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THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

WE'LL HAVE GO WITH WHAT WE'VE GOT

THE PEOPLE'S LIBERATION ARMY NAVY FIERCE DRAGON OR PAPER TIGER?

DEVELOPING NAVAL AIR POWER PROJECTION CAPABILITY

AUSTRALIA AND THE ORIGINS OF THE SINGAPORE STRATEGY

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Volume 83 No.3

THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

REGULAR FEATURES

Front cover:
HMAS SYDNEY (DDG 42) fires an Evolved Sea Sparrow Missile off Southern California. (Image RAN Matt Skirde)

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TOO EARLY TO SAY

This issue opens with a powerful paper by Mr Mark Schweikert, Federal Vice-President of the Navy League, an Editor of *The NAVY* and former Director of Joint Force Integration. Mark has made a remarkable contribution to Defence and the Navy, in particular, during his career. Mark writes presciently (Paper 1) in an article entitled *We'll Have To Go With What We've Got*. He paints a grim picture – arguing "[our] will to pivot to a war footing now will be key to not only deterring conflict but defeating [our enemies]". The second paper is by Mr Kelvin Curnow, a long-standing contributor who kindly gave permission for his paper on the PLAN *(Fierce Dragon or Paper Tiger)* to be published as an out-of-essay-competition article. It makes an important contribution. The third paper is by John Rigby and Paul Sawtell on Developing Air Power Projection Capability. They make the case for organic naval air power projection by the FAA – applying F-35B *Lightning IIs* from suitably designed, versatile modular ships (including Incat vessels). They conclude that "there seem few other options for Australia with respect to projecting air power that offers the potential to deter an adversary". Tying in with the views developed by Mr Mark Schweikert, the final paper is by Dr Honae Cuff, an academic at the Seapower Centre, Canberra. Third prize in the Essay competition, professional section, Honae examines, in detail, *Australia and the Origins of the Singapore Strategy*. Concurring with analysis and papers presented in *The NAVY* going back at least two decades, Dr Cuff concludes:

> As two former members of the British Empire and with robust security links to the U.S. today, one would hope that senior Australian and Singaporean political and military leaders recall the lessons of the Singapore Strategy. A nation cannot always rely on the protection of a larger power and diverse and comprehensive bilateral relations – matched with autonomous capabilities – can play a constructive role in regional affairs and defending security interests.

These are powerful papers presented by established and new authors to *The NAVY*, for which Editor is most grateful. Dr Cuff states "one would *hope* that senior Australian and Singaporean political and military leaders recall the lessons…". The editor is reminded of the old Army adage – "that hope is not a plan", and President Ike Eisenhower's (5* General U.S. Army) attributed admonition:

> The value is not in the plan, but in the planning.

USS AMERICA (LHA6) Operating Twelve USMC F-35B *Lightning II* as designed also to Fly from LHDs such as HMAS CANBERRA and ADELAIDE.

In the early 1970s, shortly after the 1968 Paris Riots, Henry Kissinger – in discussion with Zhou Enlai (Communist Party of China statesman and Prime Minister 1949–76) – asked about the success of revolutions in France. Referring to the recent riots, Zhou made the oft quoted remark "too early to say" – frequently interpreted to be about the 1789 French Revolution. The Fifth French Republic referred to, that began in October 1958, survived the riots.

In the long cycle of history [1], 2016/17 may represent a juncture. In the UK, it probably represented its Fourth Reformation (on voting to leave the EU) and the beginning of a Fourth (Networked) Commonwealth. If the British Century began at Waterloo in 1815, it ended in 1916 in the battles of Jutland, the Somme and the Dublin Easter Rising. Similarly, the American Century, commencing in 1917 and its Second Empire (following defeat in Vietnam in 1974), probably both ended in 2016. Not simply on the election of President Donald Trump – which was more a symptom, than the cause. Currently, the world might be seeing the emergence of a short-lived Fourth (Network) Republic, before the U.S. redefines itself more powerfully, fit for the 21st Century.

Historically, the election of President Macron and the ongoing Jacquerie against the state (and the EU), suggests the end of the Fifth Republic (1958-2017) and the formation of a new Sixth Republic. Australia – itself a product of the French, American, and British (Industrial) Revolutions – is also going through change. The Constitutional Crisis of 1975, possibly instigated the Third [Australian] Commonwealth, which – noting the instability of the major parties and the turnover of PMs – probably ended in 2018. Coincident with the purported Fourth [U.S.] Republic, Australia may be seeing the reassertion of its sovereignty within an emerging Second Australian [Networked] Federation. Neither filial; nor monarchical – as it ever was.

China records its Century of Shame 1842-1948, and is resolved both never to allow this to happened again and, increasingly, to enact revenge on the colonisers and occupiers who inflicted the shame. Existentially, the Communist Party of China, is threatened by U.S. Forces in the Korean Peninsula – from where the Japanese mounted their successful invasions of China. And where, between 1950 and 1953 – shortly after it defeated the Nationalists in mainland China – the CPC fought an existential war of survival. Similarly, the CPC is threatened by any advances towards the Yangtze – where the forts were seized as a precursor for ending the Civil War. If the Chinese Second Republic began in 1977 (on the death of Mao in 1976), it ended in 2012, with the founding of the Xi Dynasty – predating the changes currently occurring in the U.S., France, the UK, and Australia. The CPC is exploiting perceived weaknesses brutally exposed by COVID; bringing forward its 2050 designs for the assimilation of Taiwan and the South China Sea, and assertion of a new Chinese Political Economic Global Order (PEGO).

A very real concern is that the Global West has fixed itself to a plan, without understanding the value (and morality) behind the plan. Consequently, removing the thinking capacity and doers behind the plan. Sometimes attributed to Clausewitz [2] but generally accepted to have been posited by Helmuth von Moltke the Elder (Chief of the German General Staff, 1871-1888) is the observation: [3]

> No plan of operations extends with certainty beyond the first encounter with the enemy's main strength (or "no plan survives contact with the enemy") ...a battle changes the situation to such a degree, that no human acumen is able to. Consequently: "strategy is a system of expedients".

USS GERALD R. FORD (CVN-78) Commissioned in 2017, with USS HARRY S. TRUMAN (CVN 75) in background.

The "plan" is well known by the enemies of the Global West. As a result, the Global West is fixed – without the thinkers, planners and doers to expedite victory from first contact. Returning to Mr Schweikert's argument for "pivoting Australia's war footing in order to deter conflict and defeat our enemies" – this will pose a challenge that would have been beyond pre-COVID Governments to understand or respond too. The curse of COVID has, fortuitously, challenged Governments in Australia and elsewhere. Plans failed. Australia has examples of states where the response has been agile – and others typified by repeated failures. It will be essential that Australia learns from its failures, if it is to face its future, successfully.

Australia has also been criticised for speaking out against the CPC over COVID and other matters when, so the argument goes, "Australia would have been better leaving it to others to do so". [4] An appeasement "hiding behind Mother's skirt strategy" – where Mother, it is presumed, represents the U.S., EU, or UK? This is not Australian. The reassertion of an Australian Sovereign Voice during COVID has allowed the U.S. (and latterly the UK) to wake up and begin their reformations. Australia's tradition of reason is one that will ever "rage against the lights going out" in Hong Kong and elsewhere. Never will Australia "go gentle into the foul night of tyranny". [5] The CPC should not underestimate the ability of the Global West to change *expediently* – as it will. It is far "too early to say" whether the long-cycle-ideas of Liberal Democracy are over. As Chief of Navy, paraphrased, observes (see Letters),

> [The RAN stands ready, aye, ready to stand alongside its Allies as a] "lethal, Thinking, Fighting Australian Navy". ■

RAN amphibious forces insignia with Fighting Kangaroo based on Lord Mountbatten's WW2 All Arms Insignia.

REFERENCES

[1] Korotayev, A.V., & Tsirel, S.V., *A Spectral Analysis of World GDP Dynamics: Kondratiev Waves, Kuznets Swings, Juglar and Kitchin Cycles in Global Economic Development, and the 2008–2009 Economic Crisis.* Structure and Dynamics. , 2010. 4 (1): pp. 3–57.

[2] Jolles, O.J.M., *On War, Translation by O. J. Matthijs Jolles of Clausewitz's Vom Krieg (1832).* 1943, New York: Random House.

[3] Hughes, D.J., *Moltke on the Art of War: selected writings. Originally in Moltke, Helmuth, Graf von, Militarische Werke (1831)*, vol. 2, part 2., pp. 33–40. 1993, Presidio Press: New York.

[4] See for example, Katrina Grace Kelly, "Bunch of bogans in a Monaro try to goad China to war", *The Australian*, 22 May 2021.

[5] After Dylan Thomas (1947) "Do not go gentle into that good night".

STATEMENT OF POLICY

CURRENT AS AT 1 APRIL 2021

For the maintenance of the Maritime wellbeing of the nation.

The Navy League is intent upon keeping before the Australian people the fact that we are a maritime nation and that a strong Navy and capable maritime industry are elements of our national wellbeing and vital to the freedom of Australia. The League seeks to promote Defence self-reliance by actively supporting defence manufacturing, research, cyberspace, shipping, transport and other relevant industries.

Through geographical necessity Australia's prosperity, strength, and safety depend to a great extent upon the security of the surrounding seas and island areas, and on unrestricted seaborne trade.

The strategic background to Australia's security is changing and in many respects has become much less certain following increasing tensions, particularly in East Asia involving major powers, and in Europe and the Middle East. The League believes that Australia should rapidly increase the capability to defend itself, paying particular attention to maritime defence.

The Navy League:

- Believes Australia can be defended against attack by other than a major maritime power and that the prime requirement of our defence is an evident ability to control the sea and air space around us and to contribute to defending essential lines of sea and air communication with our allies.
- Supports a continuing strong alliance with the US.
- Supports close relationships with all nations in our general area particularly New Zealand, PNG and the South Pacific island States.
- Advocates the acquisition of the most capable modern armaments, surveillance systems and sensors to ensure technological advantage over forces in our general area.
- Advocates a strong deterrent element in the ADF enabling powerful retaliation at significant distances from our shores.
- Believes the ADF must be capable of protecting commercial shipping both within Australian waters and beyond, in conjunction with allies.
- Endorses the development of the capability for the patrol and surveillance of all of Australia's ocean areas, its island territories and the Southern Ocean.
- Advocates Government initiatives for rebuilding an Australian commercial fleet capable of supporting the ADF and the carriage of essential cargoes to and from Australia in times of conflict.
- Notes the Government intention to increase maritime preparedness and gradually increase defence expenditure to 2% of GDP, while recommending that this target should be increased to 3%.
- Urges the strength and capabilities of the Army (including particularly the Army Reserve) and Air Force be enhanced, and the weaponry, intelligence, surveillance, reconnaissance, cyberspace and electronic capabilities of the ADF be increased, including an expansion in its UAV capability.

As to the RAN, the League, while noting vital national peacetime tasks conducted by Navy, including border protection, flag showing/diplomacy, disaster relief, maritime rescue, hydrography and aid to the civil power:

- Supports the maintenance of a Navy capable of effective action in hostilities and advocates a build-up of the fleet and its afloat support elements to ensure that, in conjunction with the RAAF, this can be sustained against any force which could be deployed in our area of strategic interest.
- Considers that the level of both the offensive and defensive capabilities of the RAN should be strengthened, in particular with a further increase in the number of new proposed replacement frigates and offshore patrol vessels, noting the need to ensure essential fuel and other supplies, and the many other essential maritime tasks.
- Recommends bringing forward the start date of the replacement frigate program to both strengthen the RAN and mitigate the local industry capability gap.
- Recommends the timely replacement and increase in numbers of the current mine-countermeasure force.
- Strongly supports the early acquisition of large, long range and endurance, fast submarines and notes the deterrent value, reliability and huge operational advantages of nuclear powered submarines and their value in training anti-submarine forces.
- The League is concerned at the very long time before the projected 12 new conventional submarines can enter operational service, noting very serious tensions in the NW Pacific involving major maritime powers.
- Recommends very early action to provide a submarine base on the Eastern seaboard.
- Notes the potential combat effectiveness and flexibility of the STOVL version of the Joint Strike Fighter (F35 *Lightning II*) and supports further examination of its application within the ADF.
- Supports the development of Australia's defence industry, including strong research and design organisations capable of the construction and maintenance of all warships, submarines and support vessels in the Navy's order of battle, and welcomes the Government decision to provide a stable and continuous shipbuilding program.
- Advocates the retention in maintained reserve of operationally capable ships that are required to be paid off for resource or other economic reasons.
- Supports a strong and identifiable Naval Reserve and Australian Navy Cadets organisation.
- Advocates urgent Government research and action to remedy the reported serious naval recruiting and retention problem.

The League:

- Calls for a bipartisan political approach to national defence with a commitment to a steady long-term build-up in Australia's defence capability including the required industrial infrastructure.
- Believes that, given leadership by successive governments, Australia can defend itself in the longer term, within acceptable financial, economic and manpower parameters.

Welcome to the winter edition of *The NAVY – the Magazine of the Navy League of Australia.*

In our last edition I wrote about the future submarine project and we included the article from Neil Baird and Robert Blake proposing a 'submarine stocktake'. I hope you enjoyed the article and I note that since then there has been discussion about alternatives to the future Attack Class submarine. It is the view of the Navy League that what is needed now is not consideration of alternatives to the ambitious program that our Navy and Australian Defence industry have committed to, but a renewed and intensified commitment to it—that is—to the *Attack-class* future submarine program. That will require extending the life of the *Collins-class* submarines, but the contemplation of a stop-gap measure; building an alternative in the meantime—which has been floated—is bound to create more complexity than it will alleviate. Defence, industry and the Navy have enough on their plate with the complex tasks ahead of them and now is the time to consolidate, focus on the programme that has been committed to and work expeditiously through it to the end. To do otherwise would be compounding an already very challenging time ahead.

A TIME FOR ALLIANCE BUILDING

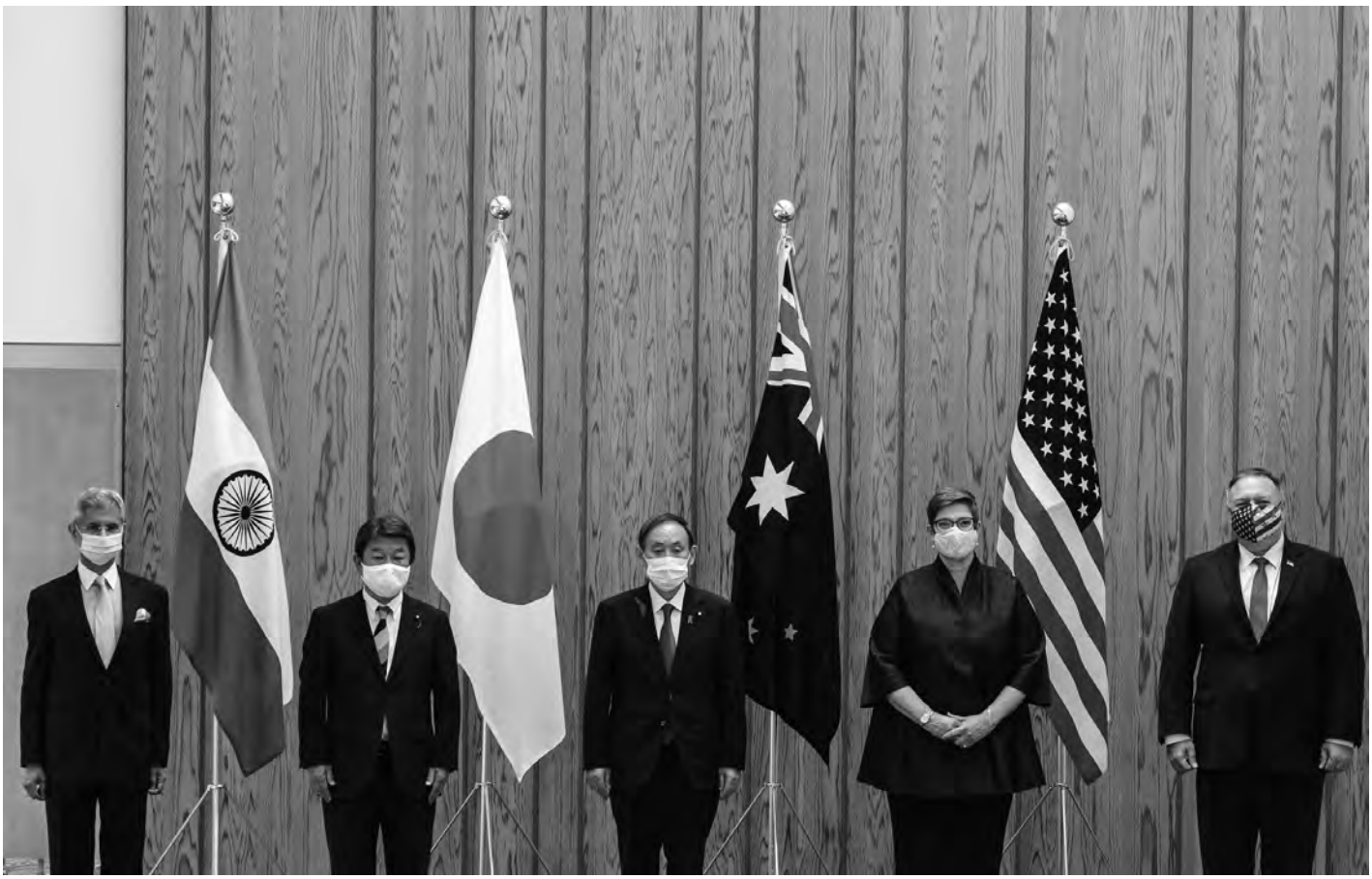
At a time when senior strategists are warning of the dangerous regional security balance now is a time for building and reinforcing our alliances. While it was possible to be concerned that not so long-ago Australia appeared to be becoming increasingly isolated in the region, our invitation to participate in the recent G7 summit in Cornwall, UK and our Prime Minister's efforts during and around the summit, has advanced Australia's security interests in our home region.

The maritime sphere is key to these efforts and the UK has recently signalled a renewed interest in the region. The UK carrier strike group being sent into South East Asia is a clear example of this and our Prime Minister's announcement, shortly after the summit, that the RAN will join the group is another positive step. These deployments diplomatically demonstrate that Australia is not alone in dealing with aggression and coercion in the region. The Royal New Zealand Navy had also announced it will join the UK Carrier group, led by HMS QUEEN ELIZABETH, on its passage through the area and there will also be exercises including the Five Power Defence Arrangements countries in the areas around Singapore and Malaysia, as will Australia.

Further advancing our interests in rules-based order, the Quadrilateral Security Dialogue, with Australia's reinvigorated recent participation, strengthens our position in the region. In particular, this has been illustrated by the 2021 joint statement reinforcing a shared vision for a free and open, rules based maritime order in the region which the Navy League applauds.

THE FUTURE OF THE NAVY LEAGUE

An ongoing issue that arises for consideration at our AGM and Federal Council meetings is the future of the Navy League, and the role we can play to meet our Statement of Policy and ensuring we remain relevant and effective. Like all organisations, to do so we must be alive to the changing environment in which we operate, as well as taking account of the needs of our members and the value we can provide to our maritime nation. This issue has also been canvassed in several articles in *The NAVY* magazine over the years which I encourage you to return to.



QUAD Foreign and State Ministers meet with Prime Minister of Japan.

HMS TAMAR (P233) Provides Picket Boat Overwatch for the G7 Summit.

Image of *Attack-class* Submarine docking at Osborne, SA (NAVAL GROUP).

A group from the Navy League Federal Council is refining the various suggestions we have received to date and will report back to Federal Council at this year's AGM. We'd love to have your ideas and we welcome your input into the discussion about how best to prepare the Navy League for the future. Please be sure to have your say, you can send a short email to our editor, a more formal 'letter to the editor' to be considered for publication, or you might like to pen an article for consideration for publication in a future edition of *The NAVY* magazine.

OUR STATEMENT OF POLICY

As we contemplate the future of the Navy League, we should continue to be directed by our Statement of Policy for the maintenance of the Maritime wellbeing of the nation. The Statement of Policy has changed in some of the detail over the years and is adaptable, though these principles, guided by the fact that we are a maritime nation, remind us all of the importance of a strong Navy and capable maritime industry for Australia. As we work through the possibilities of the Navy League of the future, it is our task to reflect on how well we have achieved these goals and how best we can impact them in the future. As I mention above, your input into this process, as members and readers is imperative, and I encourage you to include consideration of the Statement of Policy in your input on how we best can translate our objectives into action in the future.

IN THIS ISSUE

As always, this edition contains some great reading. The first, from our own Vice President Mark Schweikert, is a must-read written on contemporary maritime issues which will prompt many of you to rethink your approach to Defence planning and ask whether we are investing in the right equipment. We are also lucky to have Kelvin Curnow's contribution on the People's Liberation Army – Navy (PLAN), which continues its expansion seaward. It should factor into our questioning whether our current defence posture has us sufficiently alive to the risk, how quickly it might develop and whether we are able to respond in a timely way. John Rigby and Paul Sawtell present their paper *'Developing Naval Air Power Projection Capability'*. As you read their paper, I encourage you to reflect also on what, as a nation, is the appropriate balance of Australian input into defence production and sovereign capability. We also have a paper from Dr Honae Cuffe, which was the third prize in the professional section of our 2020 Maritime Affairs Essay Competition. Dr Cuffe discusses the Singapore Strategy compellingly, and I am sure the paper will be of interest to you as you enjoy this edition of *The NAVY.*

THE NAVY LEAGUE OF AUSTRALIA MARITIME AFFAIRS ESSAY COMPETITION

As you read Dr Cuffe's article, you might also begin to think about your own contribution to upcoming editions of *The Navy*. The competition has a place for all, whether you are a professional maritime strategist or have never before put pen to paper. With prizes in the professional and non-professional categories and the opportunity, like Dr Cuffe and all of last year's winners, you also have the chance to have your work published in a future edition of *The Navy*. I encourage you to submit your essay to be in the running for one of the great prizes. In these times where the regional strategic balance has become more tenusous and the importance of the maritime sphere so obvious, reviewing our past and planning for the future is in all of our interests.

The annual Maritime Affairs Essay Competition is open for entries until 21 August 2021.

I hope you enjoy this volume of *The NAVY – The Magazine of the Navy League of Australia* and, as always, encourage your feedback.

Happy reading. ■

HMAS SUPPLY COMMISSIONING

On Saturday 10 April 2021, I was proud to be present as we commissioned HMAS SUPPLY (II, A195) into the Royal Australian Navy [at Garden Island, Fleet Base East, Sydney]. Captain Ben Hissink and the Men and Women of SUPPLY were professionally turned out and had put an immense amount of time and effort into preparing to commission this exciting new combat support capability into our Navy.

The broader media reporting surrounding the dancing troupe, which performed prior to the commencement of the formal commissioning ceremony has been widely reported. It is important to provide the intent of the activities, and articulate the context in which they occurred.

In the months preceding her commissioning, SUPPLY undertook significant engagement with the Woolloomooloo community and their ceremonial homeport Eden, NSW, to build meaningful and enduring relationships.

Through these engagements, the local community agreed to support SUPPLY's commissioning with a number of activities, including a traditional smoking ceremony and Welcome to Country. Prior to the ceremony, a separate digeridoo and dance performance, to be conducted by a local multi-cultural community youth group was organised. These performers were engaged and managed through the local community and indigenous intermediaries.

There is no doubt that the style of the dance performance diverged from what was envisaged.

As a result, Navy is now managing a range of consequences, exacerbated by re-edited and misleading video by some media outlets – disappointingly, including the ABC. Resequenced footage incorrectly suggests the Governor General and I were in attendance, when in fact, the Fleet Commander, myself and the Governor General were formally welcomed onto parade after the dance performance had completed.

The nature of such journalism has been addressed by both the Governor General and the Prime Minister in recent news articles, and this morning, the ABC has issued an apology.

Notwithstanding, the negative public reaction on social media targeting the empowered, proudly multi-cultural, young women performers is inexcusable and regrettable. While their non-traditional performance style was unexpected, and in contrast to the traditional occasion, their efforts represented their community and cultures, and was in support of our Navy.

It is important to emphasise the importance of meaningful community engagement as part of our core business and preparing Naval Power. Community engagement and support is fundamental to what we do and how we do it. It is from our communities that we generate our future workforce and build and maintain our social licence – critical to a lethal Thinking, Fighting and Australian Navy. Undoubtedly, community engagement does sometimes entail risks – these must be fully and effectively identified and managed in the same manner as in all other lines of effort.

In conclusion, I am delighted and immensely proud of the collective efforts to bring SUPPLY into naval service – by our two Headquarters and in particular the Men and Women of HMAS SUPPLY. This is an exciting milestone for the introduction of this critical capability in the year of delivery. Stand on.

Abstract from Letter to Navy by MJ Noonan. AO
Vice Admiral, Royal Australian Navy
Chief of Navy Australia

Prior to the apology by the ABC, Mr Peter Dutton the new Defence Minister reportedly spoke to the Chief of Navy, stating: "It was not a good look…I have made it very clear that that won't be happening again".

By Editor

Many readers of *The NAVY* and members of the NLA would have been confronted by the imagery deliberately edited and resequenced by the ABC, presumably to traduce the fine men and women of the Royal Australian Navy, HMAS SUPPLY, the Chief of Navy, Governor General (the Commander in Chief), and Fleet Commander. In addition to the 101 Doll Squadron dance group. It confirmed for many what has been known for a long time. That the biases within the ABC are such that systemic behaviour of this type is permissible, where it would be prohibited elsewhere. It has been going on a long time, in both the ABC and BBC; noting revelations of BBC coverups regarding the late Princess of Wales, and recent hi-profile reporting on Ministers of both Church and State – addressed in and out of court. In this respect, the response by Minister Dutton may have been premature. The style of the performance might "have diverged from what was envisaged" but at least the group gave an honest account of themselves. Which is more than might be said of the ABC.

The ABC needs to take a long look at itself. Dishonest editing of this type sends entirely the wrong message about our country and will, ultimately, cost young lives if wrong interpretations are arrived at as a result. The RAN is a "lethal, Thinking, Fighting and Australian Navy". Lest any forget.

Aeneas

ARAFURA AND HUNTER CLASS

Dear Aeneas,

Imagine my shock and complete surprise when I saw the initial Artist impression and model [of the *Arafura-class*]. Why we continue to think that our patrol boats should be lightly armed cruise boats or fishing boats has got me beat – maybe I am in the wrong century. A ship designed for peacetime border patrol probably isn't going to cut it as the second-tier warship of the RAN during medium to high intensity warfare. Or even low intensity warfare. It will be a waste of a good crew – young lives not fulfilled at a time when we will need every trained person. I have the same concerns about the *Hunter-class*.

Regards
Geoff Hawkins

By Editor

Geoff, thank you for these observations – see also Paper 1, this issue. I would welcome your more detailed articles (from which this statement is abstracted) in soft copy please, so that your essays may be published in full.

Aeneas

RANKIN Division Oct 66-Feb 67 55th Anniversary

On the occasion of the 55th anniversary of enlistment in the Royal Australian Navy, a reunion of all recruits from the October 1966 intake to be held over the weekend of Friday 22 - Sunday 24 October 2021. Expressions of interest please contact or join our Facebook group for more information.

Steve Yovan
https://facebook.com/groups/261872548771680

WE'LL HAVE GO WITH WHAT WE'VE GOT

By Mark Schweikert

The United States Marines Corps (UMSC) have a philosophy, 'fight tonight'. It is a reflection of their need, and propensity, to have to fight with little warning and with what they have. Australia is currently in a similar position facing down a threat from China. Time is at a premium, if not already lost, to prepare for a potential regional conflict with a more aggressive militarised China.

INTRODUCTION

In 1986, Paul Dibb wrote a controversial and thought-provoking assessment on Australia's defence strategy. Dubbed the 'Dibb Report', it contained such assertions that Tier 2 frigates (fitted for but not with) while under RAAF air cover in the top end was an effective means of maritime security, and that any major conflict threatening Australia would essentially be seen from seven to ten years out and spending on high end military capabilities could commence at that point.

These assertions/theories enabled the then Hawke Government to adopt a 'fortress Australia' defence strategy in its subsequent 1987 Defence White Paper. Many argued that the Dibb Report was actually an economic model not a defence strategy to endorse the then Labor government's predetermined actions to cut defence spending by investing in lessor military capabilities.

BACKGROUND

Since 1987, contemporary Defence White Papers have moved away from a fortress mentality to a forward engaged, high technology model of overmatch to deter aggression, or meet it in someone else's back yard.

Nevertheless, Dibb's theory of being able to see a potential high-end conflict from almost a decade out, while criticised then, is looking more and more accurate.

China's rapid developments in military technology, build rates, coupled with a 'Wolf Warrior' aggressive foreign policy outlook, is having many commentators state that we are on a trajectory to war.

Former US Secretary of State, Mike Pompeo (former congressman, CIA director and secretary of state for two years) recently said of China

> their central idea is to undermine democracy everywhere. The Chinese Communist Party deeply believes their Marxist/Leninist ideology is the right ideology for the world, and they attempt to impose that ideology everywhere.

Pompeo's statement adds tension to the recent announcement by China that its military modernisation program (the likes of which not seen since 1930's Nazi Germany) has been brought forward from 2030 to 2027.

Of note too is China's growing addiction to resources from other countries. This puts it in parallel with Japan's reliance on imports pre–Pearl Harbour, which ultimately saw it go to war to secure those

China's first locally built and second aircraft carrier SHANDONG (CV-17). At 70,000 tonnes she is the biggest of the two carriers, for the time being. China's next aircraft carrier, hull number 18, is expected to be approx. 85,000 tonnes and will launch within weeks of publication.

A Chinese maritime militia vessel harassing another fishing boat. These 'little blue men' will be pivitol, to the PLA-N's ability to influence the sea at great distances from the Chinese mainland while presenting a collateral damage nightmare.

resources after embargoes were applied for its ethnic cleansing activities on the Chinese mainland (a similar situation presents itself today with world concern over Chinese treatment of the Uyghurs ethnic minority).

Appeasers dismiss the China threat and believe the Chinese middle class will rise up in a greed, freedom and prosperity inspired political correction, much like an Arab Spring. However, they fail to understand the Chinese middle class. Owning a car, a flat, having a job in the city, access to medical services etc were things unthought of 50 years ago (i.e. living memory). The political system that has given people this middle-class prosperity is Communism via the Chinese Communist Party. It is said that the Chinese middle class now number 500 million. So why would anyone expect them to cut the throat of the golden goose? Consequently, China, as a society, is quite secure and its government has the support of the people.

So, what does all this mean for Australia? Well, it may indicate that we are too late to react to Dibb's theory as 2027 is fast approaching. It may be a case of having to go to war with what we've got, rather than with the luxury of what we had planned.

CHINA'S MILITARY STRENGTH

In the 1980s-1990s when the People's Liberation Army-Navy (PLA-N) was being built by the Army, it was said that it resembled exactly what an army thinks a navy should look like. From this, many ignored its rise and labelled it a brown water navy.

Since then, the PLA-N consists of two very large aircraft carriers, powerful cruisers, advanced destroyers, multitudes of frigates, nuclear-powered ballistic missile submarines, nuclear powered attack submarines and diesel electric submarines, and using these at increasingly longer ranges from home (blue water). It is also rapidly growing an amphibious assault capability in the form of large well dock equipped ships (LPDs) and now helicopter assault ships (LHDs) similar to the RAN's Canberra class ships ADEALIDE and CANBERRA.

The PLA-N is yet to be tested in conflict including its ability to leverage and integrate other military and national capabilities. To this end China is developing its Intelligence, Surveillance and Reconnaissance (ISR) capabilities in an attempt to fully fuse the information into real-time accurate targeting data. Apart from surveillance satellites, long range surface wave radar and over the horizon radar, one tactic/measure being employed is a low-tech solution known as the 'The Little Blue Men'.

The sleek and stealthy game changing *Renhai-class* cruiser NANCHANG (DDG-101). Larger than a USN Ticonderoga class cruiser, the class is fitted with sophisticated air defence systems not previously seen. (USN)

The term was coined by Andrew S. Erickson of the Naval War College in reference to Russia's 'Little Green Men' employed by President Putin during the 2014 annexation of Crimea, essentially Russian troops posing as civilians doing clandestine military things in full view. China's little blue men form the growing and ubiquitous Chinese Maritime Militia.

The Militia pose as fishermen on vessels of all shapes and sizes but answer to the military. They engage in low level harassment to coerce without armed conflict. The Militia also form an important and impressive chain of observation/listening posts reporting on opposing naval movements for intelligence and targeting purposes.

To the casual observer they are civilians and not legitimate military targets. Neutralisation thus becomes an activity fraught with collateral damage and public perception danger, made even more difficult when one realises that 50% of the world's fishing fleet is located in the South China Sea

FORTS

China has been occupying and developing many of the reefs and sholas in the Spratly and Paracel islands into man-made outposts/islands, in contravention of a 2016 UN ruling that it was illegal. Originally the Chinese claimed they would not develop or house military capabilities on these newly created man-made islands. Lately this has been proven incorrect.

It was thought the presence of oil and gas was China's intent in securing these outposts. However, their militarisation has many are wondering about more sinister aims, such as providing air cover for lurking ballistic missile submarines and/or cutting off the supply lines to North Asia from Australia and the middle east, given one third of the world's shipping passes through the South China Sea.

Also, any military force wishing to transit the South China Sea or coming to the aid of Taiwan would need to neutralise these island bases first, thus alerting China not only of a military force's presence and strength but also intent.

ANTI-SHIP BALLISTIC MISSILES

One way China is attempting to deny large tracts of ocean is through land-based DF-21 and DF-26 anti-ship ballistic missiles. Some have dubbed their employment akin to the WW I concept of creating a modern day no man's land, given the theoretical 'foot print' from their launch site.

The DF-21 is a two-stage, solid-fuel rocket, single-warhead medium-range ballistic missile. It has a 600kg warhead and travels at speeds up to Mach 10 (although it is thought it may slow considerably in terminal phase due to air resistance). Its range is approx. 1,500kms – 2,700kms and requires third party targeting data to get it within

The Brunei Navy KDB DARULAMAN with the now decommissioned USS RODNEY M.DAVIS. The KDB DARULAMAN is similar to the RAN's *Arafura-class* patrol boats. With an electronics and armament upgrade, the *Arafura-class* could make for very effective destroyer escorts, providing a force multiplier effect to the larger ships of task group by fulfilling the inevitable medium to low end warfighting tasks required. (USN)

An RAAF F/A-18F *Super Hornet* with two anti-ship Harpoon missiles. A quick purchase of 'more of the same' *Super Hornets* would provide a force multiplier to the RAAF. (RAAF)

range of its own sensors for the terminal phase. Even then, the short timeframe for engagement leaves the missile vulnerable to jamming, spoofing and high-speed aggressive manoeuvring of the target. Only larger aircraft carriers are considered capable of being acquired by its sensors (which might explain why the West has not developed this capability).

The DF-26 operates similarly but has a range of 5,000kms.

China's little blue men and their ubiquitous fishing boats will be pivotal to the use of the DF-21/26 for maximum range engagements and keeping large surface combatants at bay. Without their input, no man's land will be crowded.

AIRCRAFT CARRIERS

China operates two aircraft carriers (Liaoning 67,000 tonnes and Shandong 70,000 tonnes) employing supersonic fixed wing aircraft. Its third and larger aircraft carrier (the Type 003 at 85,000 tonnes +) is expected to be launched within weeks from the time of this article's publication. A fourth has also been laid down (the Type 004 at 110,000 tonnes) which is expected to have nuclear propulsion.

Many in the intelligence community believe that a PLA-N carrier battle group may soon steam through the South West Pacific, or even below the Indonesian archipelago given the extended range deployments and exercises that are being conducted each and every year. If so, it would demonstrate China's confidence in its capabilities and send a message to weaker states that 'the dragon has arrived'. The implications of this for regional third-party basing rights and agreements for the ADF cannot be overestimated.

ENTER THE CRUISER

One of the more interesting game changing developments in the last few years has been the launch and appearance of a new large Chinese stealth cruiser with technically advanced long range air defence capabilities not previously seen. Some reports suggest that the Type 055/*Renhai-class* cruisers are also fitted with anti-ship ballistic missiles such as the DF-21/26.

Larger than a US Ticonderoga class cruiser, the three *Renhai-class* cruisers will eventually number 16 units and are designed to defended carrier battle groups as well as perform out of area/ expeditionary missions.

WHAT CAN BE DONE ABOUT IT?

The short time frame from when China is expecting to have its military modernisation complete leaves Australia with a reduced ability to react in order to maintain its overmatch defence policy. Lead times for nearly all new equipment, particularly ships and submarines, mean they will not be ready in time.

One way to react and enhance our current military state is through acquisition of legacy/existing in-service equipment and capabilities.

Army recently purchased more CH-47F Chinook helicopters and second-hand U.S Army M-1A2 Abrams tanks with associated combat support vehicles and systems to revitalise its armoured manoeuvre capability, currently based around the M-1A1. This capability upgrade will be done with relatively little cost but more importantly will be completed within five years. Its need for self-propelled Howitzers and long-range surface to surface missiles is now paramount.

For Navy, with long lead times, off the shelf purchases are near impossible with no ships or submarines available that could fill the need.

One measure could be to upgrade the electronics packages and arm our Arafura-class offshore patrol vessels (currently in build). Despite being a quantum leap in patrol and constabulary capabilities from the *Armidales*, they were redesigned for RAN use substantially underarmed from their original configuration, reducing cost in the process.

As part of a combined or joint force package, upgraded *Arafuras* could provide a force multiplier effect to larger ships and task groups, possibly even reviving the concept of the 'destroyer escort'.

Modern modular techniques could enhance other aspects of the Arafuras utility in areas such as anti-submarine warfare (ASW) and mine countermeasures. This could involve a removable ISO container with a variable depth sonar streaming from the stern of the ship.

While the Arafuras helicopter pad is unable to take the weight of a SH-60R Seahawk ASW helicopter, it could take a variety of smaller armed utility helicopters to complement and supplement the Seahawk force for all manner of non-ASW tasks. A marinized version of the Airbus H-145M armed light helicopter comes to mind (which is currently being considered by our Special Forces).

The Boeing Australia and RAAF jointly developed *Loyal Wingman* UCAV during testing. (RAAF)

Given we are building 12 *Arafuras* now, this potentially makes them the best platform to get more naval power to the sea through arming and modular application techniques. The historical similarities and precedence with the successful yet smaller 60 Bathurst class corvettes built in Australia for service in and during World War II cannot be overlooked.

Our *Hobart* and *Anzac* class ships could also be upgraded. All warships are capable of refitting with new capabilities. For example, the Royal Navy's *Type 42 Batch 1 class* destroyers were thought to be space and weight limited. But after the class's poor performance and losses in the Falkland's conflict, space and weight were found to fix weaknesses. They were, in fact, lengthened.

Our *Hobart-class* destroyers could be given more 'bolt-on' anti-ship missile defence systems such as Phalanx and Mk-49 Rolling Airframe Missile launchers to survive swarm attacks. Weight would be an issue but an engineering diet and other measures could allow for these vital combat enhancements.

Life of Type Extensions (LOTEs), with upgrades, for existing capabilities could also be a powerfully effective measure, as the government is doing with the Anzacs and *Collins-class* submarines.

The RAAF is currently one of the preeminent air forces in the world. Its F-35 JSF project is delivering the world's most advanced fighter aircraft but additional orders in a timely manner would not be possible given the world-wide demand. An alternative is potentially expanding the existing *Super Hornet* and *Growler* fleets. Boeing is still producing the *Super Hornet* but now in a new Block III configuration, as well as the game changing electronic warfare *Growler* Block II. Given the existing in-service nature of these aircraft this might be a very useful short-term addition.

RAAF and Boeing Australia are also in the process of developing a new stealthy unmanned aerial combat vehicle program called the Loyal Wingman. This semi-autonomous stealth aircraft can fly into harm's way and deliver precision payloads.

The concept of the Loyal Wingman started in the US with converted F-16 Falcons being controlled remotely by other strike/fighter aircraft in order to safeguard the controlling aircraft. So far, RAAF and Boeing have achieved success with the flight test program, but if full scale production could start sooner rather than later, then this would provide the force multiplier RAAF needs in the coming years.

Another related area this program could investigate is removing the pilot support systems from older Classic Hornets and converting them to Loyal Wingmen aircraft (much like the U.S F-16s mentioned above). They are being decommissioned anyway and have a very useful range and ordnance load.

An ESSM missile leaves the vertical launcher of an Anzac Frigate. A sovereign missile building capability will enable ammunition to be plentiful and not have to be used sparingly. As the old Chinese saying goes, 'many ants are the death of the serpent'. Just like many missiles. (Defence)

Other generic measures to meet the coming storm could include; delayed withdrawal from service of existing platforms (Classic Hornets and HMAS SIRIUS come to mind); technology refreshes; imaginative upgrades (lithium-Ion batteries for *Collins* for example); Electronic Warfare enhancements; Cyber resilience and exploitation fits; joint force integration measures such as long-range high-volume data links, and significantly greater ammunition stockpiles (new smarter variants too).

URGENCY – MISSILE BUILDING CENTRE

Quantity or critical mass of platforms on the coming battlefield will be needed, which is an area Australia is lacking. However, enhancing ammunition supply could be the panacea to lower numbers.

A lesson of the 2014 Russian-Ukraine war was the use of massed artillery to overcome technology and numerical advantages. To illustrate, Russian supplied tanks were fitted with explosive reactive armour (ERA) that rendered contemporary anti-tank weapons ineffective. However, use of massed artillery in the indirect role for extended periods against tank formations tended to strip away the ERA through blast and shrapnel effect on fittings, thus exposing the armour to small Ukrainian anti-tank teams.

Something conceptually along those lines for the ADF could be provided through the Government's recent decision for a sovereign ammunition and missile building facility. Historically, ammunition usage rates for all recent conflicts has been 2-3 times higher than the wildest peacetime predictions.

RUSSIA FIRST, CHINA SECOND?

Another consideration for our ability to deter and/or win conflict in the region is the Russia-China 'friendship' and how far that might extend into military co-operation?

Russia and China are increasingly operating together militarily, including in large-scale military exercises and joint operations in places like the South China Sea. Russia is also still supplying advanced military equipment to China.

Both countries share the same geopolitical view of a decadent, decaying West led by the U.S. They also understand the U.S military cannot handle two major regional wars concurrently. So, if the U.S

Australian, French, Indian, Japanese and US ships operating together in the Bay of Bengal. Strengthening alliance interoperability though joint exercises and integration measures is an effective means of deterrence. (USN)

were to be otherwise engaged with its NATO allies against Russia what does that mean for Taiwan or even Australia in times of need?

Australia's military reliance on the U.S is reminiscent to that which was placed in Britain through the Singapore Strategy, which incidentally was the last time a major war was fought in our region. Like the aftermath of the capture of Singapore, this strategy could benefit with a reassessment to a more self-supporting posture.

ALLIANCES – A KEY DETERRENT

Another means of boosting our military capability is through enhanced alliance cooperation, both with our traditional five eyes partners and our newer endeavours with 'The Quad' and bi-laterally with Brittan, France and India.

The recent image on the front cover of the last issue of *The NAVY* (Volume 83, No.2) would have sent shock waves through Beijing. It depicted a USN aircraft carrier operating with an Indian aircraft carrier with escorting Japanese and Australia warships in a great demonstration of regional military cooperation and power known as The QUAD (four nations).

Australia is also steeping up bilateral exercises with India and France through the Malabar and La Perouse series of regular exercises (respectively).

Closer to home, our connection with the French in the Pacific is one that potentially needs greater thought and attention. New Caledonia and French Polynesia could be key anchor points for influencing/controlling the South West Pacific, given the lack of an Australian aircraft carrier or power projection capability. Question is, can our advanced 5th generation air force operate from there and can they be protected (assuming the French allow basing)? RAAF's plans for enhanced ground-based air and missile defence and Army's land based anti-ship missiles to defend island forward operating bases have yet to come to fruition.

CONCLUSION

The PLA-N is currently the largest navy in the world by number of combatants, 350 compared to the U.S. Navy at 293. Although some would argue that real naval power is more than just ship numbers. To paraphrase Admiral of the Fleet Sir Andrew Cunningham 'it takes three years to build a ship but 300 years to build a navy'.

So, although numerically superior, the question remains as to the PLAN's professional mastery at sea, having never fought in that environment before. Recent observations indicate the PLA-N tend to operate as a separate and single service force without the force multiplier advantages of joint force integration and information fusion. One way they may overcome this is a willingness to accept casualties, a potential strong point over western militaries.

While Australia and our traditional allies and bi-lateral partners have significantly greater years of 'tradition' (which encompasses training, experience, doctrine, exercises, logistics etc) than China, their ability and will to pivot to a war footing now will be key to not only deterring conflict but defeating it. ■

About the Author: Mark Schwikert is the Federal Vice-President of the Navy League, a former Editor of *The NAVY* and the former Director Joint Force Integration with Defence. He left the Department after 22 years to start his own consultancy business 'Remarkable Effects'.

THE PEOPLE'S LIBERATION ARMY NAVY FIERCE DRAGON OR PAPER TIGER?

By Kelvin Curnow

In a speech delivered on 30 June 2020 Prime Minister Scott Morrison, unveiled an ambitious plan to spend $270B over ten years on defence projects. It was confirmed that in the near-term Australia would purchase the air-launched 370-kilometre range Lockheed Martin AGM-158C Long Range Anti-Ship Missile (LRASM). The Prime Minister acknowledged that the nation must have 'Capabilities that can hold potential adversaries' forces and critical infrastructure at risk from a distance, thereby deterring an attack on Australia and helping to prevent war.' [1] In this context it is apposite to review China's naval capabilities.

INTRODUCTION

The rise of China as an economic power is often reported in the Australian popular media but up until July 2020 the growth of China as a military power has largely been ignored. Three widely reported events brought the topic to the fore:

- Writing to the United Nations, Australia's permanent mission rejected the Chinese Communist Party's claim to disputed islands in the South China Sea (SCS), asserting that the claims were 'inconsistent' with the 1982 United Nations Convention on the Law of the Sea (UNCLOS).
- The ABC reported that Australian warships transiting the SCS on their way to exercise with the United States Navy and Japanese Maritime Self Defence Force in the Philippine encountered PLAN ships near the disputed Spratly Islands.
- Finally, on 28 July 2020 after Australia-US Ministerial (AUSMIN) talks in Washington the Foreign Minister Senator Marise Payne offered a nuanced view on China's actions in the SCS. While offering broad agreement with her counterpart US Secretary of State, Mike Pompeo, she stated that 'The secretary's positions are his own Australia's position is our own.' [2]

Minister Payne's statement was broadly taken to mean that Australia would not follow the US in exercising freedom of navigation operations (FONOPS) in the SCS. The words were also uttered in the context that in a post-COVID world, Australia will be heavily reliant on its main trading partner to pull it out of recession.

The Australian government was also well aware [July 2020] that after President Trump leaves office, his successor will adopt a less aggressive stance towards China. In this context Australia is adopting a view that despite its differences with China it must learn to live with this emerging superpower. Nevertheless, because of its traditional alliances and democratic values Australia may well have to act militarily to protect her own interests and those of her allies.

GROWING CAPABILITIES

On 23 April 2019 a naval military parade was held in the waters off the port city of Quingdao celebrating the seventieth anniversary of the People's Liberation Army Navy. Present was Xi Jinping, General Secretary of the Communist Party of China who viewed the parade from the Type 052D destroyer, the XINING. The impressive sail past of thirty-two ships included: a Type 055 destroyer, the NANCHANG; two Type 094 class ballistic missile submarines (SSBNs); a number of Type 052C and 052D destroyers; eight Type 054 frigates; Type 071 amphibious transport dock ships; and, Type 072 tank landing ships. Also present was the Type 001 aircraft carrier the LIAONING. Noticeably absent the Type 002 SHANDONG. Thirty-nine fighters, bombers and helicopters of the PLA Naval Air Force (PLANAF) overflew the parade. These glimpses we have of the Chinese navy give the impression of a modern, formidable navy which has grown exponentially and certainly on the surface it appears to be a capable fighting force.

President XI Jinping Inspects the PLAN Fleet.

In 2005 the PLAN's surface fleet numbered one hundred and fifty-eight vessels; by 2017 this had grown to a total of three hundred ships. In comparison to the prodigious growth in PLAN ship numbers the United States Navy has a total of two hundred and ninety-three ships in its fleet, an addition of only two to the total since 2005. However, rapid growth does not mean that the PLAN has acquired the requisite skills to operate the equipment with a high level of seamanship. In 2003 for example, all 70 sailors aboard a diesel electric submarine died during a training accident. The submarine apparently drifted for days before a fishing boat came upon the lifeless vessel.

THE PEOPLE'S LIBERATION ARMY SURFACE FORCE

The PLAN is organised into three fleets: the North Sea Fleet headquartered at Quingdao; the East Sea Fleet headquartered at Ningbo; and the South Sea Fleet headquartered at Zhanjiang. It operates a growing number of major surface combatants of which its two aircraft carriers, the Type 001 LIAONING and Type 002 SHANDONG are its principle components. Both these ships are to a Short Take Off Barrier Arrested Recovery (STOBAR) design. This is a highly compromised method of operation in that aircraft must rely on its own engine power to launch off the carriers. This does not permit aircraft to operate at heavy weights. To overcome this shortcoming the 85,000-ton Type 003 carrier will be equipped with the Electromagnetic Aircraft Launch System (EMALS). In a significant technological breakthrough, the Type 003's EMALS will be powered by an 'integrated propulsion system' (IPS) rather than nuclear power.

PLAN Ship LIAONING (CV-16) and Escorting Carrier Battle Group.

On 1 November 2017 the South China Morning Post reported that 'a medium-voltage, direct-current transmission network' which could power the Type 003's EMALS had been developed by a research team led by the country's top naval engineer Rear Admiral Ma Weiming. The claim that the Type 003 will also be fitted with high-energy consuming laser weapon systems and electromagnetic guns would suggest that there is ample power derived from the IPS, and does not need to copy the United States in requiring nuclear power for its aircraft carriers. However, herein lies the paradox (as it does with many Chinese claims regarding their military equipment) the relatively unsophisticated SHANDONG continued to undergo sea trials in mid-2020 some two years after her initial trials with no sign of initial operating capability (IOC) being attained.

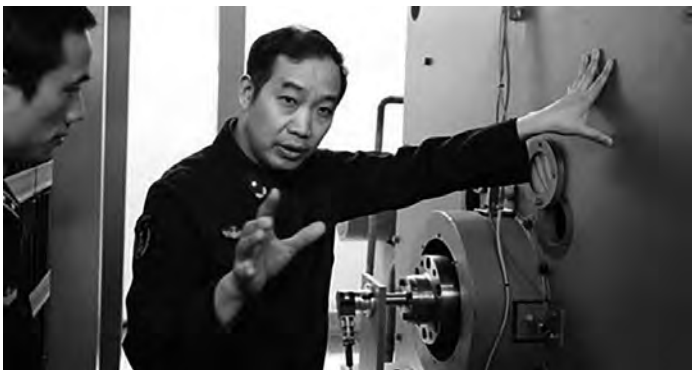
Two recent additions to the PLAN's amphibious warfare fleet are the Type 075 landing helicopter docks (LHDs) with a third of the type currently under construction. These ships have a maximum speed of 30 knots and weigh between 35,000 and 40,000 tons. They can carry between approximately forty helicopters including the Changhe Z-8 and the Harbin Z-20. The other major component of the amphibious fleet consists of seven Type 071 amphibious transport docks, with another fitting out. The type can carry up to eight hundred troops which can be transported ashore by four Z-8 helicopters flying off the aft flight deck and four Type 726 air-cushioned landing craft launched from the well deck. These vessels are complemented by thirty-two Type 072 landing ships, tank (LSTs) and thirty-one Landing ships, medium (LSMs). With the arrival of the Types 075 and 071 the PLAN has signalled an important shift towards blue water capabilities.

PLAN Ship NANCHANG Type 55 *Renhai-class* Cruiser (DDG 101).

Commissioned into service in 2004 the two Type 052B class destroyers are considered as the first modern surface warfare vessels operated by the PLAN having capabilities matching those of Western types. The destroyer fleet currently comprises approximately thirty-one ships with a further thirteen under construction, four fitting out and two on sea trials. The six Type 052C destroyers built between 2002 and 2015 introduced both the Type 346 fixed planar array active electronically scanned array (AESA) radar featuring S-band arrays for air search and C-band arrays for missile control. The Type 052C also introduced vertically launched surface-to-air missiles (SAMs). These are cold launched from eight revolver-type vertical launchers with six missiles per launcher. These features made them the first PLAN warships with an area air defence capability. In mid-2020 fourteen Type 052D destroyers were in service. These ships are referred to in the Chinese media as the 'Chinese Aegis' with some justification. They feature the Type 346A AESA radar, and for the first time on a Chinese ship a canister vertical launch system (VLS) capable of housing and launching all types of missiles found on PLAN ships.

To demonstrate its multi-role capabilities, analogous to those of the USN's *Arleigh Burke* class, the Type 052D can launch HHQ-9 SAMs, YJ-18 surface-to-surface missiles (SSMs) and CY-5 ant-submarine warfare (ASW) missiles via sixty-four VLSs. Featuring an advanced stealth design the Type 055 is a development of the Type 052D, but is considerably heavier weighing between 10,000 and 13,000 tons. The vessel has 112 VLSs capable of firing HHQ-9 SAMs, YJ-18 SSMs, and CJ-10 land-attack cruise missiles [LACMs]. It is speculated that later variants could also be armed with a railgun, prototypes of which are already under test by the PLAN. Naval analysts have noted a number of design flaws with the type, including the low positioning of its Type 346C AESA planar arrays, a factor which would affect the ship's radar detection range, and the use of light aluminium alloy in the upper decks which could reduce its survivability in combat.

The bulk of the PLAN's surface fleet is comprised of smaller types the most capable of which are the thirty 4,053 tonne Type 054A stealth frigates. These feature a 76mm main gun, a sixteen cell VLS for HQ-16 SAMs and eight C-803 anti-ship/land attack cruise missiles.



Rear Admiral Ma Weiming PhD, Chief PLAN Engineering Officer, Professor at the PLAN University of Engineering.

Significantly this class is also equipped with the H/SJG-206 towed array sonar and the YU-8 vertically launched anti-submarine rocket which possesses a 50km range. These features make the Type 054A the PLAN's primary anti-submarine ships which have a major role to protect the aircraft carriers.

THE PEOPLE'S LIBERATION ARMY NAVY SUBMARINE FORCE

Despite the PLAN possessing a substantial fleet of seventy-three submarines only fourteen of these are nuclear powered. The nuclear-powered ballistic missile submarine (SSBN) force is comprised of one Type 092 which the US Defense Intelligence Agency lists as not operational, and six Type 094 boats. The nuclear-powered attack submarines (SSNs) fleet is comprised of three Type 091 and six Type 093 boats.

The Type 094 SSBNs weigh 11,000 tons submerged and carry twelve Ju Lang-2 (JL-2 [Giant Wave-2]) submarine launched ballistic missiles (SLBMs) which have a range greater than 4,320nm (8,000km). Each missile can carry either a single one megaton warhead or three multiple independently targeted re-entry vehicles (MIRVs) with 20, 90 or 120 kiloton warheads. The submarine must operate north of the Kuril Islands in order for the JL-2s to reach two thirds of the contiguous United States. The Type 094 is further limited by the noise it emits, being louder than the Soviet Delta III SSBN of mid-1970s vintage.

Although the design has been refined since its introduction in 2006, the Type 093 SSN is even louder and would be easy prey for USN or RN SSNs. The type has a displacement of 7,716 tonnes submerged and possesses a top speed of 30 knots. The boats have either six 553 mm torpedo tubes. The type uses the canister system for the launching YJ-18 missiles via its torpedo tubes. While they are not the equal of Western boats such as the *Astute* or *Virginia* class SSNs the Type 093s are more capable than the large force of the PLAN's SSKs of which only the seventeen AIP equipped Type 093A could be considered near equal to their Russian and Western equivalents. The single AIP equipped Type 032 submarine features four VLSs for YJ-18 missiles.

The PLAN has shown particular interest in the USN's nuclear powered cruise missile armed submarines (SSGNs). Chinese literature considers that saturation attacks by SSGNs would provide a faster, stealthier response as opposed to carrier-based aircraft. The Type 032 is possibly testing this future capability which at this point is severely limited by the number of nuclear-powered submarines available.

THE DF-21D

A weapon which does not have a Western equivalent is the Dong Feng 21D (DF-21D) anti-ship ballistic missile (ASBM) colloquially described as the 'carrier killer'. The missile has a range of 930mi (1,500km) and flies at a speed of Mach 10, although USN analysts have placed this at a much lower Mach 5. Fired at such a long range the missile would be reliant on off-board as a means of locating a target including the Yaogan-VII electro-optical satellite, Yaogan-VIII synthetic aperture radar satellite, maritime patrol aircraft, submarines and UUVs.

The Chinese also operate a number of over the horizon (OTH) radars which could be used to locate a USN carrier battle group (CBG). Herein lies an inherent difficulty, OTH radars cannot pinpoint the exact location of a CBG, while reconnaissance aircraft and submarines would be open to attack by forces defending the carrier. A further difficulty faced in setting up a 'kill chain' for a DF-21D targeting a CBG is that the ships are moving at 30kn/h (34mph), hence targeting data must be continually updated, a capability which the PLAN has not demonstrated.

To make a successful attack the DF-21D must also negotiate other defences including electronic countermeasures, the Raytheon SM-2 Block 4 and SM-6 Standard missiles and in the future laser weapons. Rather than demonstrating a superior capability the advent of the DF-21D reinforces the perception that the USN continues to go unmatched in capability, and relying as it does on old technology the missile's capabilities will be surpassed by Western defences developed using superior expertise.

AN APPRAISAL OF THE PLAN

China's development of a modern blue water navy has been spectacularly successful. However, there are a number of caveats. It has neither the extensive operational experience of Western navies nor some of their technical capabilities. For example, it is not clear if China has yet managed to successfully field a LACM equal in capability to the Tomahawk Land Attack cruise Missile (TLAM). The US DOD believes the YJ-18 is similar to, or possibly a copy of the Russian Kalibr 3M-54 SSM which demonstrated a high failure rate when at least four of twenty-six fired by the Russian Navy against ISIS crashed. The capability of the PLANs SAM systems must also be questioned. The HQ-16 SAM is an upgraded variant of the Russian naval 9K37M1-2 'Buk' missile system.

PLAN Ship XINING (DDG117) Type 052D *Luyang III-class* Destroyer.

PLAN *Type 093 class* nuclear-powered attack submarine.

On 14 April 2018 one hundred and eight cruise missiles were fired by US, UK and French forces against Syrian regime military targets. Not one missile was shot down by Syrian air defences. Notably the most capable system employed by the Syrians was the Buk. The most advanced SAM in PLAN service is the HHQ-9 which has been developed from the Russian S-300. This has also performed poorly in the Syrian conflict, while the later and more sophisticated S-400 system has proven incapable of tracking, let alone achieve a firing position, on *Kheil HaAvir* Israeli Air Force Lockheed Martin F-35I Adir stealth fighters.

The PLANAF is also growing in size and capability, nevertheless it remains hampered in certain key areas. Despite suggestions that stealth designs are being developed for operation from the aircraft carriers no prototypes have emerged, rather it appears that J-15 production has resumed.

The efficacy of the PLANAF is further compromised by the lack of effective ASW aircraft. The Shaanxi Y-8Q is the most modern ASW aircraft in service. Approximately twenty-four aircraft are in service, a totally inadequate number given the size of the ocean area which must be patrolled. To make up for this shortfall China began installing underwater passive sonar systems in its coastal waters in 2011. These systems enable China to monitor submarines operating in its littoral waters and possibly also in the SCS. The PLAN has also invested heavily in drone technology. Research is currently focused on the potential for Unmanned Air Vehicles (UAVs) to support ASW aircraft in by deploying sonobuoys for the purposes of conducting a submarine search. Unmanned Underwater Vehicles (UUVs) are also being developed for reconnaissance and intelligence gathering.

To make up for its lack of aircraft carriers but also to reinforce its sovereignty claims in the SCS China has built three air and naval bases on Fiery Cross, Subi and Mischief Reefs in the Spratly archipelago. These instillations could be used to enforce an air defence identification zone (ADIZ) within the 'nine-dash line'. In the absence of aircraft carriers building a chain of island military instillations would appear a reasonable strategy. However, unlike an aircraft carrier which can steam up to 400+ miles in a day, islands are immovable which makes them easily targetable.

In May 2018, it was confirmed that China had deployed both HQ-9B SAMs and YJ-12B anti-ship missiles on all three Reefs.

Further north, Woody Island is likewise armed with the same systems and together with the Spratly fortifications forms a close to complete anti-access/area-denial bubble (A2/AD) over Chinese claims in the SCS. In mid-2020 Xi'an H-6K bombers deployed to Woody Island, further signalling China's intention to robustly reinforce its territorial claims. These bombers can carry up to six YJ-12 AShMs. The H-6K has a combat radius of approximately 1,990nmi (3,500km) which, when flying from Fiery Cross Reef, gives the bomber substantial coverage of the SCS.

CONCLUSION

The PLAN is a rapidly growing force with a mix of capabilities which as yet do not match those of the U.S. and its Western allies. The USN's overwhelming fleets of aircraft carriers, nuclear-powered submarines and Aegis destroyers are indicative of the fact that China's stated intention to match or outstrip American naval power by the mid-2030s may be difficult or even impossible to fulfil.

The USN has not stood still in countering the growth in Chinese naval power. Placing Lockheed Martin F-35B *Lightning II* fighters on assault ships has alone magnified the USN's capability to project airpower and doubles the number of aviation capable ships available, a fact which highlights the inadequacy of the PLAN carrier numbers. Building a first rate navy does not rely on numbers alone. Seamanship learnt by Western navies over decades and even centuries cannot be replicated overnight neither can be complicated manoeuvres such as replenishment at sea and vertical replenishment.

Until the PLAN demonstrates its proficiency across the broad range of capabilities required to operate a large, sophisticated modern fleet of warships it remains firmly somewhere between being a paper tiger and fierce dragon. ■

REFERENCES

[1] Jade Macmillan and Andrew Greene, "Australia to spend $270b building larger military to prepare for 'poorer, more dangerous' world and rise of China", *ABC News*, Online: www.abc.net.au/news/2020-06-30/australia-unveils-10-year-defence-strategy/12408232. Retrieved: 7 August 2020

[2] Matthew Knott, "Independence actually: Marise Payne's unmistakable message to the US", *The Sydney Morning Herald*, Online: www.smh.com.au/world/north-america/independence-actually-marise-payne-s-unmistakable-message-to-the-us-20200729-p55gfi.html Retrieved 31 July 2020

A WASTED DECADE

According to Jerry Hendrix, [1], the U.S. Navy spent a decade in the early 2000s building warships that either don't work, cost too much to build in large numbers or whose designs are fundamentally flawed on a conceptual level. Or all three. [2]

> DDG-1000 and Littoral Combat Ship (LCS) came out of the moment of change and transformation, almost as if, absent a real strategic threat, that change would be our strategy. [1]

The problem is, the stakes weren't actually low in the 2000s. While the US Navy treaded water on its fleet design and force structure, the Russian and Chinese navies designed sound, affordable ships—and began building them in large numbers. The Americans' lost decade allowed the Russians and Chinese to catch up to U.S. Sea Power. [2]

The LCS was supposed to be cheap, fast, flexible and easy to build. But after spending $40 billion over a period of around two decades, the Navy managed to acquire just 35 of the 120 metre vessels.

The LCS's problems are myriad. The most serious of the type's flaws is rooted in its requirements. The Navy insisted the LCS be capable of reaching a top speed of more than 40 knots, which is around 10 knots faster than most warships are capable of traveling. [2] Yet, the actual value of a 40-knot sprinting speed in any conceivable combat scenario for a vessel as large as the LCS cannot be established. Chief of Naval Operations Admiral Michael Gilday commented at the annual Surface Navy Association:

> A 850 km/h missile doesn't care if its target is traveling 40 knots or 30 knots. Do I really need a Littoral Combat Ship to go 40 knots?

In a 2008 paper written by Mark Czelusta for the Pentagon's George C. Marshall European Center for Security Studies, he questions "Why was the Navy willing to risk so much time, money and opportunity on what amounted to an experiment in adding a one-third speed boost to one new class of ship?" – because it believed it was safe to tinker. Incremental tinkering had become the order of the day – optimising what one had. Rather than conceptualising and designing afresh to meet potential threats and developing new strategies.

The US Navy spent a decade investing a succession of weird ideas in an unsound ship design. That created an opportunity for the Chinese and Russian navies. All they had to do to catch up to the U.S. Navy, while the US Navy was wasting time and money on the LCS, was build ships that worked. That is, conventional, 30-knot vessels with built-in radars, missiles and guns and big crews. Those ships—Russia's new Project 22350 frigates and China's new Type 052 destroyers and Type 055 cruisers, among others—are fairly old-fashioned by the standards of the LCS. But they apparently aren't exorbitantly expensive. And Russia and China have been able to build them in large numbers, year after year—and then deploy them. [2]

Last of the *Zumwalt-class* USS LYNDON B. JOHNSON (DDG1002) built at Bath Iron Works, Maine.

> The Navy might have 296 combat vessels, in theory. In practice, it has no more than 274 front-line ships that it actually can plan major operations around. [2]

We can blame a decade of complacency, during which the Navy experimented – at tremendous expense – with bad ship designs and worse theories of warfare, all while secure in its wrong belief that no foreign fleet could challenge it, then or in the near future. [2]

ABSURD ACQUISITION DEBACLES

After 20 years of what Senator Jim Inhofe (R-Oklahoma), Chairman of the Senate Armed Services Committee and Senator Jack Reed (D-Rhode Island), Ranking Member of the committee described in 2020 as "absurd acquisition debacles," the USN is changing its approach. The Navy will move forward by designing hulls around fielded systems with room for upgrades, Chief of Naval Operations Admiral Michael Gilday at the annual Surface Navy Association symposium stated:

> I'm enthused about our approach to shipbuilding because it will be critical to making the future fleet a reality.
>
> We've decoupled new technology development from building ships. Instead, we're designing them with program-of-record systems in their baseline and margins to insert future technologies when they're tested and ready.

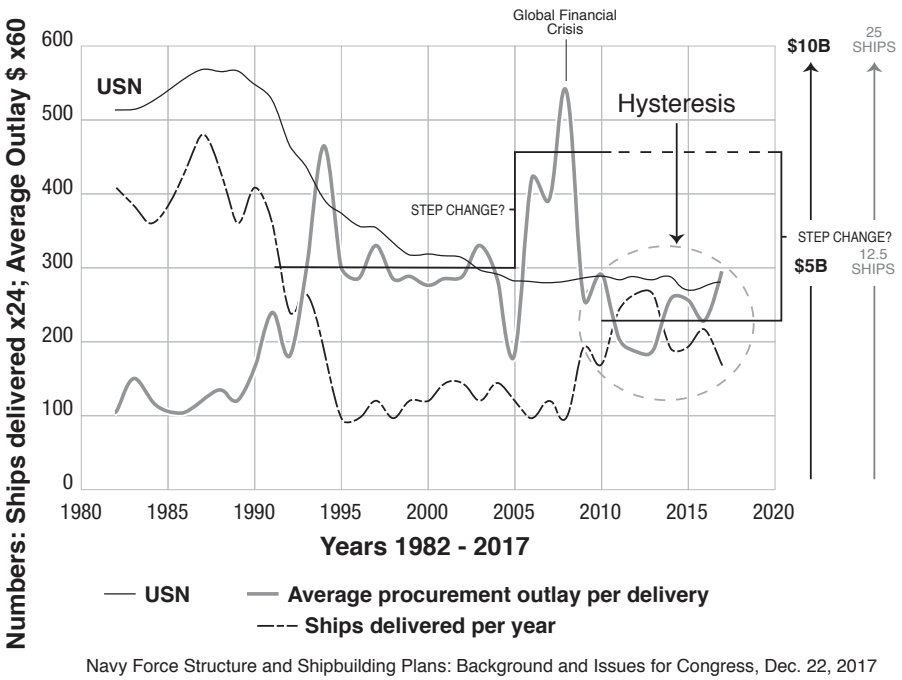
In a joint 2020 Op-Ed in USNI *Proceedings*, Jim Inhofe, and Jack Reed, citing more than $8 billion in cost overruns between the lead ships in each of the last eight ship classes, Inhofe and Reed called on the Navy to:

> summon the spirit of the "Father of Aegis," the much-revered Adm. Wayne E. Meyer, whose mantra was "Build a little, test a little, learn a lot."

To break out of its funk, Reed and Inhofe believe the US Navy must figure out subsystems prior to moving forward with designing new ships — it should figure out what's possible first and then work toward major advancements in technology. [3]

DESIGNED NOT TO SUCCEED

Analysis by Ronald O'Rourke / CRS [4] show the size of the U.S. Navy has been halving in numbers every 25 years since the late 1980s, from about 570 ships in 1987, to around 280 ships in 2017/18. What this analysis also shows is potentially two step changes. The first in 2005-09, which includes the 2007-2008 Global Financial Crisis when ship delivery rates reduced – dramatically pushing up the procurement outlay per delivery. The second occurring between 2009 and 2011, when shipbuilding rates were anaemically restored. Potentially creating the type of hysteresis and 'chaotic states' [5] of 'successive growth stages of cascading logistic curves; [connecting] natural growth and chaos like states' (see Marchetti [6] and Modis & Debecker [7]), typical of a system coming off line.



Hysteresis and Step Changes in U.S. Navy Ship Procurement, 2004-2017

Pugh observed in 2007 that "we are at a turning point in the history of Defense. Future generations of combat [Fleets] are unaffordable for any save the USA. Major changes to the landscape are inevitable". [8] It is clear today that they are also unaffordable in the U.S. [9] Equating Productivity (for an industry or individual) to Readiness for a fleet and crew, fleets are not *fitted* to the current age and productivity of U.S. shipbuilding yards [10] and fleet readiness is in stasism. As reported by the USN to Congress in the fall of 2017:

> …the surface navy has struggled with readiness, manning and training shortfalls for more than a decade. [These] shortfalls were paired with a can-do, don't-say-no culture that tolerates surface ships deploying in less-than-optimal readiness and a relentless demand for forces from combatant commanders that has increased since China and Russia have asserted their presence in the maritime domains.

The global *stasism* of Defense research adaptation and design (RAD), outside of a few key areas in the U.S. and China, is clear in reviews like Bitzinger [11], where specific to maritime he covers the U.S. Navy DDG-1000 program. He cites Luttwak [12] as concluding that, 'instead of shaping new platforms and weapons configurations to *fit* today's information technology, communications, sensor and guidance equipment, we are shoving, cramming and moulding such technology to fit the nooks and crannies of 1945-era platforms.' And the fit is not working – designs have ended up 'shipping / crewing the fits, rather than fitting the ships and crews'.

THE UNICORN – A 355 SHIP USN?

The current average delivery outlay is about $4 Billion per ship. [4] To sustain a 280-ship navy about a Design Life of 40 years will cost $40B a year, an increase of the existing shipbuilding budget by 12.5%. This will not avoid hollowing out. To avoid hollowing out a 280-ship navy may require 24-25 new ships a year; representing an increase in the annual shipbuilding budget of 275% for existing warship designs and builds.

To grow the U.S. Navy to 355 ships in, say, 8 years or two Presidential terms and sustain it thereafter (to avoid hollowing out) will require significantly increasing the shipbuilding rate. Based on the existing Design Life model, the budget would need to increase by 250% over 8 years, and then be sustained at 170% its 2017 value thereafter. To avoid hollowing out during the build-up to 355 ships and thereafter, a Defence Cost Inflation (DCI) of 8% would require a 450% increase in the shipbuilding budget for 8 years; then 350% its 2017 value thereafter.

> *In the midst of chaos there is also opportunity (Sun Tzu)*

Sun Tzu, Mark Twain, and (attributed to) Einstein all consider the changes necessary to realise opportunity from chaos:

> Whereas '*insanity* may be doing the same thing over and over and expecting different results', 'change may be the handmaiden *Nature* requires to do her miracles with'.

The last Revolution in Naval Affairs (RNA) was led by the revolutionary designs incorporated into the FFG-7 class, and the Israeli Navy's Sa'ar / *Reshef-class* of missile boats. [9,13] It occurred at the chaotic transition between the Industrial Age (1920-1965), and the Information Age (1970-2015). [14] Disparaged at the time, the FFG-7 recapitalized scale in numbers and size, enabling President Ronald Reagan to build his 600 ship Fleet. FFG-7s should have been replaced by new designs in the 1990s but were not – resulting (at 8% DCI) in the halving of fleet numbers. When investment in Research, Adaptation and Design has been maintained, DCI has been reduced, for example in submarines resulting in a DCI approximately 1% above Historic Inflation, or about 5% [8,15,16]. Concomitantly, submarines have become comparatively more affordable than warships.

Shipbuilding budgets are not going to increase significantly – and not by the amounts necessary to maintain / grow fleets and avoid hollowing out. Current designs for surface warships are simply unaffordable. This is impacting productivity and readiness (fitness) in shipbuilding and navies; so exacerbating stasism. If it is not possible to re-insert RAD and associated knowledge stripped from shipbuilding programs, then it will be necessary to change and start doing things differently. Whereas it may be possible to increase the current U.S. shipbuilding budget to $50B (an increase of 50% over 2017), average procurement outlays of $4B per ship will not fit. If the 8% DCI steady state demand rate requires 31 ships a year (for a 355-ship navy), the average ship procurement outlay will need to be reduced to $1.6B per ship (a 60% reduction on current costs). This would mean designing accordingly and ramping up the annual shipbuilding budget to $66B over the next eight years to build it to 355 ships, and then sustaining at $50B a year thereafter.

Humans and artefacts have a decay rate moving with them through their lives and creating their own critical juncture with time and space. [14] A human with a life expectancy of 80 years reaches their 'peak' in the mid-late 40s (46-47). Artefactual system-of-systems appear to have a 'natural' decay rate described by [Defense] Cost Inflation. We can ignore it, and, or, try to control it by imposing our own designs and aspirations (hopes) upon it – such as an artificial Design Life of 40 years, when the 'natural' design life may only be 20 years. As Canute demonstrated to his courtiers in the 11th Century, even he did not have the power to turn back the waves. [17]

HMS QUEEN ELIZABETH (R08) joining the UK Carrier Strike Group (May 2021).

IS THERE AN ESSINGTON LEWIS OR RENSIS LIKERT IN THE HOUSE?

In the lead up to World War 2 and following the attack on Pearl Harbour two revolutionary industrialists, scientists, and engineers rose to the fore in Australia and the U.S., namely Essington Lewis and Rensis Likert. They both led and influenced the transformation in, amongst other things, ship building and munitions manufacturing, without which the Pacific Campaign would not have been won – in the way it was. Both were industrial leaders, who had come of age during the Great Depression. They were also products of an engineering and industrial base that probably no longer exists – when design, engineering and leadership were synonymous.

It is doubtful, in the mercantilist accountancy dominated industrial scene of the West – based upon optimization rather than new design – if such individuals exist today. On the other hand, it is clear that China and Russia, continue to invest in their engineering and industrial leaders. For example, Rear Admiral Ma Weiming PhD, Chief PLAN Engineering Officer, PLAN University of Engineering (see Paper 2).

Where are such individuals within the managerialist orthodoxy of the West – and would they be allowed to exist within the structures of DSTG, CSIRO, our "Public" Universities, the Services – let alone industry? Yet without such thinkers and leaders – from within – it is unlikely the Global West will be in a position to compete.

RENEWED INFRASTRUCTURE INVESTMENT

The Biden administration is on course to initiate the largest investment in the increasingly fragile U.S. infrastructure in generations. One of the most important is about the line between military and commercial infrastructure and the interconnectivity of the two, specifically for the U.S. Navy and the maritime industry. Seeking also linkages between efficient commercial practices and maritime builds – for example Versatile Modular System (VMS), warships based upon commercial hulls.

The U.S. Shipyard Act put forward by four Democrats, one Independent, and three Republican Senators and a pair of bipartisan Representatives, at core, the is designed to provide funding, in part by using the Defense Production Act (DPA), to help the US Navy refurbish four critical shipyards in Hawaii, Washington (state), Virginia and Maine.

Maritime infrastructure serves both commerce and national security purposes, as well as scientific ones. All three are intertwined; building ships, maintaining ports, maritime engineering, projecting naval power, and engaging in ocean sciences are inherently interlinked. Unfortunately, the way the U.S. [and Australian] Governments deals with them are not. [18]

This may be infrastructure's moment in the U.S. and Australia, and a moment to think about infrastructure in the context of "widening the aperture and making the connection between commercial and military dimensions of maritime capacity". In order to benefit the economy, environment, and enhance national security. [18]

GREENWHICH STATION

At the meeting of the Group of 7 developed nations (G7) in Cornwall, UK, the Prime Minister Scott Morrison confirmed that RAN Frigates will join the HMS QUEEN ELIZABETH (R08) carrier strike group (CSG) in regional naval exercises

The Prime Minister discussed the deeper military co-operation with United States President Joe Biden and British Prime Minister Boris Johnson in a meeting — on the sidelines of the Group of 7 summit in Britain — aimed at uniting liberal democracies against threats to open trade.

Rear Admiral Mark Hammond AM RAN, the Fleet Commander, confirmed HMAS BALLARAT and HMAS PARRAMATTA would be conducting "vital navy-to-navy engagements with partner nations across the region".

President Joe Biden is pushing for a strong statement from G7 leaders on economic coercion, backing Australia's concerns about Chinese trade strikes that cost billions of dollars in lost exports.

G7 leaders also agreed a plan to counter Chinese President Xi Jinping's Political Economic Global Order infrastructure plan. The White House said the Build Back Better World (B3W) initiative would provide a transparent partnership to help narrow the $50 trillion needed by developing nations by 2035. ■

REFERENCES

[1] Hendrix, H.J. (2020) *To Provide and Maintain a Navy: Why Naval Primacy Is America's First, Best Strategy*, Focsle LLP: Plano, Texas

[2] Axe, D. (2021) "The U.S. Navy Wasted A Whole Decade Building Bad Ships", *Forbes*, 5 Jan, https://www.forbes.com/sites/davidaxe/2021/01/05/the-us-navy-wasted-a-whole-decade-building-bad-ships/?sh=1dcec52454e

[3] Larter, D.B. (2021) "Here's the US Navy's plan to stop its string of shipbuilding failures", *Defense News*, Jan 11.

[4] O'Rourke, R., *Navy Force Structure and Shipbuilding Plans, 22 December, in Background and Issues for Congress*, CRS, Editor, 2017, Congressional Research Service (CRS): Washington.

[5] 10. Marder, A.J., *The Anatomy of British Sea Power*, 1940, New York: Alfred A. Knopf.

[6] 11. Marchetti, C., *Fifty-Year Pulsation in Human Affairs, Analysis of Some Physical Indicators*. Futures, 1986. Vol. 17 (3): p. pp. 376-388.

[7] 12. Modis, T., & A. Debecker., *Chaoslike States Can Be Expected Before and After Logistic Growth*. Techno-logical Forecasting & Social Change, 1992. Vol 41(1): p. pp. 111-120.

[8] Pugh, P.G., *Retrospect and Prospect: trends in Cost and their Implications for UK Aerospace*. Defence and Peace Economics, 2007. Vol 18(1), February: pp 25-37.

[9] Reay Atkinson S., C.J., Skinner, K.F. Joiner, & N.H.M. Caldwell. A*waiting the next Revolution in Naval Affairs. in Pacific 2017 - International Maritime Conference*. 2017. Sydney, International Conference Center: RINA.

[10] Jeremy, J., *Designing and Building 21st Century Aircraft Carriers*. The NAVY Magazine of the Navy League of Australia, 2016. Vol. 78, No. 3(Jul-Sep): p. 25-26.

[11] Bitzinger, R.A., *The Future Ain't What it used to be: Strategic Innovation in the Global Defense Industry, in Emerging Critical Technologies and Security in the Asia-Pacific, 2016*, R.A. Bitzinger, Editor 2016, Palgrave Macmillan: Hampshire UK. p. pp. 154-166.

[12] Luttwak, E.N., *Breaking the Bank: Why Weapons Cost so Much*. The American Interest, 2007. Autumn.

[13] Maor, N., *Formation of Navy Part II - The Israeli Defence Force, 1960-1979*. The NAVY Magazine of the Navy League of Australia, 2017. Jan-Mar 2017 Vol. 79, No.1: p. pp. 22-26.

[14] Reay Atkinson S &, J.J., Bogais, *A Critical Juncture – DC Dynamics or DC Stasism: to be or not to be? That is the question in Data Center Dynamics (DCD) White Paper Feb 2018*, N. Parfitt, Editor, 2018, DCD: London

[15] Reay Atkinson, S., I. Hassall, N.H.M. Caldwell, M. Romilly, & R. Golding., *Versatile Modular System (VMS™) designs for a Versatile Modular Fleet (VMF™) in paper presented at EAWWIV Conference*, 2011, Old RN College, Greenwich, London.

[16] Joiner, K.F., and S., Reay Atkinson, *Australia's Future Submarine: shaping early adaptive designs through test and evaluation*. Australian Journal of Multi-Disciplinary Engineering (AJMDE), 2016. Vol 11, No. 2, 16 Nov: Presented at Submarine Institute of Australia 8th Annual Conference, 14-16 Nov.

[17] R.C. Blake (2018) Realizing the 355 Ship Navy, *Unpublished*.

[18] Klein, A., and Jones, B. (2021) "Why maritime infrastructure is about more than the U.S. Navy" Brookings, Friday, May 21, 2021

UK – BUILDING BACK BETTER?

UK Maritime has enjoyed mixed fortunes in the pandemic; on the one hand, there has been the shutdown of cruise and the crew change crisis; on the other, record container carrier profits. What does the UK government's commitment to 'build back better' mean in this context?

The key consideration for speakers at the Nautilus Union Conference was addressing the fundamental question about what 'build back better' should mean for the maritime industry.

Seafarers key to recovery

Nautilus general secretary Mark Dickinson, who opened the discussion, was clear that it should be about working towards a fairer future:

> Let's get our priorities right. Let's think about the human beings,' he said. 'Our message to this webinar today is build back better, yes, but let's build back fairer as well.

The UK maritime minister Robert Courts MP, paid tribute to the seafarers who

> kept the world moving' during his contribution to the online event and said that 'people are at the heart of maritime.

The minister told the online event that the UK Maritime 2050 strategy would form the 'foundation upon which we can build our response from the pandemic'.

Talent, training and recruitment

Maritime UK chair Sarah Kenny referenced a Nautilus survey which found that 52 per cent of seafarers are rethinking their choice of career because of the pandemic.

UK Chamber of Shipping policy director Peter Aylott acknowledged the challenge and referenced the fact that the number of cadets has also dipped in the past year.

An ongoing crisis

Highlighting the Union's Build Back Fairer campaign, Mr Dickinson stressed the continuing importance of seafarers being designated as key workers.

A work in progress

Discussions covered an extremely broad range of issues, the common thread throughout was people. For all of the spending commitments and major infrastructure announcements that will follow under the 'build back better' branding, a better future will only be reached if there is a fairness for seafarers and maritime professionals. [1]

CONTINUING AUSTRALIAN MERCHANT FLEET CRISIS

Admiral Tim Barrett, previous Chief of Navy, said Australia was suffering "sea blindness":

> It really is a lack of understanding of the significance of the dependence we face.
>
> Australia is so dependent on foreign shipping that obtaining critical supplies during a nat¬ional emergency can't be guaranteed.
>
> Issues around COVID and regional tensions mean that only now we are discovering that we are in a very parlous state
>
> The issue is around ¬resilience to fuel supplies, pharmaceuticals, agricultural equipment, anything that's critical to society."

Maritime Industry Australia Limited (MIAL) Chief executive Teresa Lloyd, reported there are now just 13 Australian-flagged or controlled cargo vessels. Thirty-odd years ago, there were 100. Britain still has 470 such commercial ships.

Admiral Tim Barrett went on to say:

> If you don't have the capacity to requisition ships, there's not much you can do in an emergency.
>
> A national government has legal authority in a crisis to requisition civilian ships, which carry its flag or are controlled by its companies, but has no authority over foreign ships. Thus the lack of a commercial cargo fleet leaves Australia naked in any emergency that interrupts essential supplies.

Mr Innes Willox of the Australian Industry Group stated:

We are more vulnerable to economic shock than we have been quite possibly since World War II, given geopolitics and the fragmented nature of our core assets.

Commenting, former Deputy Prime Minister and John Anderson stated that the Government should:

> urgently resolve this issue when we see how dangerous the world has become. We need to be sure we have our essential supply lines secured and can bring in critical materials.

Responding to Deputy Prime Minister and Transport Minister Michael McCormack, Ms Teresa Lloyd stated:

> The government has made no efforts to do anything to incentivise or encourage an Australian shipping industry. The only thing they are even working on relates solely to the regulation of coastal trading, which is already dominated by foreign ships.

Noting Indian crews and ships marooned off China, Admiral Tim Barrett went on to say that COVID-19, in combination with geopolitics, has disrupted international freight shipping much more than has generally been realised.

Mr Peter Court, grandson of the former West Australian premier Charles Court, trained as one of BHPs last maritime cadets, stated:

> the progressive loss of skills meant that turning it round now [in 2021] would be much easier than it will be in five years' time.

Mr John Anderson reflected that the dreadful record of industrial relations on the ports had made governments wary of reviving those forces, but he believed the security considerations were so important that the government must ¬address and reverse the decline of Australian merchant shipping. [2]. ■

Coal Ships Anchored off Newcastle.

REFERENCES

[1] Nautilus Union (2021) "It's time to build back fairer", *Telegraph*, 12 May 21. https://www.nautilusint.org/en/news-insight/ telegraph/

[2] See Greg Sheridan (2021) "Shrinking merchant fleet leaves Australia exposed", *The Australian*, Feb 17, https://www.theaustralian.com.au/nation/shrinkingmerchant-fleet-leaves-australia-exposed/news-story/c0cbf77e0ada5e3184fabcb8cd3f1bed

DEVELOPING NAVAL AIR POWER PROJECTION CAPABILITY

By John Rigby & Paul Sawtell

In World War 2, the Carrier Battle Group dethroned the massive battleship and defined the strategic offensive. Since that time, the Aircraft Carrier has been critical to naval operations since Korea, Vietnam, The Falklands and the Middle East. In that time the carrier, like the Battleship has evolved into massive ships with air groups bigger than some Air Forces, the loss of just one of which could be as traumatic as that as the loss of HMS Hood or the IJN Yamato and could affect the outcome of a whole campaign. Such ships require a large retinue of escorting ships and a subsequent Fleet Train to maintain on station. In this paper, we propose that smaller wave piercing carriers with a 'sprint' capability offer a viable alternative.

FOREWORD

Fighting the next war with the weapons and doctrines of the last war

In the Jan-Mar 2021 edition of the NAVY two eminent U.S. Commanders (Joint Chiefs Chairman General Mark Milley and Vice-Admiral Joe Sestak) were quoted in summary as follows: -

- U.S. cedes control of the Western Pacific to China
- The military must embrace robotics and A.I. to maintain supremacy over China
- The world is in the midst of a fundamental change of war, where cyberwarfare, precision guided weapons, drones and advanced satellite communications will determine the outcome
- Smaller forces more widely distributed and very difficult to detect were the key to the future.

Their comments were more extensive than just these highlights and we commend them for closer and thoughtful consideration.

The risk to carriers from Air, Subsurface and Surface threat, not to mention satellite tracking, make them a 30-knot high value target where the need for mutual protection at 30 knots forces group elements closer together, thus facilitating targeting with conventional, advanced non-nuclear or nuclear weapons.

Loss of the carrier virtually threatens the 'Raison d'etre' of the group itself.

Working as a team but dispersed over an expanded operational area, while close enough to provide mutual defensive support, via air and ship launched responses directed by combined long-range sensors this expanded group provides the following benefits:

- A credible air force equal to larger carriers
- a diffused risk as the dispersed "group" is a more challenging targeting proposition
- expands the options for the "group" over-arching naval commander.

One of the authors is of the view that these carriers require an escort of ships with the same 'sprint' capacity, as opposed to operating as a squadron independent of such (battle) support.

USS GERALD R. FORD (CVN-78) *Ford-class* nuclear powered carrier.

Does this overall approach mean that 'The Carrier Battle Group' as we know it is obsolete? Not necessarily so.

Just as the F35 that can interdict to break down the enemy's defenses, making the way safer for more conventional aircraft, so could the "Sprint Dispersed Squadrons" make it safer for the "heavy hitters" of a main Carrier Battle group to deliver the "Coup de Grace".

Of course, this would only apply where our proposed carrier force is acting in concert with an ally or allies that can field such assets.

Launching both F35 STOVL fighters (up to 12), ASW and AEW helicopters (up to 4 each) provides a fast and dispersed screen of capable air assets, able to both attack and defend at a distance.

With speeds of up to 50 knots providing the ability for these ships to rapidly depart launch points, an enemy's search and destroy targeting, is greatly complicated, thus increasing group and individual asset survivability.

Such unconventional ships, as proposed, could be within reach of regional middle powers to purchase from Australia (or construct) at some point in the future thus forming an intensive regional force capable of confronting any single large protagonist bent on hegemony.

Carrier Battle Group led by USS RONALD REAGAN (CVN76) RIMPAC (2010).

It is with these thoughts in mind that the following discussion paper is presented.

INTRODUCTION

The following concept paper adheres to the Navy League's policy statement, specifically with relation to the following:

> *"Notes the potential combat effectiveness and flexibility of the STOVL version of the JSF (F35 Lightning) and supports further examination of its application within the ADF"*

and

> *"Supports the development of the Australia's defence industry including strong research and design organisations capable of the construction and maintenance of all warships, submarines and support vessels…."*

While the thoughts in this paper have been a matter of discussion between the authors for over a decade, a recent article in the July to September edition of *The Navy* presented by Reay Atkinson, Skinner et al, [1-3] prompted the writers to present this essay.

PRESENT SITUATION – AN ASSESSMENT

Australia's air defence of its naval assets and its capacity to project power (sea and air) is presently limited to a reliance on a strong ally that has those capabilities.

Our capacity to engage in unilateral defensive or offensive action, without the support of such an ally providing the essential air support (i.e., aircraft carriers) that will underpin the success of such action, is non-existent.

As a middle power, our influence on the political and immediate strategic realm is reduced by this truncated capability.

This has resulted from the view that sea-based air power was/is beyond our capability and this in turn results in our active reliance on allies who have that capability.

Thus, we are left with the capacity of our surface and sub-surface ships to only engage adversarial air forces in the immediate defence of the ships involved.

Reliance on "powerful friends" whose commitment is subject to both political whim and to the view that their own homeland's security and national interests outweigh commitments to any other nation, creates a dilemma for our military planning and preparation.

World War 2 provided ample evidence that reliance on other nations is fraught with danger and is only sustainable when their and our interest are intertwined or in parallel.

> *Independence requires our military planning and preparations be based on ensuring our homeland integrity.*
>
> *That integrity is underpinned by protecting those shipping lanes essential to our nation's wellbeing.*

This view does not preclude cooperative operations with other nations (to our mutual benefit).

Rather it allows Australia to demonstrate a resilient defence posture, while enhancing our ability to defend our interests and adding that ability to those (abilities) of our allies.

HMS QUEEN ELIZABETH (R08) Embarking RAF and FAA F-35B May 2021 (Image UKRN).

A BROAD VIEW OF CURRENT CAPACITY

It is understood that the RAN's commissioning of air defence destroyers could facilitate protection for fleet assets within the envelope of the (air defence) ship.

The Frigates coming on-stream in the near future offer an additional layer of fleet air defence and potentially a capacity to defend certain land bases if necessary.

Some have conjectured that our recent acquisition of multi-purpose air and amphibious carrier type vessels (LHD) might enhance that capability.

Sadly, neither vessel, as configured, can presently launch strike or defensive aircraft.

Their main role is in troop deployment in amphibious operations.

The ground forces they deploy are also, therefore vulnerable to determined air opposition.

Flexibility of the force's commanders to respond to aerial and ground resistance is reliant on support from allied carrier forces.

The fact that Australia lacks an advanced aircraft carrier capacity will always limit its ability to project power in the region and, critically, adequately defend Australia.

Such reliance on major partners, namely the United States (perhaps also Japan, France and Britain), to provide that naval air power projection, comes with the caveat that their and our individual needs must align for us to be assured of that support.

We are not the only U.S. ally in the region.

Many of these allies are closer to likely strategic threat, so it may not always be the case that the U.S. et al will, or can, come to our aid.

WHAT TO DO?

Often debated without a conclusive and positive outcome, the need for aircraft carriers has been raised repeatedly.

Argument against acquisition of such craft, is based on the cost of designing, building, operating and maintaining such craft.

Acquisition of a conventional aircraft carrier (nuclear or fossil fuelled) has been regarded as an inappropriate commitment for us, especially given the need for an array of supportive defensive ships such an asset would require.

In our view, Australia should consider a radical departure from conventional aircraft carriers and instead develop an indigenous aircraft carrier type.

Fifth generation STOVL aircraft (F 35B as being acquired by the US Marines and the Royal Navy) offer a path to designing a ship suited to our navy's operational requirements.

This capacity must be and remain independent of the defence partners with whom we have arrangements.

THE NEED

It is self-evident that Australia has not the financial or industrial capacity to build or acquire aircraft carriers such that the U.S., or other major maritime nations can put to sea.

HMAS CANBERRA (L02) MRH90 Vertrep with *Tiger* ARH Ranged on Deck.

As considered above, the Canberra and Adelaide provide a possible opportunity for a platform to launch some combat aircraft, but both these ships are slow and would require extensive modification and expanded and layered support to defend them.

Equipped with STOVL aircraft or even combat ready UAVs, such a multiple role would complicate doctrinal and battle management options- perhaps best to leave them to the current challenges of troop and related logistic delivery.

Unless Australia prefers to remain incapable of independently defending itself and its interests, we must commit to a naval force capable of providing air defence and strike capability.

In other words, 'power projection'.

This capability must provide air power to a level that would give even a major maritime nation sufficient pause in contemplating any aggressive action.

So, what could the answer be, especially if it is to be built and maintained in Australia and to be available within a reasonable timeframe?

The objective of this paper is to explore one approach and present it for consideration.

PROPOSAL

The authors believe that Australia needs a small light carrier design in sufficient numbers that can provide an independent and credible force with the ability to interdict and deter offensive maritime forces far from homeland shores as well as provided cover for shipping lanes vital to our economic and political integrity in times of cool conflict.

Providing a high level of operability with current and future strategic partners (consistent with present strategic doctrine) this proposal provides not just for our own independent stance but also provides stronger support for those partners.

To achieve this at a reasonable cost, we need an existing platform that can be transformed into such a micro carrier to achieve this objective.

This platform needs to provide adequate space for 6-12 combat aircraft and 2- 4 manned or UAV helicopters (or similar) plus on board AEW and ASW vertical lift assets.

Needed is a very high-speed capability (45-60 kts) that the authors believe adequate to enable STOVL aircraft launch. However, we recognise that future research may prove it necessary to consider alternative launch assist technology, see below.

On-line sources indicate that a STOVL F 35B fully loaded (22,280kg) requires a take-off run of 450 ft~ with ski-jump. The USMC operate such aircraft without ski-jumps but their ships are longer with air-cover provided by super carriers. USMC concentrates on ground support for landed marines, with a secondary air defence role.

It should be self-defence capable with respect to air, missile and submarine attack and self-reliant in terms of aircraft maintenance and provide a credible capacity to respond to any potential adversary's aggressive intentions in our near and broader sphere of influence.

Lastly but essential, the technologies providing these capabilities should be indigenous or readily available within the Australian industrial context.

Obviously, a single ship with this size "air force" would by itself have little or no viable effect with respect to the above.

Therefore, it is clear that a number of these ships would be required and a somewhat unconventional operational doctrine developed to enable their effective operation, independent of large fleet (e.g., US Navy) operations (but with the option of contributing to such operations).

OPERATIONAL "DOCTRINE"

Doctrine One

The unconventional doctrine postulated below provides an approach to operations that is quite different to current carrier operations:

1. The ability to provide credible interdiction envisages using a number of these ships operating together as a single battle group, providing a force equivalent to a larger aircraft carrier.

   This group could bring a large force of aircraft (24-60), both manned and unmanned to any battle. The fleet's designed cruise and battle speeds, limit the use of conventional support ships- *see addendum with contrary view.*

   Each micro-carrier must be capable with respect to anti-aircraft and anti-missile defence and ASW systems to complement carrier air patrol activity.

   Further, these ships must have a shared and integrated network of sensors (radar, thermal, satellite etc.) to provide an enhanced capability (panoptic, panoramic and parallact) to detect stealthy aircraft and missiles.

   With four operational carriers working in-team, the capacity to launch four aircraft at a time would exceed that of most larger aircraft carrier, allowing for a more responsive threat reaction.

2. Of course, depending on the peace time or wartime conditions pertaining, each unit could operate independently to provide a visible influence over a greater geographical environment and also provide force protection to other naval or commercial maritime assets as an alternative to its primary interdiction role (i.e., in concert with the other micro-carriers).

A benefit of the approach outlined in #1 above is that air operations could be conducted within a specified regional battle zone while dispersing these carrier assets over an extended operational area e.g., a diamond pattern.

This would make it a more complex task for an adversarial response to easily eliminate all of these ships and their aircraft, compared to disabling/destroying a single much larger asset, even one defended by a flotilla of supportive defence ships.

A minimum of 6 ships is envisaged.

Battle formation as outlined in 1 above would be four ships at the points of a kite pattern with a fifth ship trailing as the "tail".

The fifth ship provides the back up for any loss and with the added benefit/capacity to absorb aircraft in flight should their "home" carrier be lost or disabled.

Incat USNS JOINT VENTURE (HSV-1) Proof of Concept Vessel.

Furthermore, as it would "steam" more stealthily than a conventional frigate or destroyer, it should provide a primary/complementary layer of anti-submarine screening for those fleet elements engaged in aircraft launch or retrieval or other defensive action. In addition, it would play a role in pilot/aircraft retrieval when necessary.

The sixth ship allows for repair, related maintenance and provisioning.

As foreshadowed above, the speed of this design is a critical element.

The ability to rapidly transit from southern bases, to a likely battle zone in the Pacific Island arena or South China Sea or even into the Indian Ocean is essential.

The approximate distance from Perth to Manila is 2800 nautical miles.

A cruising speed of 40 knots could put a small but formidable task force into the South China Sea in about 3 days or less than half the time for the Adelaide or Canberra to transit a similar distance.

This fast transit ability combined with a battle speed of 50 knots plus would provide a formidable force multiplier.

Doctrine Two

Notwithstanding the comments in Doctrine 1, one of the authors holds the view that there are benefits of having the AW destroyers and ASW frigates as a supportive component of the fleet.

His view is that this is a matter to be considered as he believes the idea that they (the micro-carriers) can operate by themselves is a matter for debate.

If they can't that opens up the serious need for additional vessels to provide ASW, AAW and anti-missile defence.

These vessels will need to be multi-hull wave piercing vessels as well, if only to keep station with the carriers.

In his view this need is indicated by the layered defence deployed around US carriers and the massive resources and doctrinal effort put in would appear to indicate such a need, bearing in mind that the U.S. is the largest and most experienced carrier operator in the world.

These would provide the following benefits:

1. An extended layer of protection could be afforded the carrier group especially when focussed on air operations (launch and recovery) and also provide a capacity for the assistance to crews from aircraft downed in battle that an air craft carrier could not carry out without diminishing its battle focus conduct.
2. Supportive craft that would play the role of destroyer/frigates in adding greater and extended anti-submarine and anti-craft and missile defence.
3. Such craft would need to be capable of equivalent speed as the micro-carriers

He is also concerned that the speed capability envisaged *might* enable air craft launch without a "ski deck" or steam catapult but that that is less than certain. Agreed is that electro-magnetic systems (e.g., EMALS) may have a role to play although in his view, such systems need below deck space that that could impinge significantly on aircraft storage in what could be only a single hanger deck.

This view raises issues of:

- increasing major technical and deck operations complexity common to conventional aircraft carriers,
- in the case of a ski jump, an impediment to forward motion from excessive windage.

The latter issue might be moderated by more streamlined ski-jump designs.

PLATFORM AVAILABILITY

INCAT

Incat, an Australian builder, using high grade marine aluminium, constructs fast ferries based on a Wave Piercing catamaran design.

These ships carry large numbers of cars and trucks in a roll-on roll-off configuration, and have operated successfully globally for years, with some military applications developed as well.

The largest unit commissioned/ordered to date is believed to be around 130 metres however Incat advise that there is no theoretical limit to LOA.

AUSTAL Steel Light Amphibious Warship Concept Vessel.

At 12,000 tonnes, passenger capacity of 2100, 400+ metres of heavy trucks and 220 cars, this unit should provide the deck space and interior space needed.

A major benefit of this suggestion is that this ship builder has extensive experience in this design type and the use of high-quality aluminium construction. However, there are some views that aluminium is not suited to military requirements and the use of marine grade stainless steel, while of greater expense would provide a tough, light, and long-lasting hull/superstructure (with a low magnetic signal) could be considered.

The builder- Incat, native to Tasmania, selling this product successfully to the world, provides a sound and reliable base for developing and constructing this design.

Such experience should allow for tight cost control and minimum risk and a relatable cultural experience between client and builder that should readily assure timely completion of this battle fleet.

Naval craft will require higher standards of construction and layout design to re-purpose this commercial design to meet the needs of naval use.

The Incat platform provides the speed, stability and capacious interior arrangement that could be re-configured to meet the requirements of aircraft launch, storage, preparation and maintenance.

Incat is a builder with the skills and capacity to manufacture such units quickly and efficiently thus avoiding many of the issues associated with the use of foreign entities for delivery of our capital ships.

Such repurposing of this design to accommodate complex aircraft and weapons systems would require substantial naval architecture to achieve the greater space/dispersal arrangements and structural integrity required for military use.

We understand Incat has some experience of this with previous iterations of this design type being built for military purposes (some trialled by the US Navy).

AUSTAL

AUSTAL is also well-recognised constructor of ships including littoral warships for the US Navy. Their design and construct capacity should also be capable of such a ship design and they are well experienced in the use of high-grade aluminium for war ship construction. Currently AUSTAL is constructing some 15% of US Navy new construction.

Manufacture could be shared between these two builders to achieve the number of ships required in less than a decade. There are many other builders in this country with the capacity to contribute in large or small part.

DRIVING THE SHIPS

Innovations could be introduced that would provide such ships with unique features.

For example

- if gas turbines were used as the primary propulsion unit, fuel type (e.g., JP5) could be shared with aircraft, thus eliminating the need for separate fuel storage. As this is expensive fuel, such operation might be chosen only for battle conditions.
- Therefore, cruising operation may be more economically achieved by the installation of secondary propulsion units using electric motors similar to those used in the Collins class with batteries charged from a range of sources, including
  - operation of one or more gas turbines
  - photovoltaic cells “buried” under polycarbonate sheet covering the flight deck (obviously requiring hardened heat resistant areas for jet exhaust take-off)
  - small diesel power plants
  - future developments in power generation technology

Such transit capability, when high speed was not essential, would achieve fuel cost savings but more importantly provide extended range with reduced reliance on supply ships.

Possible Future Propulsion Energy Source

Another alternative power source currently under development by Professor Heinrich Hora *et al* (University of New South Wales) might provide an alternative power source for the ships.

His nuclear fusion technology uses powerful lasers to ignite a hydrogen-boron fuel pellet to initiate a fusion process that simultaneously generates an intense magnetic field to control this process.

Requiring neither water coolant nor steam generation to produce electrical power, the small “reactors” or tokamaks could be placed in a ship to produce virtually limitless electrical power with only minuscule fuel requirements and with none of the radiation danger associated with conventional nuclear power plants.

Such a power source could eliminate the need for gas turbines or any other conventional power source providing near silent operation and with no limit to range, even at high speed.

Further, no complex industrial capacity would be needed to provide the technological platform associated with conventional nuclear (fission) power.

However, it is unlikely such technology would be available for practical use before 2040 but the ships design should take into account the future availability of such propulsion technologies.

DEFENDING THE SHIPS

The speed of these ships implies a much faster transition to areas of contention than other ships of the RAN.

In turn this suggests the ships (operating independently or as a battle group) would require independent defensive systems so support from destroyers or frigates would be reduced or not needed (NB Addendum 1 – alternate view in Doctrine 2).

Therefore, like the LHD class, these ships should be armed with a range of anti-aircraft, anti-missile and anti-torpedo defences of the most advanced type as well as decoy systems to defeat anti-ship missile attack.

Given the timeframe for delivery, if planning started within the immediate/intermediate future (say around 2023-5), anti-aircraft and anti-missile laser weapons (presently coming into service with U.S. and Israeli military units) could be added to its armoury upon commissioning or at some future point.

Electrical power generation and storage capacity (batteries and supercapacitors) would need to be adequate to support such weapons.

This is especially important given the employment of hypersonic weapons being mooted by potential regional adversaries.

SUMMARY

The above provides a skeletal outline only.

Intended to initiate exploration of the possibility of enhancing Australia's capacity to deal with an increasingly volatile regional area, our proposal offers a view that some may consider counter-intuitive.

A pragmatic assessment is likely to exclude the acquisition of a conventional carrier type, especially given the need to protect and sustain such a unit.

This paper offers an asymmetric option that has the potential to provide Australia with the force multiplier with great potential to deter an aggressor.

This is critical in an era where the capacity and desire of our long-term ally, the United States, to provide the defensive shield we have relied upon for over 70 years, may wane.

Emerging powers such as India and China will seek to exploit their nuclear weapon and economic status to "influence" those nations they perceive to exist within their "natural" sphere of influence.

Designing and building such innovative ships on a large scale would underpin the military and industrial infrastructure evolved with the Collins type and continuing with the current submarine project and the air defence ships now under construction (both destroyers and frigates).

It would provide Australia with a comprehensive capacity to carry out the defence of its surrounding seas and beyond and offer a meaningful capability to defend and support our allies in the event of regional conflict.

Such designs, together with the operational doctrine proposed, should provide a compelling alternative to major capital ships i.e., aircraft carriers being built by (or entering service with) the United States, China (catamaran carrier design?) and Britain.

Given the power of nuclear weapons and the potential for swarms of attack UAVs and yet-to-be determined new military technology, investment in such large ships is placed very much at risk (as are the crews).

Development of such ships may also provide an export opportunity for Australia, particularly if costs are well managed.

The value proposition of much smaller and more agile, faster platforms capable of projecting air power (manned and/or robotic) is compelling, especially for those nations without the economic grunt of the major powers.

In fact, this allows for an asymmetric approach to projecting concentrated air power far beyond the reach of our current land-based aircraft, with the exception of the B21B, which at present Australia has no apparent intention of purchasing.

Apart from such long-range bombers, the cost of which may be prohibitive, there seem few other options for Australia with respect to projecting air power that offers the potential to deter an adversary, other than that proposed here. ■

The authors have no connection with Incat or with the University of New South Wales.

All information sources are from public domain or from commercial websites.

REFERENCES

[1] Reay Atkinson, S., C.J., Skinner, K.F. Joiner, N.H.M., Caldwell, & A. Swidan, *Important trends and junctures in warship design* - Redux. The NAVY - Journal of the Navy League of Australia, 2020. Vol 82, Issue 3: p. pp. 7-13.

[2] Reay Atkinson, S., C.J., Skinner, K.F. Joiner, N.H.M., Caldwell, & A. Swidan, *Important trends and junctures in warship design - Redux.* The Naval Review - Journal of the UK Royal Navy and Royal Marines, 2020. Vol 108, No. 3, Aug: p. pp. 400-409.

[3] Reay Atkinson S., C.J., Skinner, K.F. Joiner, N.H.M. Caldwell, & A. Swidan, *Important Trends and Junctures in Warship Design.* Journal of Ship Production and Design, The Society of Naval Architects and Marine Engineers (to be published 2019), 2019. First presented as *Awaiting the next Revolution in Naval Affairs*, International Maritime Conference, 3 October 2017.

3RD PLACE

AUSTRALIA AND THE ORIGINS OF THE SINGAPORE STRATEGY

Dr Honae Cuffe

June 2021 marks 100 years since the British Government approved plans for the construction of a fortified naval base in Singapore. Australia's relationship with the Singapore Strategy is dwarfed by the devastating shadow cast by the fall of Singapore and two schools of thought – that of betrayal by the British government, or wilful ignorance on Australia's part as the nation accepted Singapore as the impregnable cornerstone in imperial defence despite evidence of Britain's waning power. [1] These narratives have detracted from the origins of the Singapore Strategy and Australia's keen appreciation of the maritime domain and the utility of the Navy in defending the nation's interests. For a nation with a young and, arguably, inexperienced Navy, this was quite a surprising appreciation with a great deal of foresight. This history carries important lessons in self-reliance for us today.

WARTIME LESSONS AND EMPIRE DEFENCE NEEDS

The origins of the Singapore Strategy can be found during the First World War. Japan had entered the First World War in August 1914 with the expectation that it would capture German territories in the East and South China Seas and the escort Allied convoys in the Indian and Pacific Oceans. The Imperial Japanese Navy quickly extended its operations, capturing the Marshall, Mariana and Caroline Islands, each a part of the German territories in the North Pacific. Australia saw in Japan's rapid territorial advances its desire to broaden its Pacific empire, with the potential for a campaign of aggressive southern expansion with designs on Australia. These concerns were exacerbated by Japan's rapidly growing shipbuilding capability, increasing from 85,000 tonnes annually to 650,000 tonnes between 1914 and 1919. [2] For the remaining years of the war, the RAN and the Prime Minister's Department paid close attention to Japan's naval movements and collated intelligence concerning the nation's intentions in the region. [3]

It was against this backdrop in September 1917 that Australia's Minister for the Navy, Joseph Cook, requested that the British Admiralty reassess the maritime defence needs of Australia and the Asia-Pacific. Cook suggested that a major imperial base was required either in Australia or another British territory close by. Plans were made to send an Admiralty officer to Australia to investigate, although, given the wartime context, this could not happen until after the end of the war. In December 1918, the Australian government was informed that the Admiral of the Fleet, Lord John Jellicoe would visit to review the situation in the region. [4]

It is interesting to note that as the Australian government was seeking a reassessment of the maritime defence needs in the Asia-Pacific region, Australian representatives at the Paris Peace Conference were considering the significance of strategic isolation and naval deterrence. One of the key issues addressed in Paris was the future of Germany's former Pacific territories. Australia saw the chain of islands in the South Pacific as "natural bastions", essential in securing naval approaches to the nation's north. Australia hoped to couple administrative control of these islands with increased naval deterrence.

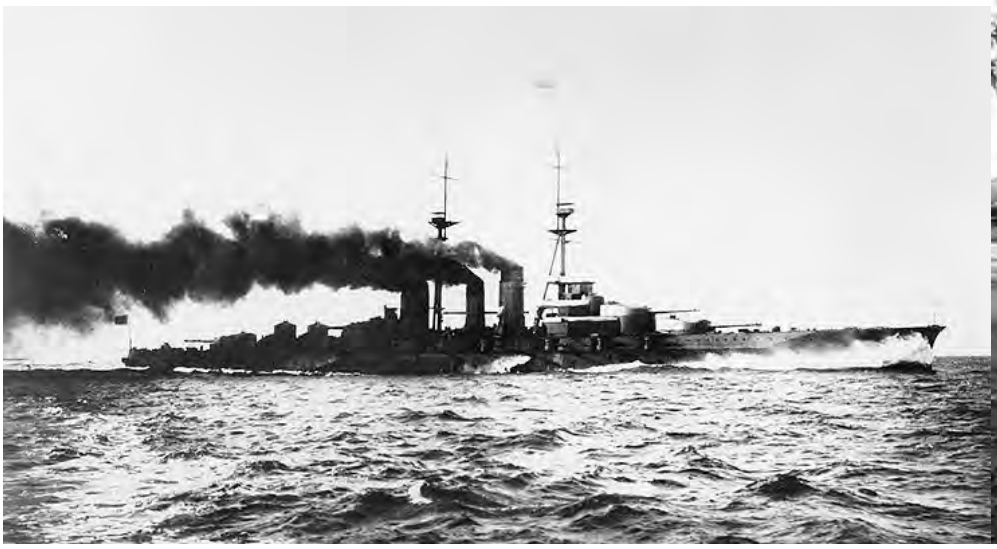
Japanese troops besieging the German Chinese Colony of Tsingtao 1914.

In a report prepared by John Latham, a wartime Australian naval intelligence officer and assistant secretary to the British Empire delegation in Paris, he argued that

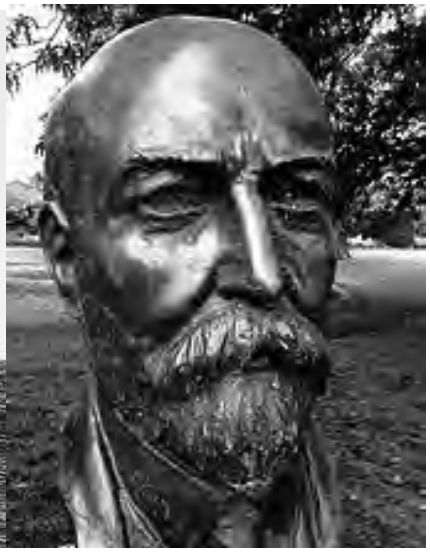
> "Australia … must aim at doing her best to counteract the naval preponderance of the enemy by employing a smaller force along sound strategic lines. She should aim, that is, at holding the sea passages and threatening from a flank the sea routes by which an attack would come. The suggested naval frontier would, roughly speaking, extend through Singapore to the Tonga group."

He went on to characterise this maritime frontier as not only an Australian concern but an Empire one. If this area fell into the hands of an enemy, other nearby British possessions and lines of communication would all be threatened. Latham recommended the establishment of a series of observation points and naval bases in existing British Empire possessions. These establishments would facilitate the collection of intelligence and the carrying out of regular naval patrols to deter enemy forces. Responsibility for the Singapore-Tonga naval frontier would be shared between Australia, Britain and New Zealand. [5]

In the end, Latham's suggestions were not acted on, in part because of a League of Nations' stipulation that the former German Pacific territories could not be fortified or garrisoned. Nevertheless, this report highlights Australia's appreciation of the value of sea control and denial and, to that end, an attempt to convince Britain to commit greater naval resources in the Asia-Pacific region.



Pre-dreadnought HIJMS AKI circa 1914.



Minister for the Navy Joseph Cook (1917-1920).

THE JELLICOE REPORT

In May 1919, Acting Prime Minister William Watt cabled Jellicoe, outlining Australia's security concerns and the questions he hoped would be addressed in his report. Watt requested that Jellicoe provide an assessment of the "naval strategical problems affecting Australian waters and the Pacific", the need for new shore establishments and the future composition and administration of the RAN. This included particular attention to the probable routes of attack on Australia, "with special reference to occupation by a foreign power of Islands north of the Equator" and Britain's strategy in the event of war with another Pacific power. [6] While it was never specifically stated, there is little doubt that the Pacific threat Watt had in mind was Japan and the strategic utility of its new territorial acquisitions.

Jellicoe presented his report to the Australian government in August 1919. The report echoed a number of Australia's concerns. Jellicoe believed that it was almost inevitable that the interests of Japan and the British Empire would clash in the coming years. He judged Australia to be "powerless against a strong naval and military power without the assistance of the British fleet". To counter this threat, Jellicoe recommended the establishment of a major naval base at Singapore in the coming five years. A major seagoing Far Eastern Fleet was to be stationed at Singapore, including 8 Dreadnought battleships, 8 battle cruisers, 10 light cruisers, 40 destroyers, 4 aircraft carriers, 12 minesweepers, 36 submarines and a number of other smaller vessels. The cost of constructing and maintaining the base and fleet, estimated at £19.7 million, would be shared between Britain (75%), Australia (20%) and New Zealand (5%). This strategy was expected to protect the lines of communication in the Pacific and Indian Oceans and allow simultaneous operations in the event of war in both Europe and the Asia-Pacific. [7]

In addition to Australia's contributions to the Far Eastern Fleet, Jellicoe assessed the nation's requirements for harbour defence and trade protection. For this task, he recommended the acquisition of 20 destroyers, 4 boom defence vessels and 82 minesweepers.

AUSTRALIA'S PERSPECTIVE ON THE SINGAPORE STRATEGY

Australian naval decision makers were initially supportive of Jellicoe's proposals. However, Jellicoe's proposals and the recommendations made at Penang failed to appreciate the political and economic constraints shaping British and Australian defence planning. The Singapore Strategy was ultimately inconsistent with Britain's Ten-Year Rule – the belief that the British Empire would not be at war in the coming decade, thereby allowing the contraction of defence expenditure. Moreover, it went beyond what the war-weary and financially strained Britain and Australia could reasonably afford. [8]

In March 1921, with the Singapore Strategy still awaiting British approval, Rear-Admiral Grant, RAN, met with the commanders of the Chinese and East Indies Stations in Penang, British Malaya. The Admiralty requested the C-in-C make recommendations for Far Eastern defence planning on the basis of a war between Japan and the British Empire.

The commanders considered Singapore to be "the key to British Naval Position in the Pacific" and urged that it be established as the centre of imperial communications and naval presence in the Asia-Pacific region. There would be no Far Eastern Fleet permanently based at Singapore. Instead, a unit of the British Main Fleet would be dispatched in the event of war in the Pacific. This unit would comprise of 2 battle cruisers, 4 heavy cruisers, 4 light cruisers, 2 aircraft carriers, 16 destroyers, 14 submarines and a contingent of smaller vessels. For the Main Fleet strategy to work, the commanders stressed that it was absolutely essential that "Singapore is made impregnable" and able to withstand enemy attacks in the interim "Defensive Period" before the arrival of the fleet. The RAN would also play a role in local defence and deterrence during this interim period. [9]

In June 1921, after many months of deliberation, the British Cabinet finally approved the Main Fleet strategy and construction of a naval base in Singapore. The nation's financial limitations are clearly evident in these documents. The British Cabinet believed that being seen to have a "practical plan" at Singapore to maintain British sea power was, in fact, "even more important than actually commencing

HIJMS HARUNA at Yokosuka1916.

the work of developing Singapore at the moment." Cabinet did not expect to make any new expenditure in Singapore for at least two years and the recommended five year construction timeline was pushed back to eight years – a deadline that it would fail to meet. [10] These early deviations from Jellicoe's initial recommendations marked the beginning of years of uncertainty and political backflips in the Singapore project.

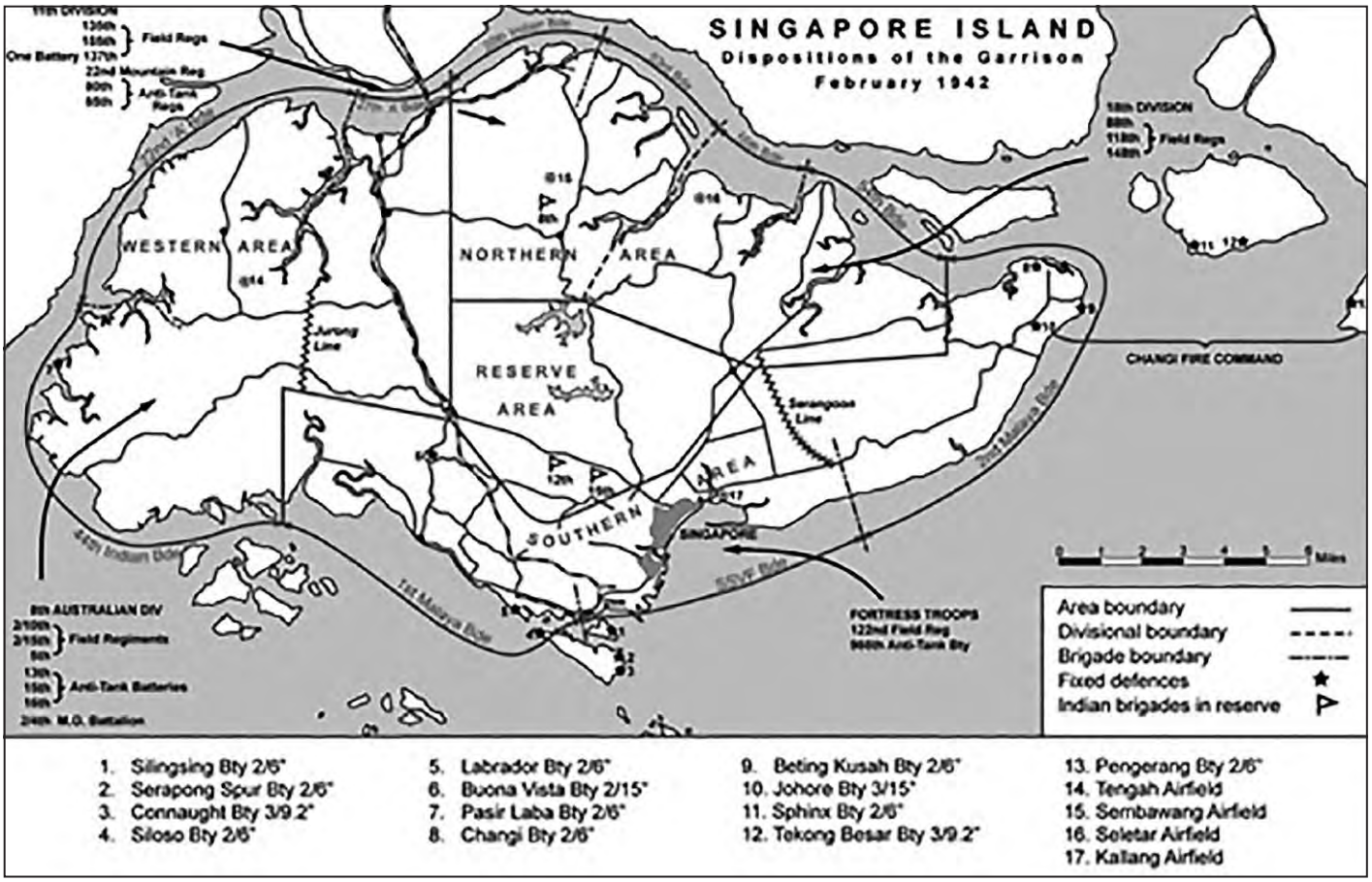
RECOGNISING THE SHORTFALLS OF SINGAPORE

The shortfall of the Singapore Strategy was not the base itself but a financially hamstrung Empire and, as would be realised in February 1942, Britain's inability to deploy the Main Fleet or hold the base until the fleet arrived. [11] These problems did not go unnoticed in Australia. At the 1923 Imperial Conference, with work only having just commenced at Singapore, Prime Minister Stanley Melbourne Bruce flagged his concerns. He remarked that "I am not quite clear as to how the protection of Singapore is to be assured, I am quite clear on this point, that apparently it can be done." Bruce received bland assurances that Singapore would be finished and the fleet would arrive. Later, Bruce pointedly remarked on RN capabilities and Britain's commitment to its Pacific interests.

> The question of the naval strength of the Empire is of the most vital importance to us. We are a very long way from Great Britain, and we have had evidence from time to time that the people of Britain do not fully realize the position of Australia, and its value to the Empire. It is quite possible that in Britain, hard pressed as she is with the war burden, a short-sighted vision may be taken of the problem of Empire defence, and expenditure may be concentrated upon the immediate defence of Britain to the detriment of the outlying parts of the Empire. [12]

Australia's fears around the Singapore Strategy were never completely resolved and Singapore remained at the centre of the nation's regional defence planning. This has paved the way for criticisms that Australia was too slow and lacked the assertiveness to accept Britain's wanning capabilities. It is important to recall that Britain remained Australia's sole security partner, leaving little choice beyond accepting the Singapore Assurance, albeit with reservations.

The Australian government was not wilfully ignorant to Britain's weaknesses, nor did it fail to pursue its own defence initiatives. The nation recognised that the Main Fleet was important in the defence of Australia and it undoubtedly influenced military thinking throughout the interwar years. Australia also acknowledged that Singapore and the arrival of the Main Fleet did not replace sovereign naval capabilities that could be turned to local and Empire defence when needed.



Fortress Singpapore - Greatest Naval Base in Far East.

Fall of Singapore and, arguably, the British Empire – surrendered by Lieutenant-General Arthur Percival, 15 Feb 1942.

In 1924, Parliament authorised a five year defence program in which the RAN was the major beneficiary, receiving nearly £8 million for new naval constructions. This program partly met Jellicoe's assessments of Australia's local defence and trade protection requirements. When detailing the new program, Prime Minister Bruce remarked that "so long as the capital ships of Great Britain are afloat no country dare send a great expeditionary force against Australia." However, a minor force could "choose his point of attack" along Australia's immense coastline and "it would be impossible to take measures to meet an attack at every possible point." Bruce went on to detail the utility of the RAN in meeting such a threat, to deploy vessels to deter against attacks or respond to threats at sea. "Thus", he concluded, "we might prevent an invader from risking the attempt to come here. That is the great value of a mobile sea force as against a much greater land defence force." [13]

Granted, the new defence program was only a modest contribution to Australia's naval capabilities. Nevertheless, the nation recognised the importance of greater naval self-reliance and was investing in this during a period of significant financial pressure.

CONCLUSION

The Singapore Strategy was certainly not without its weaknesses, and the Australian government and defence planners cannot escape criticism for being too slow and not assertive enough in responding to British defence limitations. These shortcomings aside, the thinking by Australia's policymakers and strategists that underpinned the conceptualisation of the Singapore Strategy demonstrates an attentiveness to future regional threats. Moreover, Australia was acutely aware of its particular strategic considerations as a remote island nation and the unique utility of sea power in responding to these considerations.

In reflecting on the conceptualisation and failures of the Singapore Strategy, there are some useful lessons for us today as we face an increasingly insecure world. Alliances are key in the defence of Australia's interests, but they are not infallible. Investing in strategic alliances, particularly via cooperative naval activities like RIMPAC, is essential in contributing to trust, maritime confidence building and interoperability. However, alliances must be matched with sovereign capabilities. The 2020 *Defence Strategic Update*, announced 1 July 2020, recognises this, noting that "the ADF must increase its self-reliant ability to deploy and deliver combat power and reduce its dependencies on partners for critical capability." [14] Here there is a particular focus on investing in sovereign industrial and intelligence capabilities. Recent investment in sovereign intelligence capabilities and a significant expansion of maritime capabilities are a welcome sign in the move towards greater self-reliance.

The hope is that should alliances fail, as was the case in 1942, Australia will be ready to defend itself and its most vital interests independently.

In the face of an increased risk of regional conflict, it is pertinent to consider Singapore's strategic importance today. Australia's relationship with Singapore is one of the closest in Southeast Asia, built on a shared Commonwealth history and shared interests in regional trade, stability and security. One of the most important aspects of the Australia-Singapore relationship is the Comprehensive Strategic Partnership (CSP), signed in 2015. A key initiative of the CSP is the Australia-Singapore Military Training Initiative (ASMTI) and the Treaty on Military Training and Training Area Development, signed March 2020. Under ASMTI and the Treaty, Singapore will invest $2.25 billion for the construction of new training areas in north Queensland (owned and managed by the Australian Government), where some 14,000 Singapore Armed Forces will train annually over an 18 week period. [15] These initiatives build on 30 years of Australia-Singapore military training cooperation, deepening people-to-people links and interoperability.

As two former members of the British Empire and with robust security links to the US today, one would hope that senior Australian and Singaporean political and military leaders recall the lessons of the Singapore Strategy. A nation cannot always rely on the protection of a larger power and diverse and comprehensive bilateral relations – matched with autonomous capabilities – can play a constructive role in regional affairs and defending security interests. ■

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REFERENCES

[1] David Day, *The Great Betrayal: Britain, Australia and the Onset of the Pacific War, 1939–42* (Melbourne: Oxford University Press, 1992); Richard Waterhouse, "Empire and Nation: Australian Popular Ideology and the Outbreak of the Pacific War," History Australia 12, no. 3 (2015): 30–54.

[2] Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (London: Fontana Press, 1988), 386.

[3] [Official History, 1914-18 War: Naval records of Arthur W Jose:] Navies Japanese – Miscellaneous telegrams AWM36 1914–1915], NAA: AWM36, Bundle 32/1; "The Importance to Australia of German New Guinea and the Islands (lately German) North of the Equator," 11 July 1918, NAA: A981 Mars 5.

[4] Attachment, Admiralty letter, 23 December 1918, NAA: A981, Def 350 Part 1; Naval Bases, on or after 3 January 1919, NAA: A981, Def 350 Part 1.

[5] John Latham, "Australia's Claim to the German Islands," 19 December 1918, NLA: MS 1009/19/1342.

[6] Watt to Jellicoe, 2 May 1919, NAA: A981, Def 350 Part 1.

[7] Admiral of the Fleet Viscount Jellicoe's Naval Mission to Colonies, 3 February 1920, TNA: ADM 116/1831.

[8] Jason Sears, "1919–1929: An Imperial Service," in *The Australian Centenary History of Defence: Volume 3: The Royal Australian Navy* (Melbourne: Oxford University Press, 2001), 61.

[9] Penang Conference Report, 13 March 1921, NAA: B6121, 311J.

[10] Cabinet Minute, 16 June 1921, TNA: CAB 23/26/5.

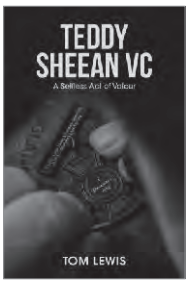
[11] John McCarthy, *Australia and Imperial Defence 1919–39: A Study in Air and Sea Power* (Brisbane: University of Queensland Press, 1976), 131.

[12] Australia, House of Representatives, Debates, 27 June 1924, http://historichansard.net/hofreps/1924/19240627_reps_9_107/.

[13] Australia, House of Representatives, *Debates*, 27 June 1924, http://historichansard.net/hofreps/1924/19240627_reps_9_107/; Jeffrey Grey, *A Military History of Australia* (Cambridge: Cambridge University Press, 2008), 129–30.

[14] *2020 Defence Strategic Update*, Department of Defence (Canberra: Commonwealth of Australia 2020), 40.

[15] "Australia-Singapore Military Training Initiative," Australian Government, Department of Defence, https://www.defence.gov.au/Initiatives/ASMTI/Home/Background.asp.



TEDDY SHEEAN VC – A SELFLESS ACT OF VALOUR

Dr Tom Lewis

Big Sky Publishing (March 3, 2021)
ISBN13: 9781922387912
Softcover: $24.00 eBook: $10.00

The author played a significant role in putting forward the case for the award of the Victoria Cross (VC) to Ordinary Seaman Edward 'Teddy' Sheean as part of the 2012-13 *Inquiry into unresolved recognition for past acts of naval and military gallantry and valour.* The depth of the author's knowledge is shown throughout the book, from his many years of working with the extended Sheean family, and includes some previously little-known information regarding Teddy; such as his engagement to a local Tasmanian girl on his last leave and that after his death she never took off the engagement ring or married.

A pleasing note is the countering of some of the HMAS ARMIDALE myths, perpetuated in previous books, particularly the completely unsubstantiated rumours of the Japanese Navy finding and killing a raft load of ARMIDALE survivors. The story of the campaign to have Teddy Sheean awarded the VC is well described as is the lack of VC's for Hec Waller of *Perth* and Robert Rankin of YARRA; although the book fails to mention the award of the Unit Citation for Gallantry in 2014 to the entire ships company of the sloop HMAS YARRA for their whole-ship gallantry – effectively a VC for the ship due to their collective bravery.

I was however disappointed with some aspects of the book as it does look like a 'rush job' to get the story out. A number of spelling errors, poor quality maps, some photos of limited relevance and what I would term as 'historical padding' (back ground data of limited value to the main storyline) indicate a lack of proof reading and also detract from the main story line. Endnotes are used effectively but there is no index. Tom's previous book on this matter *Honour Denied – Teddy Sheean: A Tasmanian Hero* is a far more readable and high-quality publication.

Overall Teddy Sheean VC – A Selfless Act of Valour is an easy read and a suitable memorial to Teddy Sheean and the ships company of HMAS ARMIDALE (I).

MUTINEERS – A TRUE STORY OF HEROES AND VILLAINS

Robert Hadler

Wilkinson Publishing (April 15, 2021)
ISBN: 9781925927573
Softcover: $30.00 eBook: $12.00

The word Mutiny will always catch the eye of a prospective reader and Robert Hadler has chosen another under-reported aspect of the Royal Australian Navy's history for his most recent book. Previous analysis of the 1919 HMAS AUSTRALIA mutiny, in Fremantle, has been sparse with the matter quietly omitted from the RAN's official history for World War I (published in 1928) and only a few articles in more recent times; Robert Hyslop's 1970 article in the *Australian Journal of Public Administration* and Graham Wilson's article in the *Journal of the Australian Naval Institute* in 1996). Both articles, however, left many questions unanswered.

Now for the first time much of the full story is told although it will be up to the reader to ascertain who the heroes and villains might be in this saga. So what was the AUSTRALIA mutiny? On 28 May 1919 the battlecruiser AUSTRALIA arrived in Fremantle - her first Australian port after the ship had been absent on war service since late 1914. About half her ships company had served onboard throughout those four long years of war including the book's hero (or villain) Able Seaman Dalmorton Rudd. When the ship was due to leave Fremantle, on 1 June, a large group of sailors put forward an unprecedented request to their commanding officer to allow the ship to stay in port. When Captain Cumberlege denied this unusual request a smaller group of masked men, led by Dalmorton Rudd and his younger brother Stoker Leonard Rudd, entered the boiler room and convinced the stokers on watch to abandon their post; thus stopping the ship from initially leaving port.

After AUSTRALIA was able to sail several men including the Rudd brothers were arrested and charged with mutiny; not including violence. The 'mutiny' could have been dealt with onboard, with even the commanding officer calling it more of a 'strike'. It soon however saw a court martial imposed with five men standing trial (there was a sixth mutineer but he somehow slipped ashore when the ship was in Melbourne and deserted). The five other men including Dalmorton Rudd and his younger brother were sentenced to various terms of imprisonment at Goulburn Gaol and dismissal from the service. End of story – well not quite!

Many Australians saw the gaol terms as excessive 'Royal Navy' discipline imposed on the young Australian sailors. Soon the Labor Party seized upon the issue and with a federal election pending, and with Prime Minister Billy Hughes still absent overseas at the peace talks at Versailles, the matter became a political football as the Labor Party stridently called for the convicted men to be released from Goulburn Gaol. Eventually in December 1919 the five men were released as part of a Peace Amnesty - but only after British consent was given!

This in turn created a crisis between the RAN leadership and the politicians as the two senior officers. The 1st Naval Member (Rear Admiral Grant) and the Fleet Commander (Commodore Dumaresq), who were both on loan from the Royal Navy, did not believe they had been properly consulted. Both men wrote directly to the Prime Minister threatening to resign. This later incident was played out behind the scenes and well out of public and media view but the Governor General, Sir Ronald Munro Ferguson also became involved with secret updates to the British Government which the Australian politicians were not aware of.

Eventually in early 1920 the crisis between the politicians the senior naval officers was resolved and the whole matter slipped into obscurity; but if there was ever a story worthy of a TV mini-series than this is it.

Much of the book focuses on Dalmorton Rudd. He was a complex character who was a natural leader and was awarded a Distinguished Service Medal for bravery during the war; for his part in the raid on the German held port of Zeebrugge in April 1918 which saw bitter hand to hand fighting and heavy casualties amongst the raiding party. Rudd married an English girl in early 1919 – but his wife died soon after from pneumonic influenza. His character began to change and he began to drink more heavily. Today this would be recognised at Post Traumatic Stress Disorder and this may have contributed to his actions on that fateful day in Fremantle.

Mutineers is highly recommended. Hadler's book is well written, extensively researched and easy to read but I will leave the reader to make an assessment of who the heroes and villains are. That said, in my opinion as a naval officer, if this event occurred in an Australian warship today the perpetrators would be facing a court martial and, if found guilty, would most likely be sentenced to a period of detention in the Defence Force Corrective Establishment and their naval service terminated.

THE NAVY LEAGUE OF AUSTRALIA
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The Navy reserves the right to reprint all essays in the magazine, together with the right to edit them as considered appropriate for publication.

SUBMISSION DEADLINE: **Saturday 21 August 2021**

Prize-winners announced in the January-March 2022 Issue of *The NAVY*.

HATCH: *Antasena-class* Tank-Boat built by North Sea Boats for the Indonesian Navy with potential for Australian Army Riverine Craft.

HATCH: HMAS SUPPLY (A195) Commissioning 10 April 2021, Fleet Base East, Garden Island, Sydney (Image LSIS Christopher Szumlanski).

MATCH: USS CANBERRA (LCS 30) Christening Ceremony 5 Jun 2021, Mobile, Alabama.