for each soldier on the march, for example, was considerable: and loaded with this the marching legions would still cover 18-20 miles, or 29 to 32 kilometres in a day. And when on the march at the end of every afternoon the legionaries constructed a camp, with earth and wood walls and sentries posted throughout the night, and with every man (and indeed camp follower) in his place. The overwhelming sense is one of remorseless progress and an unstoppable force. It is no wonder that the Empire arose and remained for many hundreds of years given such capabilities as this.

This aspect covered, from there the second part of the book takes us through the history of the individual legions. This is not so interesting unless you are familiar with all of the matter of this part of ancient history, and therefore will be treated as a reference work by many. Nevertheless there are details given in the 2-4 page extracts which are stories in themselves: legions disgraced in failure – the 5th Alaudae; disappeared in Britain – the Ninth Hispana; and anchored forever in one place – the 3rd Augusta, which spent all of its hundreds of years in Africa. Various myths are examined and dealt with, such as all of those legions raised by Julius Caesar used an emblem of a bull on their shields. There are details even of cavalry squadrons such as those equipped with camels and elephants: we learn that sadly the latter did not make the crossing to Britain, which would have lent a new facet to the military history of that country. There are 110 pages of these accounts.

Then come the history of battles, and this is even more encyclopaedic, and to most readers these combat actions will be obscure. Nevertheless, they are well-written despite being concise.

Some of the combat accounts may be familiar to readers who are not well read on Roman battles however. Amongst them are the invasion in Britain in 43AD; and the story of St Paul and his encounters with various non-Roman persecutors. Another story describes in detail how the Romans ventured into Scotland and fought the "rebels" there, with much detail on how the northerners' chariots were defeated by targeting the horses and (we presume as it is described elsewhere), attacking the wheeled vehicles from behind. It was the Romans' northernmost campaign, and a complete victory. Another lengthy account includes the story of the 14th Gemina legion's encounter with Boudicca, the British warrior queen.

Dando-Collins might want to review some of the numbers he cites without question from his sources. For example, he suggests around 80, 000 soldiers and civilians killed in action in an AD60 battle between the forces of Queen Boudicca and the Romans

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north of London, at a village now called Mancetter, on the border of Warwickshire and Leicestershire.

The Britons were eventually involved in a crush due to the constraints of the chosen ground hampering them; their indiscipline and chariot tactics, and they lost badly to the legions, having nevertheless carried all before them including burning a lot of London to the ground.

The casualty figures sound most dubious to me especially as only about 400 Romans are given as killed. The book also gives, quoting the source Dio, that the Britons had "230, 000 fighting men." This must be seriously questioned: the population of Britain in 1000 AD was estimated at only two million; it must have been much less in Boudicca's time. But even given that number, to say that about half of all males of fighting age must have been involved in the action begs disbelief: how would they have known about the need to be there; how would they have travelled there; what would they have lived on, and where are the bodies of the slain?

Beyond the many, many, battles there is other information. One is a three page description of Trajan's Column, that 38 metre monument to the ancient empire which still stands, albeit battered by thieves over time, in Rome. The detail given here is enough for a neophyte to definitely count the Column on a list of sights to be seen when visiting Italy. The disappearance of the Ninth Legion is revisited, with a new theory as to their fate.

There is a great deal scattered throughout the text about Roman customs, laws, superstitions and general culture, and from this the book is almost another story in itself. A reader taking in all of the chapters rather than using the work simply as a reference will gain a great deal of knowledge about the greatest empire

ever to rule the world. As well, the book covers what looks to be all of the major characters' roles in much of the politics of the times, which given they range over hundreds of years, is no mean feat.

The 16 pages of colour illustrations in *Legions of Rome* are particularly attractive, as is the inclusion of useful maps showing the movement of legions and sometimes of the progress of battles. There are black and white pictures every few pages throughout; often of statues depicting the subject matter of the pages, but also occasionally sketches, for example of a legionary and his equipment. This is not to say the work is a "coffee-table" book; it is rather a serious work of scholarship. The writing tone is nevertheless pleasingly easy to read, and the overall graphic design gives an attractive but solid feel to *Legions of Rome* as a whole. There is a comprehensive list of sources and an excellent index. At 600 pages it's a hefty work both in weight and what it has achieved.

Has Stephen Dando-Collins succeeded in his self-imposed immense challenge to tell the story of the Legions of Rome? By any reckoning it must be said he has, and in fine form too. This is a great book, and indispensable for anyone who wants to fully understand Imperial Rome.
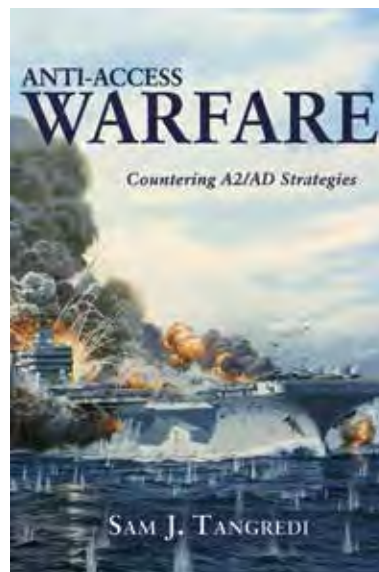
ANTI-ACCESS WARFARE: COUNTERING A2/AD STRATEGIES
By Sam J. Tangredi,
Naval Institute Press,
Annapolis MD, 2013

By Dr Gregory P. Gilbert

Anti-access/area denial, or A2/AD as it is often abbreviated, has become one of the buzz phrases of recent defence debates. The story goes that as the US and its close allies withdraw from their Middle East commitments their militaries have moved away from counter-insurgency operations and pivoted to the Asia-Pacific region where the primary challenge is countering, if not breaking down, the anti-access/area denial strategies of nations such as China, North Korea and Iran. The US air-sea battle concept is often seen as the operational and tactical counter to A2/AD, although few details of air-sea battle have been made available to the public. As a result Sam Tangredi's book on *Anti-Access Warfare: Countering A2/AD Strategies* is very timely indeed.

Tangredi goes much further than the typical water-cooler chat that has tended to accompany the trendy A2/AD label. *Anti-Access Warfare* is

much more than a review of military technology in such operations: it involves a fundamental rethink of anti-access concepts at the strategic level. Tangredi makes the point that anti-access is 'an ancient concept' that uses 'techniques of strategy that have been used throughout military history'. In this Tangredi is profoundly correct, A2/AD is really not new but is rather a new name for an old approach to war. *Anti-Access Warfare* starts by examining an ancient and a modern example – the Persian War of 480 BC and the Gulf War 1991 – to determine five fundamental elements that characterise the anti-access approach. In summary they are: the perception of strategic superiority of the attacking force, the primacy of geography, the predominance of the maritime domain, the criticality of information and intelligence, and the determinative impact of extrinsic events.

These five elements form a historical model of A2/AD at the strategic level which is then utilised by Tangredi when he discusses historical case-studies and modern anti-access strategies. Overall these five elements hold up to the extensive evaluation by Tangedi and hence represent fundamental truths of anti-access warfare – critics might suggest that this is not all that surprising as they are motherhood statements. The theoretical construct that underpins this book is rather illuminating and a rare departure from the standard group think. It is, however, presented in a manner that is both easy to read and comprehend.

Anti-Access Warfare also contains a wealth of information for the naval practitioner as well. The historical case-studies include three anti-access victories – the Spanish Armada 1588, the Dardanelles 1915 and the Battle of Britain 1940, as well as three anti-access defeats – the Nazi defence

of Fortress Europe 1944, the Pacific War strategy of Japan 1942-45, and the Argentine attempt to defend the Falkland Islands 1982. Tangredi goes on to analyse four modern anti-access strategies in detail, using his fundamental elements to help develop the analysis and increase our understanding at the strategic level. These include chapters on East Asia (looking at China's anti-access strategy), Southwest Asia (looking at Iran), Northeast Asia (North Korea), and Central Eurasia (Russia and the near abroad). Each of these modern case studies identifies possible ways that anti-access strategies may be broken down, like breaches in conceptual *great walls*, not necessarily by warfare or military action but often through a combination of other means. In fact Tangredi concludes that high technology weapons, such as the anti-ship ballistic missile (ASBM), do not revolutionise warfare by themselves. Historically it is the collective use of force by sea, air and on land (maritime forces) that are able to enact a superior offensive strategy often coupled with a flexible defence posture, to gain victory.

Some might cynically suggest that A2/AD will lose favour in coming years when it is replaced by the next defence fad acronym, but none-the-less Tangredi is correct to highlight the past historical examples and enduring nature of anti-access warfare. Modern maritime strategy supports this view when it describes sea denial as a sub-component of sea control. Unfortunately some recent military education has conflated the sea denial construct by limiting discussion of its use to the tactical and operational levels of conflict. In my opinion, anti-access warfare and A2/AD are nothing more than new terms for what should be understood as sea denial at the strategic level. The gaining of sea

control in the maritime environment (which includes the littoral) may or may not contain a sea denial element, but a sea denial strategy without other maritime elements is rarely if ever a success.

Anti-Access Warfare is an excellent addition to the modern maritime strategy bookshelf. Like Mahan before him, Tangredi provides a rich tapestry of historical material that is applied to support his original strategic analysis. This work is directly relevant to our current struggle to safeguard the global maritime commons. This book provides clear thinking about future warfare options in the Asia-Pacific region, while avoiding the rather narrow perspectives found in other, more technology focused, works. *Anti-Access Warfare* is highly recommended.

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CARRIER ATTACK DARWIN -1942 THE COMPLETE GUIDE TO AUSTRALIA'S OWN PEARL HARBOUR

by Dr Tom Lewis and Peter Ingman

Avonmore books, Adelaide 2013

There have been a number of accounts of the Imperial Japanese Navy raid on Darwin on 19 February 1942. Douglas Lockwood's 1966 *Australia's Pearl Harbour* was one of the first. In 1980 Tim Hall wrote Darwin 1942 and in 1988 Alan Powell produced a scholarly account in *The Shadow's Edge, Australia's Northern War.* In 2009 Peter Grose wrote *An Awkward Truth, the bombing of Darwin.*

Lewis and Ingman's *Carrier Attack* is the first to concentrate entirely on the military aspects of the attack, and this is much to the advantage of the book. The authors carefully define the task and what is outside their scope – civilian administration and evacuation, for instance, is excluded. They concentrate on 'an analysis and an explanation of events from a military point of view'. They are right to do so for there is much, both strategic and tactical, that has not been explained about the raid. *Carrier Attack* contains the most detailed and accurate analysis of the military events of the bombing written so far.

Lewis, a naval officer who served in the Iraq War, and Ingman, an expert on World War II aircraft, have collaborated before. In 2010 they published *Zero Hour in Broome, the untold story of the attacks on northwest Australia in 1942*. In this fine account the authors honed their skills and in *Carrier Attack* they apply the same forensic approach to their topic. Readers familiar with *Zero Hour* will not be disappointed by their latest effort.

The early chapters of *Carrier Attack* provide background to the events of 19 February. They deal with topics like the strategic importance of Darwin, and its relationship to the nearby war in Timor and the Dutch East Indies in early 1942. One of the best of the background chapters is an explanation of how flying operations were conducted by the Imperial Japanese Navy. Lewis and Ingman explain the nuts and bolts of launching 188 aircraft off four carriers to form one formation, as they did on 19 February, and something the authors point out no-one else but the Japanese could do at the time. They go on to show how Japanese intelligence about the target modified their plans and their selection of aircraft types and bombs for the Darwin raid.

Then *Carrier Attack* shifts to a thematic format, keeping the events of 19 February 1942 in chronological order as far as is reasonable, but departing from chronology when necessary. The Japanese fighters shooting down of the United Stated Army Air Force's P-40s, other Allied air operations, the bomber attack on the harbour and the airfields, the USN in the harbour, the follow up attack by Japanese land based aircraft, each receives a chapter to itself.

Seventeen appendices covers such topics as what remains may be seen today, the finding of the wreck of *USS Peary* in the harbour and precise details of ships and aircraft lost. One appendix deals with the myth of the death toll cover-up. The authors argue that there was no cover-up and it is not possible that, as is often claimed, the death toll from the raid is a great deal higher than the official figure of 243. In fact they provide good evidence that it is probably a little lower, at 235.

Much of what is new in *Carrier Attack* is drawn from Japanese sources. It is pleasing to see this trend in Australian military history, for if we do not consult the records of both sides in a battle we can hardly expect to get the story right. A dozen Japanese sources are used, most importantly the Japanese official history, known as the Senshi Sosho, and combat logs (kodo chosho) of the IJN carrier air groups.

Carrier Attack is the most detailed account of the first raid on Darwin yet written – this is also the opinion of Dr Hiroyuki Shindo of the National Institute of Defence Studies in Tokyo. Shindo has spoken at several WWII conferences in Australia and he recently wrote to me about the book:

"Lewis and Ingman's book provided a very detailed account of the unfolding of the Japanese carrier air attack on Port Darwin on February 19, 1942. I thought the authors also did a very good job of explaining the significance of the Darwin attack within the larger context of the Pacific War in 1942. The use of maps and photographs was excellent, and the appendices, which included technical information on the aircraft and ships involved, and an interesting comparison of the Pearl Harbor and Darwin attacks, were very informative. The discussion of the many myths

on the Australian side regarding the Darwin attack were especially helpful for an overseas reader, since such interesting details are rarely found in accounts of the operation written in Japan."

Dr Peter Williams lives in Canberra and has written several books on the Second World War in the Pacific.
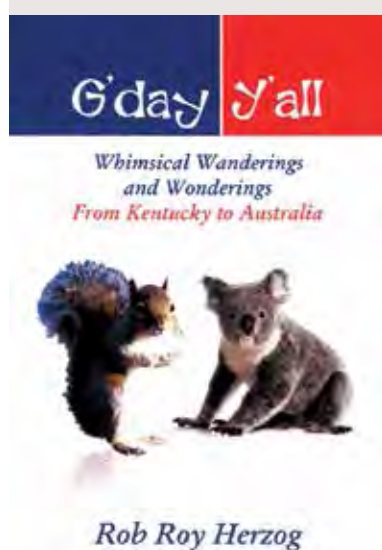
G'DAY Y'ALL; WHIMSICAL WANDERINGS AND WONDERINGS FROM KENTUCKY TO AUSTRALIA

Rob Roy Herzog, Xlibris Corporation
www.xlibris.com.au
Reviewed by Tim Coyle

This is the autobiography of Rob Roy Herzog, the only person who went from Kentucky (the Deep South) to Townsville (the Deep North) via five US Navy aircraft carriers, then onwards to the Australian Defence Intelligence Organisation (DIO), where he served as an imagery analyst and latterly as an all-source intelligence analyst. It is a unique memoir of life as an imagery specialist in a war zone and provides a never

before published description of intelligence analysis in DIO in the 1980s and 1990s. Herzog had his text cleared by the relevant security authorities and his warts and all commentary on DIO in the 1980s and 1990s alone is well worth the modest price of this book.

The book title, combining the Australian greeting 'G'day' with the good old Southern form of address, 'Y'all', sums up the extent of the book. It is divided into three parts: Hawesville (Herzog's home town) and the US Navy; Townsville, Queensland and Intelligence Service. Herzog writes in a humorous whimsical fashion laced with 'good old boy' reminiscences straight out of a 1950s television situation comedy with all manner of appealing characters. The tone changes when he describes his service as a Photographic Intelligence man operating in stifling conditions on aircraft carriers in the South China Sea during the Vietnam war. Herzog details the imagery analysis techniques of the day, not far removed from World War II photo interpreting procedures.

Herzog's description of photo reconnaissance analysis will satisfy any reader curious as to how this science was accomplished in the 1960s. He tells in fine grain technical detail the missions flown, imagery obtained and how it was processed and analysed. His return to the world of imagery analysis at DIO in the late 1970s continues this theme, but with the added spectrum of the role of satellites.

In recounting his time in DIO, he emphasises the striving for professional excellence as he explains the methods and specialist knowledge required to produce intelligence assessments. He also highlights his interaction with colleagues of the 'five eyes' community at intelligence

sharing conferences and his travels to associated locations. At this point of his memoir, Herzog is generally critical of certain aspects of DIO management and cites instances of jealousy, substandard staff management and poor productivity by some staff.

Herzog's comments on DIO management and his experiences were probably paralleled in other Defence and wider public service agencies at the time. Some readers may disagree with some of his observations; however, this is a memoir and are the author's personal experiences as he saw them. Reforms within the Australian Defence Organisation in the last 20 years have done much to eradicate many previously substandard practices.

Herzog's early life in Hawseville, Hancock County, Kentucky in the 1950s appears idyllic. His stories introduce characters who are straight out of southern folklore. Some examples: Hancock County was 'dry' therefore those seeking alcoholic beverages had to go across the Ohio River to Cannelton, Indiana. Martin, one of the Hawseville characters, would ride his horse to the ferry landing, take it on the ferry and tie it up outside the Cannelton tavern. Later, highly inebriated, he would be carefully placed on his horse by the bar staff and patrons, the horse would make its way to the ferry landing, the ferry crew would ensure the horse and Martin were safely ashore on the Hawseville side and the horse would take Martin home.

Joining the US Navy 'to see the world', his recruit training and early service also border on the slap stick. Assignment to the scullery party at the huge Great Lakes Naval Training Station often led to practical jokes for relief from the unpleasant duty. One such joke resulted in one of their

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number using a trolley loaded with breakfast food scraps as a skate board, cannon-balling through swing doors over the loading dock and upending the lot over a senior inspecting officer's staff car.

At the Norfolk naval air station, Herzog was posted as a sentry to scrutinise aircrew identity cards as they passed through a checkpoint between the taxiway and the runway. The only problem was that the aircrew were in taxying piston-engine transports who, quite naturally, refused to stop for this rather ridiculous security check. One pilot flashed what Herzog thought was a dry cleaning docket.

Herzog arrived in Australia as a member of a US Navy photo intelligence unit where he met his future wife Daphne and decided to take his discharge. For several years he did various jobs such as prospector's assistant, postman and a lengthy employment as an officer of the Australian Electoral Commission. A similar cast of characters coloured Herzog's life in Townsville as had in Hawseville.

'G'day Y'all' is a unique memoir of a most appealing 'whimsical wandering'. It tells of the recent past in war and peace. In 1959 the novelist Peter Devries wrote that 'nostalgia ain't what it used to be'. Try this one for a pure form of nostalgia.
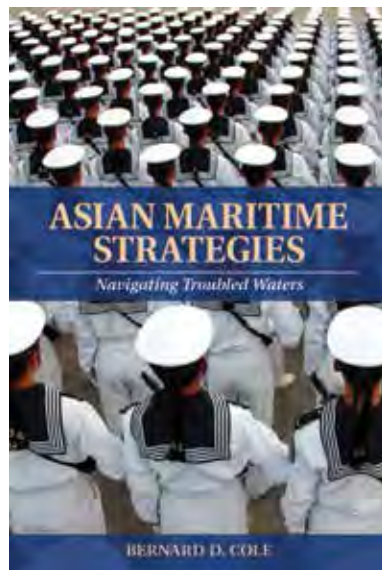
ASIAN MARITIME STRATEGIES: NAVIGATING TROUBLED WATERS

By Bernard D. Cole,
Naval Institute Press, Annapolis MD, 2013
Reviewed by Dr Gregory P. Gilbert

… the center of gravity of world affairs has left the Atlantic and moved to the Pacific and Indian Oceans.

Henry Kissinger, 2010

Captain Bernard D. Cole, USN (Ret.), who teaches at the US National War College in Washington, DC, is perhaps uniquely qualified to write a book on *Asian Maritime Strategies* for the 21st century. His experience as a naval officer, strategist, lecturer, historian and Asian specialist comes to the fore in this compilation of modern Indo-Pacific maritime affairs.

Cole's previous offering *The Great Wall at Sea: China's Navy in the Twenty-First Century* was highly influential and *Asian Maritime Strategies* is his latest instalment. It is destined to be the new standard reference for naval practitioners for many years to come, and should be included in future naval professional reading programs.

Asian Maritime Strategies

commences with a concise introduction to the Asia maritime commons and its geography, providing an essential tour of the region, disputed territories, trade routes and choke points. Cole briefly summarises the maritime strategic thoughts of Mahan, Corbett and Aube, before placing them within the current Asian context. He then follows with a brief historical discussion of past Asian maritime strategic approaches including both successes and failures.

Having set the scene, the core of *Asian Maritime Strategies* is Cole's outline of the national maritime strategies of the United States, Japan, North Asia, China, Southeast Asia, India and South Asia. These seven chapters discuss the development of maritime interests and naval forces on a nation by nation basis, looking at each nation's stated strategic outlook as well as their related interests including areas for potential conflict.

For convenience Australia and New Zealand have been included under the chapter of Southeast Asia – perhaps a construct placed upon the author by his publishers but a revealing aspect of Cole's interpretation of their national interests just the same. The final chapter discusses conflict and cooperation throughout the Indo-Pacific, producing one of the best summaries of these currently available.

The conclusion is thought provoking although decidedly middle of the road, with the sections on 'Conflict Scenarios' and 'Cooperation Scenarios' of most value. In Cole's opinion: "The current naval developments in the region evince elements of a naval arms race but lack the coherent maritime strategies that would make them dangerous to regional peace and security."

While writing this review there was much discussion about China's unilateral declaration of an 'air defence

identification zone' over the Diaoyu/ Senkaku Islands in the East China Sea. The Australian Government's rapid criticism of this provocative act was seen by some in the Australian media as a failure of our political leaders in foreign affairs and dealing with China. However it was clear that a lack of understanding about Asian maritime issues underpinned such media reporting. In such situations Cole's *Asian Maritime Strategies* should be a mandatory source.

The book emphasises that the long running East China Sea dispute is not simply a technical disagreement between China and Japan, rather it results directly from China's (and many other nations') interpretation of the United Nations Convention on the Law of the Sea (UNCLOS) which claims national sovereignty over its declared EEZ. For China it is a sovereignty issue which applies to all of its maritime boundaries – in the South China Sea, in the vicinity of Taiwan and in the East China Sea. As these areas contain Asia's major sea lines of communication (SLOC) they are vital to the national survival of many Asian nations. These include those nations that rely upon trade through these seas (especially Japan and South Korea) as well as their trading partners (including Australia and the United States). Conflict over such vital interests have potential to lead towards open warfare. It is important for one to recognise and understand the potential for conflict and cooperation in maritime Asia in order to avoid making actions that would tend to escalate rather than deter conflicts.

There are a few points which the specialist reader will need to watch out for. This book provides a comprehensive overview of a vast subject area. As such it is not intended to be a detailed reference source on every maritime force in the Indo-

Pacific. Indeed some of the country specific information may be somewhat superficial to those experts, living in the region, who are engaged in developing their own nation's maritime strategy. If you are after detailed national information you will have to go elsewhere as this book is more summary than detailed case-study.

Although Cole attempts to provide fair and unbiased analysis, *Asian Maritime Strategies* is fundamentally written from an American viewpoint. The US Navy is always in the back of the author's mind while he writes, and he carefully avoids criticising US and other national policies. As a member of the US Defense establishment Cole is unwilling (or unable) to pass judgements upon US decisions or even offer ways forward through Indo-Pacific controversies. For instance the US decision not to sign off on the UNCLOS is raised but not debated. And by the way Sydney is not the capital of Australia! Such minor inaccuracies will upset a few subject matter experts.

Overall *Asian Maritime Strategies* is a well written, readable and informative collection of the most up-to-date material on Indo-Pacific navies and maritime Asia. It is highly recommended for ANI members, members of the armed services, as well as for those who have an interest in politics, defence and international relations. It should also be mandatory reading for members of the Australian media who wish to comment on maritime events in Asia and who lack the necessary background. *Asian Maritime Strategies* is an indispensable resource on the US 'pivot' to the Indo-Pacific region and the nitty-gritties of the Asian century.

FIRST VICTORY 1914 -HMAS SYDNEY'S HUNT FOR THE GERMAN RAIDER EMDEN

By Mike Carlton
William Heinemann: Australia 2013
www.randomhouse.com.au/books/ mike-carlton/first-victory-

Reviewed by Desmond Woods

This timely book is about much more than just the search for *Emden*, though her legendary cruise and the Battle of the Cocos Islands are very well covered from both the German and the Australian viewpoint. But the book is also about the urgent transition that had to be made from peace to war in the last half of 1914, for Australia, the RAN and the RN. It also explains the fate of the ships and men of the German East Asia Squadron which was rightly perceived in 1913 as being a real threat to Australia's maritime trade and potentially her cities.

The reader is taken from the nation building entry of the RAN's First Fleet Unit, led by the battle cruiser *HMAS Australia*, in October 1913, through to the events that culminated in Australia's first victory when *SMS Emden* was reported by *Sydney* as being 'beached

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and done for' in November 1914.

The book identifies the first strategic mistake of the war at sea as being one of very grave significance. This was the interference by Winston Churchill, the then First Lord in the Admiralty, with the battle plan of Vice Admiral Sir Thomas Martyn Jerram, RN, the experienced Commander in Chief on the Royal Navy's China Station. His flagship *HMS Minotaur* was more than a match for either of the German armoured cruisers. When war was declared, to Jerram's near mutinous fury, Churchill ordered him to retreat with his ships to Hong Kong. Until receiving these orders he had been on the point of implementing the Navy's pre-war plan to bring the German East Asia Squadron to battle off its home port of Tsingtao. The Germans could either come out to fight or be blockaded – either way they would not affect the outcome of the war or threaten British trade.

Rear Admiral Sir George Patey, RN, commanding the Australian squadron, proposed to the Australian Government that *Australia* escorted by a cruiser should join the RN's China Squadron and seek out he German ships. This sound joint strategy, which would have in all probability resulted in an early victory, was not entertained far less authorised.

Instead of this sound joint plan the ill-judged retreat to Hong Kong ordered from the Admiralty made easy the escape of Vice Admiral Maximilian von Spee. His squadron consisted of two modern and powerful armoured cruisers, *SMS Scharnhorst* and *SMS Gneisenau,* four light cruisers and colliers. He sailed unmolested from Chinese waters heading south into the blue water of the South Pacific where, in an age before radar, he would be effectively a free agent. It was only after von Spee was clear of pursuit and knew he was unlikely to need all his escorts

in battle that he acceded to the request by *Emden's* captain to be permitted to detach and engage in cruiser warfare, or 'guerre de course', in the Indian Ocean. Had Jerram and Patey been permitted to bring the German fleet to battle, as they intended, *Emden's* career would have been brief indeed and her name and that of her captain unremarked in naval history.

Much of the rest of the book is about the fatal consequences of that mistaken order to retreat and the free pass that it gave to von Spee's ships to operate at will. But the early chapters also explain the decision to put the elimination of the minor German colonial settlements, and an insignificant wireless telegraphy station around Rabaul, ahead of the big strategic picture, which was to catch and destroy von Spee's squadron. This was a case of Australian politicians and their Lordships in the Admiralty situating their appreciation rather than appreciating the situation. Germans in the bush seemed more important than those somewhere on the high seas. A pre- war plan to seize German New Guinea and Samoa took precedence over the larger significance of destroying an enemy fleet in being.

An account is given of the raising and sending of the Australian militia brigade, consisting of some young soldiers and more experienced sailors, into a costly frontal assault against determined German and native resistance. Why Patey in his flagship did not provide a barrage from her 12 inch guns, or order fire from his cruisers' six inch main armament, onto the nearby the German wireless station, will forever be a mystery. It was well within range and its location reasonably well known. The sound of large calibre shells landing nearby would have provided a very good excuse for a swift German surrender and avoided loss of Australian and probably German and the local native militia lives.

Meanwhile von Spee despite trying to give the opposite impression was inevitably heading for Cape Horn intending to round it and re-coal at Port Stanley. Off Chile he met the very valiant Rear Admiral Sir Christopher Craddock, RN, at the Battle of Coronel. This was a predictable disaster. Craddock's slow, underpowered, semi-obsolete pre-dreadnought reserve fleet ships were destroyed one by one. Silhouetted against the setting sun they made an easy mark for expert German gunners who were effectively invisible in the darkness. This battle is covered in tragic detail. Craddock had feared that the consequences of not fighting his much more powerful opponent would be the court martial and disgrace that had befallen Rear Admiral Earnest Troubridge, RN, when he had failed to pursue the *Goeben* and the *Breslau* in the Mediterranean in the opening days of the war. Craddock had repeatedly asked the Admiralty for a modern fast armoured cruiser *HMS Defence* to reinforce him in the South Atlantic before the inevitable battle with von Spee which he accurately foresaw would be a defeat. *Defence* was delayed by Admiralty bungling at Montevideo.

In Valparaiso, after their bloodless German victory, Von Spee refused to drink a toast proposed by locals to the 'damnation of the British Navy'. He knew his turn to taste defeat was coming.

Once it was realised in Australia and London that von Spee was at Fiji and beyond being a threat to trade *Australia* could have been sent to the west coast of Chile and Cape Horn, the only route which the German ships could use if they were to return to Europe. It that had been done then the catastrophe at Coronel would have been averted. *Australia's* 12 inch guns would have far outranged von Spee's and would have protected the RN's inferior ships. But of course that is hindsight. It was only

after the humiliating defeat, and the loss of the first fleet action by the Royal Navy since the eighteenth century, that the recently recalled Admiral 'Jackie' Fisher sent *Australia*'s two sister ships to the Falklands to deal with von Spee's armoured cruisers. This they swiftly did at the Battle of the Falkland Islands. The enemy ships that Jerram and Patey could have brought to battle, if permitted to do so, in the North Pacific were finally sunk in the South Atlantic three months and thousands of British sailors' lives later.

Most of the book is devoted to providing the best account in recent decades of how *Emden* and her intelligent and resourceful Captain, Karl Friedrich Max von Muller, von Spee's protégé, roamed the Indian Ocean and succeeded in trying up British merchant shipping and trade in port for weeks on end in September and October of 1914. Even the sailing of the first convoy of AIF and NZIF troops to the Middle East was delayed by doubt about where exactly *Emden* was.

Emden's night attack on the Madras' oil storage depot, the surprise destruction of the Russian cruiser *Zhemchug* alongside in Penang and the one sided battle with the brave French torpedo boat destroyer, which made a doomed attack on *Emden,* are all well covered. The larger than life characters that inhabited that German wardroom are vividly portrayed, as are the eclectic mix of interesting British merchant seaman Muller took as his prisoners before sinking their ships. His punctilious observance of the rules of war at sea made him into something of an international hero and his hunting by a dozen ships became a game followed with fascination in newspapers around the world. The contrast between his humane, courteous naval behaviour and that of the German army's troops ravaging 'brave little Belgium' was noted at the time and has been since by many

authors.

The account of the 'Swan of the East's' last battle with her more powerful nemesis, *HMAS Sydney*, is movingly and accurately retold with a wealth of detail that brings the battle to life. The powerful descriptions of the carnage reminds one that when brave men are being torn apart by high explosive lyddite there are no winners and no cause for exultation among those who have witnessed it. Certainly Captain John Glossop was not among those who felt triumphant after he had seen at first hand what his shells had done to *Emden's* sailors. He wrote: 'I've seen my first naval engagement, and all I can say is thank God we did not start the war'.

The importance of destroying *Emden* was acknowledged in the British Press while there was general admiration for her captain and his men. *The Times* of London wrote: "We are pleased that the cruiser *Emden* was finally destroyed but we acknowledge Commander Von Muller as a valiant and chivalrous adversary. We hope that his life was spared, for should he come to London we would prepare for him a rousing welcome."

Glossop asked his prisoner, Karl von Muller, what he would have done had he known of the presence of the troop convoy so near to *Emden*. Muller made it clear that he would have done his duty, which would have been to shadow the troopships by day and attack by night with guns and torpedoes until he was sunk or out of ammunition. That certainly puts to rest speculation as to what the stakes were in this mid Indian Ocean encounter.

The final chapters of this extraordinary story of risk taking cover the six months of voyaging of the *Emden's* shore party led by *Emden*'s First Officer, Hellmuth von Mucke, from Direction Island back to Germany via Turkey. Emden's landing party was

ordered to destroy the British cable and wireless station's ability to be a nodal point in the Empire's communication network. The nonchalance and friendly cooperation with which they were greeted by the British was, we now know, due to the fact that these station operators knew where their second set of wireless equipment was buried to replace the one that the Germans were smashing. The British also pointed out where a dummy undersea cable came ashore. The Germans set about destroying it with axes, while the real one remained undetected under the sand.

When his captain sailed into battle with *Sydney,* von Mucke soon realised that *Emden* was overmatched, that von Muller's luck had run out. Any survivors must be prisoners. He was determined to avoid the same fate for himself and his more than 30 men and before *Sydney* returned for him he took the leaky local trading schooner *Ayesha* and his sailors on a remarkable and unlikely prolonged adventure. He sailed from the middle of the Indian Ocean to the Dutch East Indies and rendezvoused at sea with a German steamer bound for the Middle East. Finally he led his men in dhows up the Red Sea, evading the RN's patrols, and then fought the local Bedouin to get to a Turkish railhead and thence back to Constantinople. This saga of escape, perhaps without parallel in modern naval history, makes a great finale to this gripping well written history.

The author in his acknowledgements makes clear his debt to, among many others, James Goldrick and David Stevens of the Seapower Centre– Australia. His German research partner was Henning Bess, a descendent of one of Emden's officers and a retired German flag officer. This is a scholarly book rich with the fruits of careful research and can be read and enjoyed by naval historians and general readers

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of history with equal satisfaction. It is the first book since the 1914-18 war histories to deal with all the events of the closing months of 1914 from an Australian perspective. It is therefore a real addition to the library of anyone interested in why Australia went to war in 1914 and how events unfolded on the broad canvas of the Pacific, the Indian Ocean and the South Atlantic.

The startling level of success enjoyed by the little *Emden* and her gallant ship's company hint at what Maximilian von Spee might have achieved with his whole squadron if Australia had not possessed a battlecruiser that deterred him from implementing Germany's pre-war plans. He wrote to his wife that until the arrival of *HMAS Australia* the German plan in the event of war had been to attack Australia and the British Empire through destruction of Australian ships and cargos. He might have also added that he would have aimed to disable Australia's ports and dockyards by bombardment. They were logical strategic targets. That was no idle threat. Von Spee bombarded the port of Papeete in French Tahiti as he passed – because he could.

As Mike Carlton makes clear in his foreword the modern counterfactual concept that the Great War was nothing to do with Australia could not be further from the truth. In 1914 Australia was faced the destruction of her trade and wealth and the possible bombardment of her cities. These facts were not lost on the British and Australian naval officers and Australian politicians who fought hard for a decade to provide the RAN with some teeth and succeeded just in time to prevent disaster.

This book is well illustrated with photographs, diagrams and charts. It contains a useful postscript to explain what became of the main protagonists and provides as appendices contemporary reports and letters.

These add authentic eyewitness voices explaining the events described in the book.

This new book by Mike Carlton is a fine piece of naval research and also a most enjoyable page turner. It is thoroughly recommended.
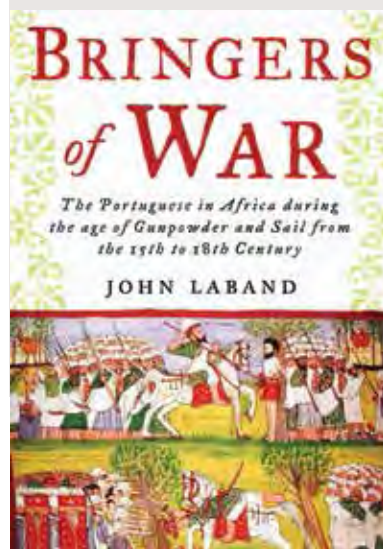
THE BRINGERS OF WAR: THE PORTUGUESE IN AFRICA DURING THE AGE OF GUNPOWDER AND SAIL FROM THE FIFTEENTH TO THE EIGHTEENTH CENTURY

By John Laband
Pen and Sword, 2013,
Reviewed by Major John Johnston

Portugal was the first European nation to establish itself in Africa and the last to leave the continent. People generally know of the voyages of discovery in the late fifteenth century and are aware of the empire's painfully slow demise in the second half of the twentieth century, but what happened between these events is a mystery for most people.

Professor Laband has set out to unveil that mystery by describing how the empire was created, developed, and maintained in different parts of Africa. He examines each region of the empire separately: Morocco, West Africa, the Swahili coast of East Africa, Mozambique, and Angola; and looks how Portuguese established dominion and how native peoples responded to Portuguese imperialism.

Drawing on an impressive array of primary and secondary sources that are available in English, Professor Laband traces the empire's origins to thoughts of the *reconquista*, the recovery of formerly Christian lands that had been lost to Islam. Circumventing the Moslem emirates of North Africa was the driving force behind the voyages of discovery, while controlling the trade routes along the coasts of Africa, India, and the East Indies was a means of paying for the dream rather than an end in itself.

The dream ended at the close of the sixteenth century with a disastrous mission to Ethiopia and a cataclysmic defeat in Morocco. The latter decapitated the Portuguese monarchy and aristocracy and led to Portugal becoming a Spanish dependency and to the empire becoming a prey for Dutch and English freebooters.

During the seventeenth century, the forts around the Arabian Sea and trading posts along the Swahili coast were steadily lost to the Omanis, just as the Indies had been lost to the Dutch and English. The empire's centre of gravity moved to Mozambique and Angola.

In Mozambique, Portuguese settlers – the *prazieros* – established vast estates on the Zambezi vallley, while Angola became the principal source of slaves for the New World. In both regions, native polities were destabilised and collapsed into warlord territories.

Armies of slave soldiers and child warriors fought each other as often as they fought the Portuguese, and bands of irregular warriors marauded through countrysides that had been depopulated through the depredations of the slave trade. To safeguard their possessions,

the Portuguese found themselves drawn into local conflicts and having to expend treasure and manpower for little return.

The success of the Portuguese in Africa is often seen as resting on technologies that were revolutionising warfare in Europe. Heavily armed but manoeuvrable vessels capable of sailing across oceans enabled the Portuguese to penetrate the African coasts, to reinforce garrisons and to subdue rebellious towns. Firearms, whether cannon or muskets, overawed native populations and cowed them into submission, while the sheer, impregnable mass of bastioned fortresses made thoughts of resistance impossible.

However, other powers – the Moors, the Dutch, the English, and the Omanis – could use the same technologies just as effectively against the Portuguese, while African tactics of deploying warriors in a dispersed line nullified the effect of concentrated musket fire. Ultimately, the survival of the Portuguese empire rested on the internecine feuding of native polities preventing their leaders uniting to resist the intruders effectively.

Professor Laband's anti-imperialist approach may make for uncomfortable reading, but his dissection of the Portuguese empire leads to conclusions that are no different those of other analysts if early modern empires, such as Nicholas Canny's studies of English imperialism in Ireland. It would be unfortunate if that approach should deter readers because Professor Laband's work can also be read as a case study for intervention operations.

Portuguese intrusions throughout Africa distabilised African societies and cultures and ultimately destabilised Portugal itself. Parallels with more recent interventions are inescapable. Secondly, features of modern Africa such as armies of child soldiers are

not new but find parallels in the slave armies and irregular bands of the seventeenth century, while the language of the *reconquista* is strikingly similar to that of neo-conservatism and liberal interventionism today.

The title of Professor Laband's book is taken from remarks of an Arab chronicler, writing a generation or so after the first voyages around the Cape. That view would have been shared by all of the indigenous peoples with the Portuguese and other Europeans came into contact. The note for us today is that history has warnings, not lessons, for the present.

THE LIBERTY INCIDENT REVEALED - THE DEFINITIVE ACCOUNT OF THE 1967 ISRAELI ATTACK ON THE US NAVY SPY SHIP

By A Jay Cristol
Naval Institute Press
Reviewed by Tim Coyle

On 8 June 1967 the *USS Liberty*, an electronic intelligence collection ship (AGI), was attacked by two flights of Israel Air Force (IAF) fighter-bombers and five Israel Navy (IN) motor torpedo boats (MTB). *Liberty* was on a patrol

line 13 miles off the coast of Egypt and Israel and Egypt were engaged in the 'Six Day War'. Thirty-four Liberty crew were killed and the incident led to a plethora of investigations by the US and Israel and gave rise to conspiracy theories as to why the ship was attacked in broad daylight in calm and clear conditions by an erstwhile ally.

The Liberty Incident Revealed is indeed 'the definitive account' of the attack and its aftermath. The author, a US federal judge and former US naval aviator, is uniquely qualified to interpret the Israel Defence Force (IDF) tactical command and control (C2) arrangements on the lead up to the attack, the attack itself and its aftermath.

Cristol spent 27 years investigating the incident, conducted over 400 interviews of US and Israeli individuals and secured the release of classified National Security Agency (NSA) reports to prove that the attack was a series of blunders by both the US and the IDF. Details presented at the investigations remained classified for many years and it was this lack of transparency which led to the conspiracy theories which Cristol demolishes.

The book may be divided into two parts: the strategic and tactical background to the attack and the IDF C2 and tactical units' actions in the attack, and the aftermath enquiries and conspiracy theories. The book's value lies largely in the 'lessons learnt' from the attack which shows that deficiencies in pre mission briefings, inadequate training leading to incorrect assessments and conclusions, poor joint C2 and the 'fog of war' are a recipe for military fratricide. The *Liberty* incident is an example of badly prepared units on both sides entering a blind engagement with tragic results. The book is a worthy addition to military fratricide literature.

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The *USS Liberty*, with a NSA electronic intelligence collection team on board, was ordered to monitor very high frequency and ultra high frequency communications on a patrol line approximately 13 miles of the Egyptian coast. The Arab-Israeli war began on 5 June with the IAF launching a maximum strike effort against Egyptian air force bases. *Liberty* was the only USN vessel so close to the war zone. Tensions had been building since mid-May when the Egyptian government claimed there was a concentration of Israeli troops on or near the Syrian border and Egypt was going to demonstrate its leadership of the Arab world and come to the aid of its fellow Arab country, Syria.

On 27 May the US 6th Fleet was ordered to remain clear of a possible conflict zone and not to operate aircraft within 100 miles of the Egyptian coast. The *Liberty* did not come under 6th Fleet command as it was subordinate to the Joint Chiefs of Staff (JCS) because of its mission. This skewed command structure resulted in a labyrinthine communications chain which Cristol describes as:

> JCS, on 8 June, began sending a number of orders directing Liberty to remain clear of the combat zone. Liberty was 120 nm from the Sinai coast when the first 'stand off' message was sent. A total of five stand off messages were sent from or through various command channels, but as a result of mistakes, faulty protocols and other problems, the flurry of messages that directed the Liberty to stand off were not received by the ship prior to the attack.

An IAF patrol flight, with an IN observer on board, sighted *Liberty* eight hours prior to the attack. The observer identified it as a USN vessel and the correct identity as the *USS Liberty* was verified on debriefing. This was passed to naval intelligence with the warning that because of *Liberty*'s merchant ship characteristics (a converted World War 2 'Victory' class freighter) the ship should not be confused with the Egyptian naval supply ship *El-Quseir. Liberty* was marked on the naval plotting board as 'neutral'. Approximately six hours later, and two hours before the attack, the duty officer removed the *Liberty*'s marker as he decided that the information was too old and that no ship would remain in the one location for such an extended period. This action removed *Liberty* from the IDF's current tactical intelligence plot which led to it becoming a target.

As *Liberty* was taking up its patrol line at 1130 on 8 June explosions occurred at the town of El Arish, held by Israeli troops. These troops reported the explosions as shelling from the sea (in fact this was either retreating Egyptian troops detonating their ammunition dumps or IDF clearing operations). The troops alerted the IDF command which ordered a three-boat MTB division in the area to investigate. The MTBs took approximately 44 minutes to close the location at 36 knots and a radar contact was made at 1341 at a range of 22 miles. *Liberty* was steaming westwards at five knots; however, the young and inexperienced operator assessed the contact's speed at 30 knots. This generated the presumption that the unknown vessel was a destroyer.

At this point of the narrative the author begins a masterly technical assessment of the tactical and equipment failures of the action. Answering the question: 'how could such a mistake (a five knot contact assessed as moving at 30 knots) be made', he explains the shortfalls in the radar 'human-machine interface', the primitive target tracking procedures and the faulty MTB division's communications with the shore command. Added to this was the IN's relatively lower prestige profile within the IDF compared to the IAF and the army. Cristol states that 'if the IN had believed that it could reach and overtake the target, it was inconceivable that it would have called for help from the air force'.

Alternatively, the MTBs had tentatively identified the target as an Egyptian destroyer at speed, therefore a call for air support was appropriate. Regardless, a call went forward and the IAF air controller tasked Kursa flight, comprising two Mirage IIIC fighter bombers on combat air patrol over the Suez Canal, to proceed to El Arish and engage the target 'if it is a warship'. At 1357 Kursa flight strafed *Liberty* with 30 mm cannon in three passes, departing the scene at 1404, by which timer a second flight of two Super-Mystere B2 fighter bombers, call sign Royal, was vectored to continue the attack. Royal dropped napalm bombs, only one of which hit the ship, but the Royal flight leader noted the bow identification number and reported it as 'CTR-5' (actually 'GTR-5' – an understandable error as the aircraft was flying at 600 knots) – Roman letters and not the Arabic script seen on Egyptian warships.

This report caused the IAF controller to order disengagement at 1412. Consternation reigned in IDF headquarters as they realised that a US ship might have been attacked. This was aggravated by a worse fear that the ship might have been a Soviet AGI as there were known to be several in the area. The Cyrillic hull lettering 'CCB' of Soviet AGIs might have been confused.

As Royal flight departed, the MTB division approached the *Liberty* from the north-west. The ship was emitting vast clouds of black smoke; the ship's ensign had been shot away and a larger flag had been hoisted on the port

halyard which was on the opposite side to the MTBs. The MTBs signaled 'A-A' the international code for 'what ship?' by light with no response gained. At that point *Liberty* opened fire with one or both of its 50 calibre machine guns.

The MTB commanders consulted their copies of the IDF's 'Identification of Arabian Navies' publication and decided that the target was the old Egyptian transport *El Quseir.* At 1430 the MTBs launched five torpedoes, four of which missed, but one struck the *Liberty*'s starboard side, wrecking the NSA compartment and causing most of the fatalities. As the MTBs passed the *Liberty* they noticed a flag hanging limp and partially obscured by smoke but they did not make a positive identification of its nationality until they passed the stern which bore the ship name. Even at this stage confusion raged in the MTB division and at the IN

headquarters as to whether the ship was Soviet. It was only shortly afterwards when the MTBs came upon a liferaft with a 'US Navy' inscription that they finally realised that they had attacked a US ship.

The extraordinary level of detail of the attack provided in the book includes a description of the physical composition of the IDF command centre and its staff positions, the communications between the centre and the tactical units and the equipment and operator deficiencies. Detailed schematics aid the understanding of conditions on the day. These diagrams include an analysis of what the pilots saw on their runs at the ship and gun camera photographs showing why the pilots could not see the ship's ensign.

The book's first 100 pages are devoted to the attack with the

remainder covering the post attack investigations, survivors' perceptions and the conspiracy theories which Cristol addresses. Appendix 2 compares the IAF and NSA audio tapes and Appendix 3 publishes the long classified NSA report which was released under Cristol's Freedom of Information application.

Some readers may find the official investigations, survivors' perceptions and conspiracy theories narrative challenging to negotiate due to their length and complexities. Regardless, this is a masterful analysis of a critical incident between friendly nations which serves today as a lesson of the importance of the fusion of effective joint command, communications and tactical intelligence with trained and experienced operational personnel.

ISRAELI SUB

PHOTOGRAPHY BY MICHAEL NITZ

The Israeli Navy submarine *INS Tanin* has conducted in its deep diving sea trials in the Skagerrak sea area off Norway. The submarine, still under the ownership of the shipyard Thyssen Krupp Marine Systems in Kiel, used the Danish port Hirtshals for replenishment purposes, rest and crew recreation.

After having successfully finished the trials phase, *Tanin* transited together with its shipyard guard ship through the North Sea to Wilhelmshaven Naval Base, to use the vessel degaussing range.

INS Tanin is expected to be handed over to the Israeli Navy in mid-2014.

Michael Nitz, naval correspondent, Kiel (Germany)

ANI On-line: A guide to the new website.

Our new website is now on-line! In addition to the features available on the previous site, the new site also features a library of past journals, a discussion forum, a news section and member list. This short guide is designed to help you take full advantage of the new features.
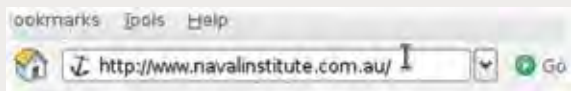

Figure 1

Obtaining an account

In order to access the new features of the site you must have a user account for the website. If you have a current subscription to the ANI, navigate to the website www.navalinstitute.com.au using your web browser (figure 1), click the "Members Login" menu item (figure 2), then click the link to download an application form. Fill in the form, then fax or post it to the ANI Business Manager. Once your account has been created, you will receive an email that outlines your member ID and password.

Figure 2   *Figure 3*

Logging in to your account

Once you have your account details, you are ready to login and access the new features of the site. In order to login, navigate to the website (figure 1) and click the "Members Login" item (figure 2). Enter your member ID and password as they were provided to you, then click the "Login" button. The case of the member ID and password are important: i.e. "CaSe" and "case" are considered entirely different words by the authentication system. Each letter of the password will appear as a single "*" to prevent others from seeing your password as you type. If you have entered your details correctly, you will be presented with the news page. The grey status bar at the top notifies you of the account you are using (figure 4). You are now able to access all of the new features of the site.
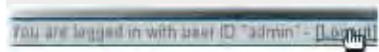

Figure 4

Logging out of your account

In order to protect your identity and to prevent malicious use of your account by others, you must log out of the site when you are finished browsing. This is especially important on public computers. In order to log out, click the "Logout" link in the grey status bar (figure 4).
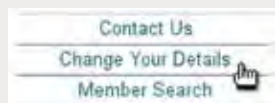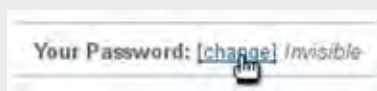

Figure 5   *Figure 6*

Changing your details

When your account is created, only your member ID and password are stored in the system for privacy reasons. However, you may provide other details that are visible to other ANI members. In order to change your details, login and click the "Change Your Details" menu item (figure 5). Then select the "change" link (figure 6) next to either your personal details or password. Change the text appropriately and click the "save" button (figure 7).

The personal information that you provide will be visible to other members of the ANI but will be hidden from members of the general public. You may provide as much or as little detail as you wish but none of the fields are compulsory. However, you may not change your member ID as it is the link between the on-line database and our off-line records.
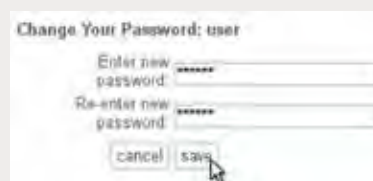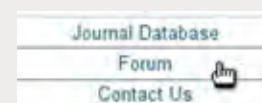

Figure 7   *Figure 8*

Participating in the forum

In order to post topics and replies in the discussion forum, first login and click the "Forum" menu item (figure 8). Then select a forum that you would like to view by clicking its "View Topics" button (figure 9). Select a topic that you would like to read by clicking its "View this topic" link (figure 10). If you are not interested in any particular topic, you may add your own by clicking the "Add New Topic" button (figure 10). Similarly, once you are viewing a topic, you may post a reply by clicking "Add New Post". Fill in the heading and body of your reply and click the "Submit" button to add your reply to the topic. If you change your mind while writing your reply, you may click the "Cancel" button and your reply will not be added to the topic.
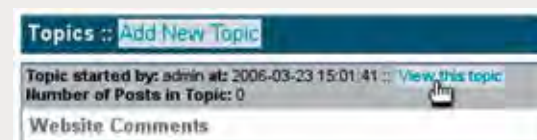

Figure 9

Figure 10

Further questions

If you have specific questions regarding website features or even a feature request, post a topic in the "Website Questions" forum and a site administrator will reply. Otherwise, happy browsing!

Thinking of Making a Contribution?

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In general, please present your work with the minimum of formatting.

Paragraphs:

Don't indent, and leave left justified. Separate paragraphs by one line. Single spacing only. Use one space only after stops and colons.

Conventions:

Use numbers for 10 and above, words below. Ship names use italics in title case; prefixes such as HMAS in capitals and italics. Book and Journal titles use italics.

Use single quotation marks for quotations. Do not use hyphens for any rank except Sub-Lieutenant.

Citations:

Endnotes rather than footnotes. Use footnotes to explain any points you want the reader to notice immediately. Book titles follow Author surname, first name, title if any. Title. Place of publication: publisher, year of that edition.

So:

Adkin, Mark. *Goose Green*. London: Leo Cooper, 1992.

Adler, Bill (Ed.) *Letters from Vietnam*. New York: EP Dutton and Co., 1967.

Articles use quotation marks around their title, which is not in italics.

If citing web sites please use the convention:

Australian Associated Press. "Army admits mistakes in SAS investigation". 17 February, 2004. <http://www.asia-pacific-action.org/southseast asia/easttimor/netnews/2004/end_02v3.htm#Army%20admits%20mistakes%20in%0SAS%20investigation>

So, web site name. Article title. Full date of accessing the site. Full URL.

Bylines:

Supply your everyday title for use at the beginning of the title, so: Lieutenant Commander Bill Crabbe, or Jack Aubrey, or Reverend James Moodie. At the end of the article, please supply full honours - Lieutenant Commander Bill Crabbe, CSC, RAN - unless you would prefer not to use them. Then please supply a paragraph on yourself, to a maximum of 50 words, including any qualifications you would like listed, and any interesting biographical aspects. **If possible please supply a colour or greyscale head and shoulders e-photo of yourself** for use alongside the article title.

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RADM Harris USN, CMDR US 4th Fleet, RADM Gilmore, HADS Washington, CMDR Frost CO NUSQN 725 pose in front of a MH-60R Seahawk Romeo maritime combat helicopter. The first two MH-60R Seahawk Romeo maritime combat helicopters were accepted by the Royal Australian Navy at an 'In Service Date' ceremony conducted by NUSQN 725 at Naval Air Station Jacksonville, Florida on 24 January 2014. Personnel from NUSQN 725 have been conducting training and testing in Florida since 2013 as part of an enhanced training package.
The Seahawk Romeo will replace Navy's current 'Classic' Sea Hawk and will be primarily used for Anti Submarine Warfare. Photograph: Stephan Immerz

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- *to provide a forum for the exchange of ideas concerning subjects related to the Navy and the maritime profession.*

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Able Seaman Imagery Specialist Jesse Rhynard surfaces after taking underwater imagery during HMAS Huon's diving operations.