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THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

SHAPING AUSTRALIA'S NUCLEAR [SUBMARINE] FUTURE

THE FIRST SHANGHAI INCIDENT: IJN'S HISTORICAL COURSES OF ACTION

THE PLA NAVY'S TYPE 001A AIRCRAFT CARRIER

THE IMPORTANCE OF THE INTERNATIONAL LAW OF THE SEA

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Volume 81 No.1

THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

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Front cover:
HMAS WALLER (SSG 75) Entering Port Jackson and Fleet Base East April 2018 (Image Navy ABET Jarrod Mulvihill).

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DETERRENCE BEGINS AT HOME

The first 2019 issue of *THE NAVY* begins with Rear Admiral Peter Briggs AO CSC RAN (Rtd.) paper *Shaping Australia's Nuclear [Submarine] Future*, based upon his October (2018) ASPI paper, *Can Australia afford nuclear propelled submarines, can we afford not to?* The second paper is by Professor (Dr) Koichiro Kageyama and deals with the First Shanghai Incident from a Japanese and Imperial Japanese Navy perspective. The third article is by a long-standing contributor to *THE NAVY* and winner of the 2018 Essay Competition, professional section, Captain George Galdorisi, USN (Ret.) and returns to the South China Sea and Australia's maritime role in upholding International Law. The final paper is the winner of the 2018 Essay Competition, non-professional section, Kelvin F Curnow, dealing with the PLAN Type 001A Aircraft Carrier and its implications for Australia.

A review of The NLA Statement of Policy, (now page 4) confirms that the NLA has given consistent support for submarine nuclear propulsion and civil nuclear energy for over two decades. No other Australian publication, policy-wonk-think-tank, or journal can claim such consistency and foresight. *THE NAVY* celebrated its 80th Anniversary in 2018 – quite an achievement for any publication. It continues to compete favourably (if not profitably) in newsagents throughout Australia, from a committed, independent, and dedicated membership base. If the maritime message (both Navy and Merchant Marine) is to reach those parts of Australia not reached and read by other media – this is the type of success that needs promoting and developing.

Questions about the future of the NLA (raised by the Editor and the President in the July, and October issues of *THE NAVY*) were uppermost in the thinking at the NLA AGM held in Canberra. On the one hand, the NLA and *THE NAVY* remains relevant, as testified by its unparalleled record supporting, for example, submarine nuclear propulsion; on the other hand, it finds itself competing – like much of the independent media – on an uneven playing field against public broadcasting, infotechnological media giants, and government Defence sponsored glossies / academia / think tanks. Increasingly, these institutionally-biased organs have become a form of propaganda. They are indirectly sponsored by Government; they exclusively attract material and support from within the Canberra beltway; and, as a result, they take what advertising remains. This is non-competitive and threatens all independent publications and leagues.

In the *THE NAVY*, Apr-Jun 1998 issue 60., No. 2, Rear Admiral Andrew Robertson AO DSC RAN (Rtd.) – who fought in the Pacific during WW2 – critiqued the [Coalition] Government's 1997 *Australia Strategic Policy White Paper*, writing *inter alia*:

> The focus of our strategic attention is now more than ever the Asia Pacific region comprising the countries of East Asia, Southeast Asia, the South Pacific, the United States and perhaps increasingly in the future, South Asia.
>
> [Australia has a] special importance for the security of the whole region of the relationships between China, Japan and the United States. Strangely neither Russia nor India are mentioned in this context, though (despite Russia's present economic troubles) both can be major players, and both can be expected to gather economic and military strength in the future. Russia has retained much of its military power and it seems unwise to neglect its probable future increasing influence in the power balance of the vital NW Pacific area.
>
> If only the West had listened to Andrew Robertson in 1997, instead of rubbing 'Russian Colonel's noses in the mire' and creating the anger that fuelled them to power, fundamentally resolved to punish the West.

Within the wider regional focus Australia's most direct strategic interests include the stability, safety and friendly disposition of the countries closest to us – the inner arc of islands from Indonesia in the West through to Papua New Guinea, the Solomon Islands and the South West Pacific.

Any substantial military attack on Australia could most easily be mounted from or through these islands. We aim to maintain our role as Papua New Guinea's key defence partner and as the key strategic power and primary defence partner of the island countries of the South Pacific.

Priority 1

The highest priority is 'the knowledge edge' – which today would relate to knowledge sovereignty, sovereign capability, knowledge transfer and cyber.

Priority 2

Defeating threats in our Maritime Approaches.

Notwithstanding their present economic problems [the crash of the Tiger economies following the 1997 Asian Financial crisis – that Japan has yet to fully recover from], as the economies of East Asia recover and grow…Australia's relative economic standing in the region will decline, and with it our strategic weight and ultimately our ability to defend ourselves in the future.

HMAS ADELAIDE (LO2) at APEC18 Assist (Image CPOIS Cameron Martin).

In the 1990s Fukuyama wrote the *The End of History and the Last Man* (1992) and Australia embarked upon Defence cuts following the 1994 *Defence White Paper*. Introduced by Labor and implemented by the Coalition, similar cuts – particularly to Navy – had not been seen since the 1920s. Navy is only just recovering – largely as a result of the 2009 [Labor] *Defence White Paper*.

HMAS CHOULES (L100) at Lombrum Naval Base Manus during APEC.

The 'expert' elites then took a strategic holiday which continued through 9/11 and beyond – as they stopped thinking and became ensnared by cultish, tactical warfighting in Iraq and Afghanistan. All the while strategy was being done to the Global West by Russia, and China, Iran, North Korea, and even the EU… After the 2007/8 Global Financial Crisis, the West found itself precisely where it would not want to be – facing an (interstitially and existentially) unbalanced powerful China. Today China is at Australia's Maritime Approaches in 'the island countries of the South Pacific' and the Global West is facing illiberal peer competitors on multiple fronts.

Dr Koichiro Kageyama's paper is courageous for a number of reasons, including that it provides a unique narrative into a key WW2 precursor event. History before and during WW2 has not been taught in detail in Japan. This has been seen as lack of repentance and apology. It also means that Kageyama's detailed historical paper might be opposed by significant factions within Japan, even today. The CCP would also attack the piece, precisely because it does not tell Chinese history to its own people – how Chiang Kai-shek and the Nationalists (mentioned in Dr Kageyama's paper) first resisted Japan. And then found themselves weakened, divided and fighting on two fronts: against Mao / the PLA, and the Soviet Union. Similarly, Prime Minister Shinzo Abe has found himself attacked for offering 'remorse rather than apology', despite numerous statements by the Emperor and Prime Ministers since the 1950s. The visit by Prime Minister Abe to Darwin in November was therefore particularly significant when he lay a wreath at the military cenotaph – a few days after Armistice Day, when Japan and Australia fought as Allies in WW1.

Prime Minister Shinzo Abe and Scott Morrison lay wreaths at the Darwin Cenotaph War Memorial (Image ABC, Mitchell Abram).

Our parents, and grandparents would find this untenable – but it is necessary to forgive and hold to the truth that we have been allies with Japan for many more years than we have ever been enemies. It was therefore particularly important that on 12 November, DFAT, the Japan Bank for International Cooperation, and the U.S. Overseas Private Investment Corporation (OPIC) signed a Trilateral Memorandum of Understanding (MOU) to operationalize the Trilateral Partnership for Infrastructure Investment in the Indo-Pacific, announced in Washington, D.C. in July. The Trilateral is aimed at delivering major new infrastructure projects, enhancing digital connectivity and energy infrastructure; and to achieving mutual development goals in the Indo-Pacific. Then on 17 November U.S. Vice President Mike Spence announced that the U.S. was to partner with Australia and Papua New Guinea in the development of the Manus Island naval base – without, apparently, informing the PNG Governor General!

These announcements will only take the Allies so far. *THE NAVY* has for long advocated the formation of a Japanese-Australian-Singapore-India (JASI) Amphibious Readiness Group to act in support of our regional interests by: diffusing tensions; upholding the Law of the Sea (UNCLOS); providing regional disaster relief (RDR); informally supporting ASEAN; and, co-independently standing by the U.S. This would be of significant value to the region. It would also help RAN take its LPDs (HMAS ADELAIDE (L01) and CANBERRA (L02)) to the next level – exercising at scale troops and aircraft (including F-35Bs and Harrier AV8Bs). Something the Australian Army has seemingly proven unwilling to do. It would send a powerful deterrence message that Australia and its Allies will fight if we have to. It might help prevent another strategic miscalculation – such as the First Shanghai Incident and the shots that led inexorably to the last Pacific War. ■

STATEMENT OF POLICY

CURRENT AS AT 1 JAN 2019

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, and the shipping and transport industries.

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. 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 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.
- Welcomes the 2016 Defence White Paper and the Government intention to increase maritime preparedness and gradually increase defence expenditure to 2% of GDP.
- 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 capabilites 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 concept of a Navy capable of effective action in war off both the east and west coasts simultaneously and advocates a gradual 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 general area.
- 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 escort requirements of our 5 new major warships 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 on completion of the current guided missile destroyer program.
- 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.
- Supports the efforts by Navy to rebuild the engineering capability to ensure effective Fleet maintenance and sustainability.
- 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 Naval Reserve and Australian Navy Cadets organisation.
- Advocates a strong focus on conditions of service as an effective means of combating recruitment and retention difficulties.

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.
- While recognising budgetary constraints believes that, given leadership by successive governments, Australia can defend itself in the longer term, within acceptable financial, economic and manpower parameters.

THE NAVY LEAGUE ANNUAL CONFERENCE

On Friday 25 and Saturday 26 October the Navy League met in Canberra for our Annual General Meeting and a meeting of the Federal Council of the League. Each time we meet as a Federal Council, State Divisions give an update to the meeting on their activities over the previous year. These reports act as a great reminder of the broad range of activities that State Divisions of the Navy League are involved in and the depth of talent and commitment we have in the League.

Some of the activities that were reported by State Divisions this year included:

- ongoing engagement between the Navy League and the RAN at the local level, particularly whilst visiting ships are in Australian ports.
- the hosting of annual events such as luncheons, including the annual lunch in Victoria as the host of the Creswell Oration, this year presented by the Fleet Commander, Rear Admiral Mead.
- involvement in Navy week activities, Trafalgar Dinners, Seafarers services and other important commemorations.
- lobbying politicians and decision-makers in a meaningful way and continuing to seek out ways to implement and support the League's policy.
- providing opportunities, including guest speakers from Defence, to ensure the experience and expertise of older members is used to further the vitally important aims of the League and to ensure the aims of the League are front and centre in Defence and Navy thinking and planning.
- support of and interaction with Australian Naval Cadets, particularly locally at the *Training Ship* level.
- recognition of the efforts of sailors past, including the establishment and support of memorial foundations and the building and dedication of memorials. In particular this year the West Australian Division's establishment of the HMAS PERTH I Memorial Foundation.
- links with our international fellows, especially from the New Zealand Navy League, who have long had a representative attend our annual meeting. We were also very pleased to once again receive the report on the work of the Navy League in New Zealand.
- the anticipated involvement in Centenary celebrations of the Armistice that ended WWI.
- production of this magazine, the Navy League's flagship publication.

The Annual meeting also discussed developments and advances undertaken on the Navy League website www.navyleague.org.au. It is well worth revisiting our website from time to time to keep up to date with goings on of the Navy League, especially in each State, but also to view back issues of *THE NAVY*, remind yourself of our *Statement of Policy* and to benefit from the links to many other sources of valuable information on the site.

In addition to the discussion from our own members, the Federal Council benefited from two excellent external presentations. The first from Rob Teasdale, Chief of Staff BAE Systems who have been awarded the SEA 5000 contract to build the *Hunter-class* frigates over the next decade. In addition, and to address some issues discussed in previous meetings, we were joined by Lieutenant Commander Keith Nordstrom RANR, Deputy Director, ANC Policy who gave a comprehensive overview of the state of the ANC.

We were also very pleased to debate the benefits of Australia embracing nuclear technology and to receive the persuasive presentation *Nuclear Power for Submarines* from our NSW member John Jeremy AM. John's presentation and our discussion, advocated rapid progress of the current submarine project with a view that we should enthusiastically embrace the development of nuclear capability in Australia for the future.

That subject led to a review of Rear Admiral Peter Briggs' article about the future of our submarine program, also endorsing the need for nuclear propulsion. We are delighted to be able to include a

Navy League Members, Federal and Divisional Presidents attending the AGM, Canberra October 2018.

shorter version of Admiral Briggs' article in this edition of *THE NAVY* and we look forward to it stimulating much further discussion on this important Defence issue for our maritime nation.

THE NAVY LEAGUE OF AUSTRALIA ANNUAL MARITIME AFFAIRS ESSAY COMPETITION

The Navy League's Annual Maritime affairs essay competition entries were discussed and the winners announced at our AGM. The winning papers will be published in *THE NAVY* over the next few editions and showcase the depth of talent in our readership and the Defence community more broadly, both in Australian and beyond.

First prize in the Professional Category was awarded to Captain George Galdorisi (USN – Retired), our friend from the other side of the Pacific, for his essay '*The Importance of the International Law of the Sea to Australia's Growing Role as a Maritime Power*'. Many of you will have read George's articles from previous competitions, … well done again Captain.

Many of you will also be familiar with the work of Greg Swinden, who was awarded the second prize in the Professional Category. Greg's essay *'Solwara Wantok (Sea Mates) – The RAN and the PNGDF (Maritime Element)'* is a credit to him and I commend it to you.

To showcase the truly international nature of the competition, following the US first place and Australian second place, third prize in the Professional Category was awarded to our New Zealand contributor, Murray Dear, whose entry '*Operation MO and the Battle of the Coral Sea – A Retrospective Review'* will appear in a future edition of *THE NAVY* and makes for great reading.

Kelvin Kurnow was also awarded the first prize in the Non-professional Category for '*The People's Liberation Army Navy's Type 001A Aircraft Carrier and its implications for Australia'*. Great work Kelvin.

We extend our congratulations to all contributors in this year's competition, particularly those who have won prizes. I encourage all readers to begin working on your entry for the competition which will be held again in the year ahead.

THE NAVY LEAGUE OF AUSTRALIA PERPETUAL TROPHY – COMMUNITY AWARD

Each year at our annual meeting the Federal Council decides on the winner of the *Navy League of Australia Perpetual Trophy – Community Award*. It is never an easy task, as the short list always highlights contributions of such great merit from a number of ships and establishment that it is difficult to narrow the award down to just one winner. The award, established in 1981, is for the ship or establishment that has, in the opinion of the Navy League's Federal Council, made the best contribution to their community.

Of all ships and establishments nominated for the award this year, the Fleet Commander reduced our task to deciding from a short list of seven nominees, all well-deserving of recognition in their own right. Of the seven, the Federal Council unanimously chose HMAS STIRLING as the Community Award winner. STIRLING's participation in 286 community events, included the Invictus Games; its band playing at a variety of functions; engagement with the indigenous community, young women, schools, disabled and the Leeuwin Ocean Sailing Foundation; two marine rescues; fundraising for the Red Cross, Cancer Council, Legacy and a local high school; and training in leadership and adventure to name just a few.

This is the second year in a row that HMAS STIRLING has been the award winner. BZ STIRLING.

HRH Vice Admiral The Prince Andrew Duke of York piped ashore HMS SHEEAN (SSG 77) while visiting HMAS STIRLING - Fleet Base West Nov 2018.

LIFE MEMBERSHIPS AWARDED

The Annual meeting also took great pleasure in hearing of the tireless efforts of two of our longstanding and hardworking members and awarding each of them Life Membership.

Ray Gill JP, a member of the League from Victoria who has served as Secretary of the Victoria Division for countless years was made a Life Member of the League.

Alfred Cunneen MBE, who has been Secretary / Treasurer of the Cairns Branch of the Navy League, for some 34 years, was made Life Member.

Well done Alf and Ray.

HAPPY READING

I am delighted to be introducing another fine edition of *THE NAVY* for your reading. I trust you will enjoy the articles in this edition, contemplate the impacts of the Defence and maritime industry decisions we take as a nation today and engage with us (and those who represent us in the Parliament) once you have done so.

NON-PROFESSIONAL CATEGORY

1ST PLACE	$500	**Kelvin Kurnow** The Peolpl'e Liberation Army Navy's Type 001A Aircraft Carrier and its implications for Australia

PROFESSIONAL CATEGORY

1ST PLACE	$1000	**George Galdorisi** The Importance of the International Law of the Sea To Australia's Growing Role as a Maritime Power
2ND PLACE	$500	**Greg Swindon** Solwara Wantok (Sea Mates) – The RAN and the PNGDF (Maritime Element
3RD PLACE	$250	**Murray Dear** Operation MO and the Battle of the Coral Sea – A Retrospective Review

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CRESWELL THE 19TH ANNUAL ORATION

PRESENTED BY

REAR ADMIRAL GREGORY SAMMUT AM CSC RAN.
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SHAPING AUSTRALIA'S NUCLEAR [SUBMARINE] FUTURE

By Peter Briggs

This paper, based upon my ASPI Paper [1], advocates early consideration of all aspects of a transition to nuclear propulsion for Australia's submarines, based on compelling strategic and submarine capability arguments. While a nuclear-powered submarine force would provide strategic advantages, some quite formidable challenges would need to be to overcome to add such a force to the Royal Australian Navy (RAN). Quite apart from the political sensitivity of such a decision, Australia acquiring nuclear-powered fast attack submarines (SSNs) would be a protracted process requiring a lead time of 15–20 years, largely because of the technical, training and educational preparations and a very significant increase in submarine-qualified personnel required to operate and maintain the force.

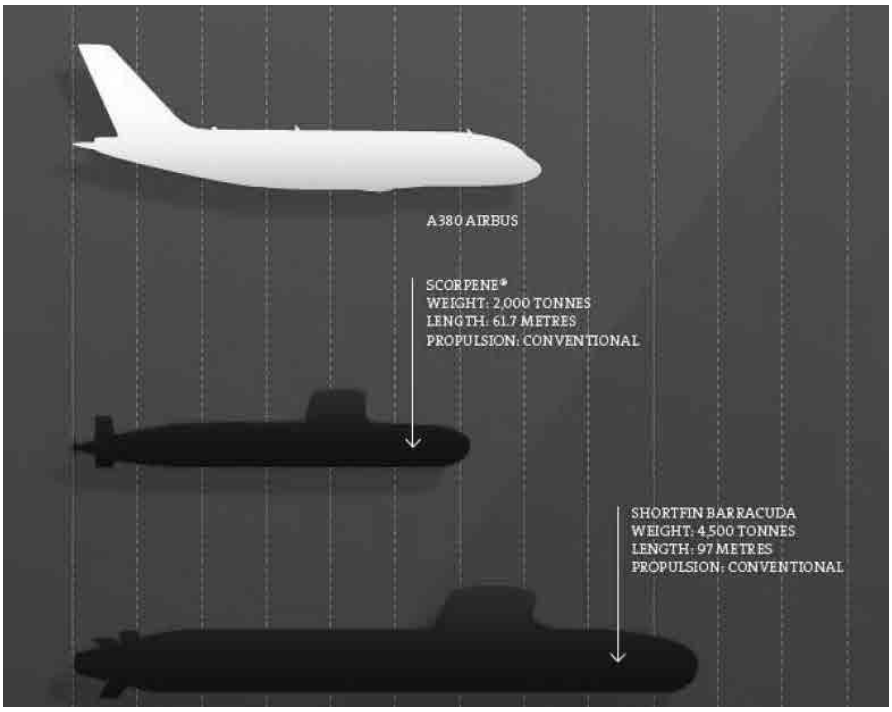
INTRODUCTION

The current program to acquire 12 conventional future submarines (FSMs) is an essential starting point for a successful transition, which will take significant time and a national focus to achieve. The RAN must first achieve the critical mass of submarine personnel and be able to sustain the manpower required for this challenging transition. Those personnel can only be generated by an increased number of conventional submarines under the FSM program.

Attempting a transition before the RAN's submarine arm has achieved sufficient scale in platforms and personnel risks a capability gap, even if there are no delays during the transition.

Given national priority for personnel and other resources, it's estimated that the first SSN could commission in 2044. A more detailed study is needed to confirm this and identify the key milestones.

In the face of deteriorating strategic circumstances, the consequent need to transition to SSNs expeditiously and the reality that growth of the submarine arm via the FSMs is essential to starting that transition, the FSM program must be accelerated, and a national priority must be given to funds, personnel and facilities.



Shortfin Barracude in comparison to Scorpene-class and AIRBUS A380 (source DCNS).

NUCLEAR OWNERSHIP

The options for Australia to develop an SSN capability would be limited to building the boats offshore or to consolidating the vessels in Australia incorporating a reactor purchased offshore. Leasing SSNs is not a practical option.

A supporting nuclear power industry is desirable as it would provide Australia with a broader regulatory, technical and educational base. However, provided the costs of not having that support are clearly identified, the absence of an Australian nuclear power industry should not preclude a transition to nuclear propulsion for Australia's submarines.

The timing of any transition should be one of the study's findings. Two timelines may serve to illustrate the long lead times required:

- The initiation of a training program to prepare the policy makers and senior technical management personnel necessary will be necessary six to eight years prior to ordering the first SSN.
- Over 250 experienced RAN submariners (approximately 12% of the submarine arm operating 12 FSMs) would enter nuclear education and training pipelines approximately eight years prior to the commissioning of the first SSN.

Given the lead time, unfolding strategic situation and benefits of nuclear propulsion, an immediate decision is recommended to commit to a feasibility study into a transition to nuclear propulsion to be delivered by 2020. It's time we understood the benefits, costs, risk and timescales of this option fully.

CORE RATIONALE

The core rationale for 'going nuclear' is as follows:

- A force of modern SSNs would offer significant sea denial and force projection capabilities, providing at least twice the

number of more capable submarines deployed at long range compared with an equivalent conventional submarine force (even the very capable FSMs). This provides much increased capacity to sustain a high level of deterrence and operational capability to meet the challenging strategic and operational scenarios facing Australia.

- Such a force would clearly establish Australia at the forefront of the region's growing submarine capabilities and indisputably establish a regionally superior submarine capability.
- The options for Australia to develop an SSN capability would be limited to building the nuclear submarines offshore or consolidating the submarines in Australia, incorporating reactors purchased offshore. Leasing SSNs is not a practical option, given the need for sovereign control over all aspects of their safe operation.
- Twelve double-crewed SSNs would provide three or four submarines on task at long ranges and able to operate at such ranges for extended periods, thus providing a formidable deterrent force. A target of 12 SSNs would facilitate a rolling construction program
- A force of at least 10 SSNs with 10 crews is the minimum required to maintain a critical mass of trained personnel and to generate the experience needed to maintain the senior supervisory and policy staff needed for a globally credible nuclear safety organisation.
- Greater manpower resilience, improved conditions of service and increased submarine availability could be achieved by double-crewing the operating SSNs, resulting in 16 crews.
- A force of 10 single-crewed SSNs, each with a nominal crew of 75, could be sustainably operated by an RAN submarine arm of around 2,250 personnel (some 14% of total RAN strength, after it's increased to cover the growth in submarine personnel numbers). These figures are illustrative; the final numbers require knowledge of the chosen SSN variant and its operating and sustainment concepts.
- Double-crewing this force would increase the submarine arm to 3,600, or 16% of total RAN strength.
- A force of at least 12 conventional FSMs, each with a crew of at least 60, and a total submarine arm of at least 2,160 is judged to be a conservative, safe and viable starting point for a transition to a force of SSNs.
- The current FSM program remains critical to provide strategic capability, protect against delay and build up manpower numbers to facilitate the long and challenging transition to nuclear propulsion.
- Growing the size of the submarine arm via the FSM program is a critical enabler for any SSN acquisition.
- Accelerating the FSM program is justified by the deteriorating strategic circumstances and the program's role in create the personnel for the transition.
- Selection of French Naval Group as the designer of the FSM may present an opportunity to integrate FSM systems and supply chains into an RAN SSN build program.
- Assuming that the early acquisition of an SSN capability becomes a national priority and the appropriate resources are dedicated to achieving it, the first Australian SSN could be commissioned by 2044.
- This would require an in-principle decision by the mid-2020s to allow the initiation of a training program to prepare the policymakers and senior technical management personnel necessary to order the first SSN by 2032. Because of the size and lead time of the training program, more than 250 experienced RAN submariners would enter nuclear education and training pipelines by 2036. Refining these timings should be a key output from the recommended studies.
- A supporting Australian nuclear power industry is desirable, as it would provide a broader national regulatory, technical and educational base. However, provided the costs of not having that support are clearly identified and allowed for, the absence of a domestic nuclear power industry shouldn't preclude a transition to nuclear propulsion for Australia's submarines.
- To enable an informed decision on whether or not to acquire nuclear-powered submarines, an immediate decision is needed to commit the resources to conduct feasibility studies into a transition to nuclear propulsion, with a delivery date for the studies in 2020.
- The manning, training, technical, financial, logistical and political aspects of the nuclear-propulsion option should be included in the feasibility studies in order to inform public debate and political decision-making.
- The information derived by studying the option could not only be used to inform the Australian Government's strategic decision-making but could also lead to a better informed public debate.

Commanding Officer HMAS FARCOMB Commander Barry Carmichael RAN watches as the gangway is put in place on arriving at Fleet Base West (Image LSIS Lee-Anne Cooper).

THE STRATEGIC JUSTIFICATION

The analysis used by the Submarine Institute of Australia a decade ago to mount the argument for an increase to at least 12 conventional submarines in order to provide Australia with a 'strategic sting' has stood the test of time. [2] Since then, Australia's strategic circumstances have deteriorated significantly. It's high time we took out some increased insurance. [3]

Australia's defence strategy set out in the 2016 Defence White Paper provides the starting point for this analysis. Some relevant extracts describe the strategy and the capabilities required of the ADF:

Our most basic Strategic Defence Interest is a secure, resilient Australia. The first Strategic Defence Objective is to deter, deny and defeat any attempt by a hostile country or non-state actor to attack, threaten or coerce Australia. [4]

Submarines are an essential part of Australia's naval capability, providing a strategic advantage in terms of surveillance and protection of our maritime approaches. The Government has determined that regionally superior submarines with a high degree of interoperability with the United States are required to provide Australia with an effective deterrent, including by making a meaningful contribution to anti-submarine warfare operations in our region. The key capabilities of the future submarine will include: anti-submarine warfare; anti-surface warfare; intelligence, surveillance and reconnaissance; and support to special operations. [5]

HMAS DECHAINEUX (SSG 76) loading Mk 48 Training Torpedoes (Image ABPhot Culliman).

Australia's maritime environment is rapidly becoming ever more complex and operationally difficult. There is much increased diplomatic sensitivity and enhanced surveillance, as evidenced by China's program to militarise islands in the South China Sea [6] and establish ocean-floor acoustic arrays. [7]

The rate of strategic change has accelerated for the worse. This paper argues that the review of submarine technology envisaged in the 2016 Defence White Paper for the late 2020s must now be brought forward. [8]

New surveillance systems, such as bottom-mounted acoustic arrays now being deployed more widely in our region, not just the South China Sea, will pose challenges and risks for submarine operations and will require Australia's submarines to be suitably equipped and appropriately operated.

The growth in regional submarine numbers, including nuclear-powered submarines, and their capability adds to the complexity and challenges of the emerging maritime environment for Australian submarine operations.

China's attempted unilateral extension of its maritime boundaries in the South China Sea, against the findings of the Permanent Court of Arbitration in The Hague, [9] and the subsequent militarisation of contested outcrops in the sea are wake-up calls for Australia and the region. It's time to seriously boost our strategic sting and provide a viable capability to deter the use of coercion against Australia's interests.

Submarines offer unique, asymmetric maritime strike and sea denial capability [10]—something we're going to need a lot more of, as Paul Dibb, Richard Brabin-Smith and Hugh White have recently elaborated. [11]

Let me now consider the case for increasing Australia's submarine capability to meet the new strategic reality.

WHY NUCLEAR PROPULSION?

The Australian Government has recognised the need for a regionally superior submarine capability. [12] This is a key planning consideration. The current program to double Australia's conventionally powered submarine capability was an appropriate recognition of this requirement: not only was a superior submarine design needed, but the boats needed to be acquired in sufficient numbers to be an effective deterrent.

The deteriorating strategic outlook justifies serious reconsideration of whether acquiring even the most advanced conventionally powered submarine will be adequate. Conventional propulsion systems don't have the same levels of flexibility, endurance and covertness that nuclear-powered submarines enjoy when operating in an environment characterised by advanced submarines, surveillance and acoustic systems. That's the environment that Australia's future submarines will operate in.

While a modern conventionally powered submarine is a formidable and flexible platform, it will be increasingly constrained in meeting the operational demands of the developing operating environment, owing in particular to greatly increased surveillance and networked antisubmarine warfare measures combining inputs from multiple sensors and platforms.

This increasingly challenging operating environment has significant implications for the deterrent impact of Australia's submarine capability, which must be designed and operated to overcome those antisubmarine measures. The deterrent value offered by our submarine capability will hinge on:

- an ongoing ability to access areas critical to an adversary
- an adversary's assessment of the capability's potential to inflict unacceptable harm to its interests.

Nuclear propulsion provides more options for government to create desired strategic effects and to manage tensions in contested circumstances.

This is not to denigrate the current effort to increase Australia's submarine capability via the Future Submarine (FSM) program; indeed, as outlined below, the technical complexities, manpower demands and long lead times to achieve a nuclear propulsion capability mandate growth in Australia's conventional submarine force as envisaged under the FSM program. It's an essential starting point for the transition to nuclear propulsion and will provide our frontline submarine capability for several decades until a future nuclear propulsion program can yield results.

This won't be a quick, cheap or easy technical process. The first question should be: Why bother to take on such an expensive and risky program?

Nuclear propulsion offers a quantum leap in submarine capability and its deterrent effect in two principal areas.

USS VIRGINIIA (SSN 774) Alongside the General Dynamics Electric Boat yard at Groton.

HMS ASTUTE (S119) with Diving Submersible Detatchable Pod embarked.

First, it offers unrivalled mobility:

- A nuclear-powered attack submarine (SSN) can deploy at two to three times the speed of a conventional submarine and thus spend more time on task.
- It can react to unfolding situations much more quickly.
- Once in a patrol area, the SSN can position itself for best effect, whether the requirement be search, surveillance, attack or evasion.
- It can reveal its presence to achieve an effect with a greater level of confidence that it can quickly and covertly redeploy after detection to retain the initiative.
- The strategic uncertainty that a conventionally powered submarine can create is greatly amplified by the SSN's mobility.
- A potential adversary must surveil a very much larger area when dealing with an SSN.
- The SSN can create, retain and exploit the initiative gained from its mobility.

Second, the SSN:

- operates independently of the surface, freed from the need to expose the submarine acoustically and to above-water surveillance by snorting to recharge batteries
- is able to operate undetected under intense space and air surveillance for much longer than a conventional submarine, which is limited by its dived endurance [13]
- is able to operate in circumstances in which a conventional submarine faces growing surveillance risks owing to low sea states and high densities of local craft.

A submarine's effectiveness depends on its stealth; the ability to deploy and operate covertly (unless and until exposure is justified to achieve a strategic effect) is critical. Given the reality of our geography, with typically long transits to operating areas, a nuclear-powered submarine's mobility and ability to choose to avoid exposing itself are significant advantages.

In addition, the SSN's much larger electrical power generation capacity offers significant advantages in powering sensors and command, control, intelligence and combat systems and allow it to operate as a mother ship or hub for remotely operated unmanned vehicles. Such drones are one of the new frontiers for submarine operations that will be the key to submarines' future effectiveness and survivability.

A quote from Admiral Sir John Eccles, Commander in Chief, Home Fleet, Royal Navy (RN), following NATO exercises with the USS NAUTILUS (SSN-571) in 1957 is still relevant today:

> Not only has the nuclear submarine complete freedom of action in three dimensions; its ability to manoeuvre at high speed … far exceeds that of conventional submarines … she need not for days on end put anything on the surface … In her ability to attack and destroy submarines (conventional or nuclear) and surface ships she is vastly superior to surface ships and conventional submarines. [14]

This isn't to say that the conventional submarine is unable to complete its mission in these circumstances; however, conventional technology doesn't provide the same level of assurance that nuclear power provides. Higher levels of risk would have to be accepted by the government of the day if the missions are to be completed:

- In the event of counter-detection, the SSN's mobility enables it to break contact with much greater certainty and offers the opportunity for a later re-engagement.
- This is particularly important where the rules of engagement don't allow the submarine to engage or destroy its pursuers.
- In this situation, a conventional submarine risks being hunted until its battery is exhausted and it's forced to surface and withdraw, with the attendant publicity.
- Similarly sized SSN and conventional submarines, such as the French Barracuda and the planned conventional Australian FSM have similar ability to operate in shallow water. However, the SSN enjoys the advantage of not having to snort in the constrained littoral waters where observers, such as fishing fleets, are often present (which is very relevant in the places where Australian submarines may need to operate).
- The advantages enjoyed by an SSN would provide increased flexibility and a greater range of options for the Australian Government in all circumstances.
- A simple speed/time/distance model illustrates the advantage of the SSN's mobility and covertness during the long transits routinely undertaken by Australian submarines. After completing an opposed 3,000-nautical-mile transit (that is, a transit during which the submarine is aiming to remain undetected), an SSN could be expected to spend 46 days out of a total of 60 days (77% of the total mission time) deployed on station. A conventional submarine in similar circumstances would typically provide from 30% to 47% on task (depending on the amount of disruption to snorting cycles experienced en route).

Rolls Royce Small Modular Nuclear Reactor embarked on a truck or equally a barge for remote green-friendly power supplies (image AMRC and RR).

I end this section with another quote from 1957, the period when the RN contemplated the cost and benefits of the transition to nuclear power and assessed the revolutionary impact that nuclear propulsion had on submarine warfare. It's an appropriate summary:

> The Submarine has not only regained the advantage which it had over the surface ship before the advent of asdic [15] and anti-submarine weapons; but has become a flexible weapon of decision as opposed to one of chance encounter. At the same time, the difficulties of detecting and attacking it from the air or surface have become truly formidable. [16]

While that statement was made 50 years ago, it's true today

CONCLUSIONS

This paper sets out the strategic capability advantages of an SSN and the most credible path to achieve such a capability based upon:

- The current FSM program remains a valid and certainly the quickest way to increase Australia's submarine capability in the face of our deteriorating strategic circumstances.
- An SSN's mobility and ability to avoid exposing itself enable it to achieve significantly greater time on task compared to a conventional submarine. The longer the transit and the stronger the opposition, the greater this advantage.
- A force of modern SSNs would clearly establish Australia at the forefront of the region's growing submarine capabilities and indisputably establish a regionally superior submarine capability.

In the face of a deteriorating strategic outlook, the consequent need to transition to nuclear submarines (SSNs) expeditiously and the reality that growth of the submarine arm via FSM is essential to starting that transition, that program must be accelerated, with a national priority allocated for funds, personnel and a fast track for facilities.

A force of modern SSNs offers significant sea denial and force projection capabilities, providing at least twice the number of more capable submarines deployed at long range compared with an equivalent number of conventional submarines, assuring the ability to sustain a high level of deterrence and operational capability. A fleet of 12 double-crewed SSNs would allow four submarines to be on task at long range and constitute a formidable deterrent force. Such a fleet would also facilitate a rolling construction program.

A force of at least 10 nuclear submarines with 10 crews is the minimum required to maintain a critical mass of trained personnel and to generate the experience needed to man the senior supervisory and policy staff needed for a globally credible nuclear safety organisation.

A force of at least 12 conventional future submarines each with a crew of at least 60 and a total submarine arm of at least 2,100, is judged to be a conservative, safe and viable starting point for a transition to a force of 10 SSNs.

And finally, a reminder for cabinet's national security committee. We need to accelerate the FSM project, with national priority for resources without reducing the sovereignty of our new subs. [17] It would also be a good idea to stock up on the high-tech/costly/long-lead-time weapons to go in those torpedo tubes.

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Flash Flash Flash: By Editor, announced in December, the Future Submarine is to be renamed the Attack-class. With the *Hunter-class* and the *Attack-class* now 'in being' let us hope we also get some good resounding, traditional nautical names too.

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THE MAIN FACTORS AFFECTING THE IJN'S HISTORICAL COURSES OF ACTION WITH A FOCUS ON THE SIGNIFICANCE OF THE FIRST SHANGHAI INCIDENT

By Dr Koichiro Kageyama

The primary role of a Navy is trade protection and promotion, but it has always also been used as a political means for projecting influence beyond the mainland. A Navy, which has prioritized the political interest, is inevitably affected and controlled by the policies of the day and highly dependent on the significance, nuances and quality of each and every policy.

INTRODUCTION

This paper poses two questions, the first being:

1. What kind of posture did Japan require of the IJN (the Imperial Japanese Navy) 77 years after its founding?

In this article, I will ask the reader to consider the political and regulatory environment since the IJN's foundation and the reasons why it shaped the IJN and used it to enforce and develop its power. In order to understand these forces, I will use as my optic the First Shanghai Incident in 1932. Largely unknown, at least in detail, this I will argue was a fundamental turning point in Japan's modern history.

The second question I will seek to address is:

2. What originated (if not caused) the IJN's course(s) of action leading up to the Pacific War?

I will seek to explain concisely several factors which affected IJN's foundation by referring to two periods.

THE IJN FROM THE BEGINNING OF THE MEIJI ERA, TO THE EARLY 1920s

Essentially the first period is from the beginning of the Meiji era to the Russo-Japanese War (1904-1905), during which there were five shaping factors.

The first factor was a Japanese national policy of placing importance on the continent including China and the Korean Peninsula, which Japan faced across the ocean.

Since the end of the Edo era, Japan had considered Russia as an existential threat. In order to maintain Japan's existence and prosperity, Aritomo, the Prime Minister Prince Yamagata, claimed the First Imperial Diet in 1890, when Japan added the northern border of the Korean Peninsula to its defensive limits and economic zone of prosperity (or profit / gain line) [1]. Adopting the 'Continental Policy' ultimately resulted in confining IJN's development and scope of operations.

The second factor was that, since the Navy was basically designed to operate in international waters and secure the freedom of the oceans and open seas, it had a potential aversion to a Continental Policy which might cause conflict with neighbouring countries and strengthen the power of the IJA (the Imperial Japanese Army).

The third factor was that the IJN continued to take an opposing position against the Government of the day, and so also the IJA leadership at the beginning of the Meiji era – which, as a result, specifically sought to exclude the IJN. [2] The IJN also strictly opposed the IJA's desire to solidify the nation's foundation by successively fermenting and then quelling civil insurrection, and using this as the basis for placing the IJN under its command – as also the means by which the IJA could take the initiative on the Continental Policy.

The fourth factor could be traced back to the fact that the IJN learned from the British tradition as a maritime nation in the period of IJN's creation. It led to the IJN understanding strategy and so needing to work with the politics and politicians of the day.

The IJN obeyed the strategic national policy which the Government decided and which supported the strategic shipbuilding programme, but which was also antithetical to the Continental Policy. Such an attitude allowed the Government and IJA leadership to question the IJN's loyalty and whether it might shift its allegiances.

The IJN began importing European warships at the end of Japan's period of national isolation and it took considerable time and effort to become highly knowledgeable about advanced technologies and capable of using them at sea and in war. Consequently, the IJN conducted systematic engineering, technical, maritime, and navigation education – meaning that its personnel didn't have the time to think about politics and pol-mil affairs and acquiring any political knowledge

The fifth factor was that IJN embodied Mahan's theory and maintained the IJN's core belief in the principle of the 'fleet decisive action', which had served it well during the the Sino-Japanese and the Russo-Japanese Wars. The decisive victory of the Battle of Tsushima in May 1905 justified the fleet decisive action principle and largely set the future fate of the country. However, the principle was interpreted as a golden rule – an idée fixe – which resulted in the IJN ignoring other concepts and the importance of adapting to new weapons and technologies. These five factors continued to affect the IJN until the conclusion of the Pacific War in 1945.

HIJMS YAMATO completing construction 1941

THE IJN FROM THE END OF THE RUSSO-JAPANESE WAR TO THE BEGINNING OF 1920

The second period followed the formation of Japan as a sovereign state and colonial power after the Russo-Japanese war, to the beginning of 1920 – during which period three more factors are considered.

The first factor was that Japan, which appeared as one of the new Great Powers of the Far East after the Russo-Japanese War, adopted a national policy of 'enhancing interest in Manchuria', and so facilitated the IJA to take the initiative in China.

The second factor was the Imperial National Defense Security Policy [3] enacted in April 1907 for the purpose of 'promoting the policy of enhancing interest in Manchuria'. IJA supported the "Northern Expansion Doctrine" that mandated it to take an offensive position on the continent; while IJN supported the "Southern Expansion Doctrine" focussed across the Oceans, to prevent other Great Powers from interfering with Japan.

It brought about a significant change in how Japan enforced military power. In other words, it made Japan shift from 'defending the nation and homeland' to 'defending the national policy'. The change created the climate that, if diplomacy became dysfunctional, Japan would necessarily enforce military power to defend national policy. Diplomacy became more of a tripwire than about prevention and deterrence.

There was another factor in the background. The IJN assured naval supremacy in the Far East following the victory of the Battle of Tsushima, which resulted in the IJA becoming even more aggressive in implementing its Continental Policy.

It might be said that the IJN virtually created the fundamental conditions for the IJA's aggressive implementation of the Continental Policy; while at the same time, the IJN was permitted to increase its offensive actions in the southern seas.

The third factor was the effect of "The Twenty-One Demands" [4] which was issued by Japan. It was a unilateral and aggressive policy enacted against China; while at the same time becoming a hugely negative pol-mil legacy impacting Japan's international relations. The demand infuriated China and disenfranchised powers such as Britain and the U.S., and led to an increasing sense of distrust by the colonial powers regarding Japan. The demand would also result in a devastating effect on the IJN, which also had the mission of protecting Japanese residents living abroad.

In addition, the U.S. tried to enable closer relationships with China, amid growing concerns over Japan as an emerging power after the Russo-Japanese war. In response to this rapprochement, the IJN began to help China rebuild the Navy by inviting Qing Dynasty Navy students to its institutions in Japan in order to influence and implant Japanese thinking and soft power.

THE IJN AFTER 1920s

Although Japan was one of the victorious Allies in the First World War, it was significantly criticised in the new post-war world order and the "Washington Structure" led by the U.S. In particular, the Great Powers required Japan to amend its hard-line Chinese policies. On the other hand, the Washington

Imperial Japanese Naval Land Forces. (Source: The Headquarter of the Third Fleet Shouwa nananen Shanghai Incident. Kinen Syasincyou).

Conference did not include the Soviet Union and the Great Powers did not impose any limitation on China's anti-foreign movements. This eventually led to conflict and hardships being faced by Japan.

In China, the Chinese Communist Party appeared to advocate anti-imperialism and de-colonialisation; intensifying anti-foreign movements within the country. There are three historic perspectives to understanding relations between China and the IJN in this period.

The first fact was the Nanking Incident in February 1927. The Japanese, British and American consulates were ransacked following the surprise attack by the Northern Expedition Army of Chiang Kai-shek. Japan had trusted and relied upon Chiang Kai-shek without question. As a result after the incident, Japan concluded that it would not be able to protect its rights and interests with cooperative diplomacy any longer.

In July 1927, the Japanese Government convened the Eastern Conference, where it decided to protect Japanese rights and interests by deploying the military to the continent – ostensibly to prevent future states of crisis. In the following year, at the negotiations before the conclusion of the Kellogg-Briand Pact, Japan claimed that 'enforcing military power for the purpose of protecting rights and interests should be justified and clearly stipulated'. [5] However, the claim was opposed by Britain and the United States – and the pact ended up becoming unclear and unenforceable.

Consequently, Japan, from an independent standpoint, concluded that the use of force for interested self-protection could be interpreted and justified as a 'self-defence action'. But, the Kellogg-Briand Pact, had in actuality, stipulated that 'all member countries should refrain from the use of military power as a political instrument without seeking solution by means of peaceful diplomacy'.

The period of the Great Depression in 1929 and long recovery from it, struck a heavy blow against Japan's economy. As a result, the Government was required to reduce domestic instability caused by political corruption; at the same time facing intensifying anti-Japanese movements in Manchuria and China's mainland, and mounting unresolved diplomatic issues.

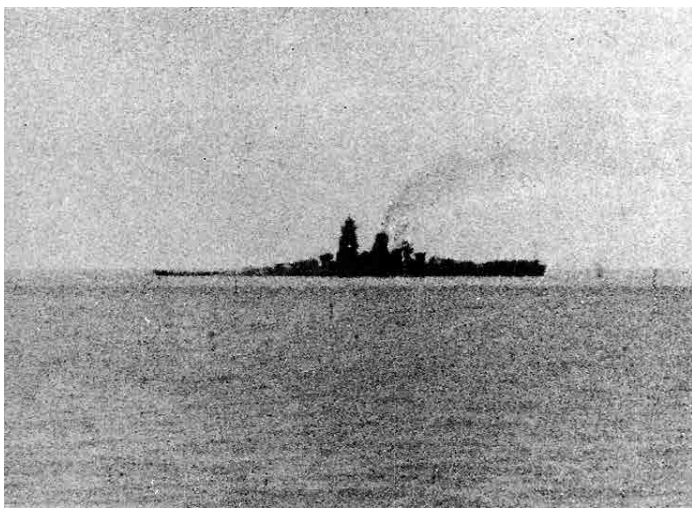
The second fact was that the Government of Japan had become dysfunctional not only as a result of the various reasons stemming from the Meiji era as mentioned earlier, but also because of the economic uncertainty present in 1931, domestic unease brought on by political corruption, and setbacks in diplomacy arising from Japan's advocacy of its interests in Manchuria. Hence in order to resolve these various domestic and international issues with one blow, the General Staff of the Kwantung Army (Japan's military forces present in Manchuria) examined using military action and occupation in response as a plot [or ruse against the Government].

It was the Manchurian Incident, a strategy of the Kwantung Army's strategic staff, Lieutenant Colonel Kanji Ishihara that brought things to a head. The incident turned into a turning point of modern Japanese history because the event and the consequential First Shanghai Incident accelerated Japan's withdrawal from the League of Nations and led the IJN to take an increasingly hard-line position.

Meanwhile, it is also necessary to understand the posture of the Government. Although Prime Minister Reijiro Wakatsuki and Foreign Minister Kijuro Shidehara were aware of the scheme, they believed in the Army Minister Jiro Minami's statement that 'it was for self-defence' and agreed with the Cabinet that they would only take measures 'to prevent the situation from deteriorating'. As a result, they failed to order a thorough investigation into the incident be undertaken.

It is also important to understand the reasons why the decision was made by the Cabinet. Both Wakatsuki and Shidehara potentially shared the nation's ultimate policy of 'maintaining and expanding Japanese interests in Manchuria', though they had different opinions about applying the use of force under International Law. Nevertheless, they both continued to maintain that the use of force to protect national interests in Manchuria was 'for self-defence'.

According to the IJA's top secret Manchurian Incident operation report, the IJA was surprised that the Government agreed in the Cabinet meeting the day after the Incident that 'it would take



HIJMS MUSASHI's crew fighting to save the ship before its final capsize, 24 Oct 1944.

Shanghai Settlement's Bund (Source: Shinkousya Shanhaijihen no Keika,1932.)

measures to prevent the situation from deteriorating', without conducting a more detailed investigation. After the Manchurian Incident became well known to the Japanese people, a new scheme was devised. Becoming known as the Shanghai Incident, it was designed and implemented to disguise the Kwantung Army plan to create the state of Manchukuo.

While the conflict attracted the attention of the League of Nations, the Kwantung Army successfully went about creating the puppet state of Manchukuo. The IJN did not know of the intention of the Kwantung Army and was deliberately kept in the dark by the IJA. And the IJA suppressed detailed reporting of the incident with the support of three of its divisions.

The third fact, which it is important to understand, is the relations between China and the IJN in the period leading up to and including the Shanghai Incident. I will explain its importance from three points of view.

THE IMPORTANCE OF THE SHANGHAI INCIDENT

The importance of the Shanghai Incident itself was seen to have three aspects:

In the state-on-state national conflict between Japan and China that was occurring on a daily basis, and included the Shanghai Incident – there was a high risk that the conflict could develop into a general state of war if a simple error or mistake was seen to get out of hand.

Consul General Kuramatsu Murai and the Commander of the First Dispatched Abroad Fleet, Rear Admiral Koichi Shiozawa were both in charge of protecting Japanese residents in Shanghai. In order to mask the subterfuge to create the state of Manchukuo, a Kwantung Army Staff Officer intentionally committed the Shanghai Japanese Priest Murder Incident. However, Murai, who did not know about the scheme at all, demanded that the Shanghai Mayor Wu Tieh-Cheng satisfy four demands in exchange for resolving the incident: apologizing officially, punishing the murderers; compensating victims for their death and treatment; and, dismissing anti-Japanese groups.

It was almost impossible for the Mayor to accept all the Japanese demands, particularly regarding the dismantling of anti-Japanese groups. Nonetheless, reluctantly Wu Tieh-Cheng decided to accept all the Japanese demands at 15:15 on 28 January 1932 and Murai was reportedly totally satisfied with the response.

In actuality, Japanese residents were never threatened with anti-Japanese groups at the time. They were much more afraid of China's military installations, which were under construction directly in front of them.

Despite the Shanghai Mayor's decision to accept all the Japanese demands, Japanese resident representatives demanded that Murai surrender to Japanese forces and give up any ability wage a war again. Murai was confused by the strict demands, and asked Commander Shiozawa to deal with the demands and confirm whether China would realize the four demarches (as it had promised to do after the Priest Murder Incident).

Not surprisingly, Shanghai citizens were furious with the Mayor's decision and protests occurred across the entire city of Shanghai. Later, in the middle of the night, Commander Shiozawa ordered IJN Land Forces to put down the protests and rioting. Unexpectedly, the IJN ran into the Chinese Army, which were attempting to do the same – leading to the outbreak that subsequently became known as the Shanghai Incident.

Murai should not have declared his satisfaction of the delivery of his demands without consulting with Shiozawa's and gaining his consent. Once Murai and Shiozawa had confirmed that China had given up the construction of military installations, they should then have jointly expressed their agreement and walked back from further escalation.

International society also aligned with China; concluding that China was fully justified in its self-defence actions and that Japan had committed the actual act of aggression. Again, Japan lost any moral standing and sympathy amongst the international community.

Two considerations emerge:

1. Since the IJN usually had little interest or detailed knowledge of the Continental Policy, it hadn't conducted sufficient research into effective measures to respond to anti-Japanese protests. The Minister of the Navy, Mineo Osumi, was so surprised and perplexed with the failure of the IJN's initial response to the 'unexpected incident' that he requested the Army to help the IJN. Commander Shiozawa (who was in Shanghai at the time) immediately appealed to the Army for support.

The IJN Land Forces were understrength and three local IJA divisions were sent to help the IJN. A Cease-fire agreement was concluded on 5 May. The Shanghai Incident brought about a big change in the IJN, because it was the first time that the IJN as well as the IJA used military power systematically to protect the life and property of Japanese residents outside Japan and beyond their duty of national self-defence since the enactment of the Imperial National Defense Security Policy of 1907.

2. Since Japanese diplomats in Shanghai had little or no knowledge of the military operation, they had difficulty in negotiating a cease-fire following the Shanghai Incident. The IJA played the main role in conducting diplomatic affairs; including locally arranging for the Shanghai cease-fire negotiations. Consequently, the IJA took the initiative in the negotiations, which resulted in the further advancement of the North China Buffer State Strategy.

Senior IJN with IJA Commanding Officers with Diplomatists gathering at Shanghai. (Source: Asahi Sinbunsya Shanghai Incident Syasin-cyou, 1932).

In addition, in response to the Shanghai Incident, the IJA forced the IJN into taking an unimportant, subordinate and supporting role.

AFTERMATH

There were two consequences following the Shanghai Incident. The first was that during the process of cease-fire negotiations, hard-line negotiators (who had been stopped from engaging in treaty-related campaigns since the London Naval Conference) gained ascendency and cemented their power through the inaugurations of the Chief of the Naval General Staff Hiroyasuo Fushiminomiya and the Vice Chief Sankichi Takahashi, who both belonged to hard-line factions. They also removed the IJN's former treaty negotiators and solidified all future engagement about the hard-line factions.

The Japanese Government officially terminated the Washington Naval Treaty at the end of 1934, and withdrew from the Second London Naval Treaty in January 1936. The IJN began to increase its size and capabilities to prevent the United States from resisting Japanese policy through, for example, a blockade. It was the beginning of the IJN's unilateral transition towards entering a state of war.

Behind the Shanghai Incident, which ended in perceived success for Japan, the power of the Naval General Staff was increased to rival that of the Naval Department. It meant that the Naval General Staff replaced the Naval Department; with authority for issuing operational orders and proposing acquisitions of IJN ships and equipment.

An example was the Tertiary Navy Supplement Plan, where the Department stipulated that the IJN would build large-scale battleships, such as the YAMATO and MUSASHI in the years following 1937 in order to prepare for a war of national survival against the United States.

Secondly, in 1933 the IJN became increasingly worried that there was no treaty limiting the size and number of warships; leading to a "fear of future [shipbuilding] crises in 1935 to 1936". As a result, the IJN began to try and make closer relationships with the IJA; recognizing that it desperately needed to increase and strengthen its equipment to prepare for what it now saw as an inevitable war with the United States. An arms race had begun – also placing the IJN and IJA in competition with each other.

The IJN claimed that the success of the Manchurian Incident was attributed not only to IJA's effort, but also to the IJN's contribution. Having maintained maritime supremacy, IJN dismissed objections from the League of Nations and threats from the United States in order to protect the IJA's position in the years to come. The IJN also believed that it could keep the IJA in line, in order both to expand the IJA and accelerate IJN re-capitalization of its equipment programmes in order to prepare for war with the United States.

THE ROAD TO WAR

In June 1936, the Japanese Government decided to amend its national security policy, its diplomatic policy and the Imperial National Defense Security Policy. The amendments gave the IJN the lead in putting the "Southern Expansion Doctrine" into practice. No changes were made in these policies until the outbreak of the Pacific War, which it largely predicated. Policy amendments included the "Northern Expansion Doctrine" and the "Southern Expansion Doctrine"; giving the IJA and the IJN formal approval to enact.

Policy changes also meant that the IJA and the IJN were given authority to secure huge budgets for their equipment expansions based on the national resolutions to advance both the "Northern Expansion" and "Southern Expansion" doctrines. It also affected the IJN's operations. At the outbreak of the China Incident in 1937, the IJN was cooperating with the IJA from the very beginning, which was totally different to their posture before the First Shanghai Incident. There appear three propositions for future generations to ask about the Shanghai Incident.

First, there was harsh criticism of Japan among member countries of the League of Nations, which was considerably influenced by the U.S. The philosophy behind the founding of the U.S. was incompatible with that of Japan in the 1920s, and U.S. thinking also deeply influenced the working and philosophy of the League of Nations.

Although the Lytton Report was officially compiled by the League of Nations, the report included ideas and views of the U.S. with the involvement of the U.S. Secretary of State Henry. L. Stimson. Theoretically, this meant that the confrontation between Japan and the U.S. in actuality traces back to the processes and forces put in play and involved in resolving the Shanghai Incident.

Secondly, the IJN understood and cooperated with the Continental Policy as long as it could profit from it. After the Shanghai Incident, the main conflict between the IJA and the IJN occurred following the Marco Polo Bridge Incident in July 1937. The Minister of the Navy Mitsumasa Yonai opposed the IJA deployment of three Army divisions. He argued that the IJA's deployment might lead to a war with the United States, at a time the IJN was not fully prepared for such a war.

Moreover, although the first stage of the negotiations for the Tripartite Pact was conducted from the summer of 1938 to the summer of 1939, the IJN opposed signing the pact. The pact was actually designed to wage a war against the Soviet Union, and the IJN saw that such a diversion would seriously impact its ability to prepare for a war against the United States. At the same time, the IJN recognized that forging an alliance with

Japanese Consulate General and the IJN Third Fleet Flag Ship HIJMS IZUMO. (Source: Asahi Sinbunsy Shanghai Incident. Syasin-cyou, 1932).

Germany and Italy would further deteriorate Japan's relations with Britain and the United States.

Nonetheless, the IJN changed its intention and agreed with the pact during the second stage of negotiations from the summer to the autumn of 1940, where they discussed including the Soviet Union and forming a quadruple alliance comprising Japan, Germany, Italy and the USSR. The IJN leadership tried to establish closer relations with Germany through the negotiations.

Just before the start of the Pacific War, the Director of the IJA Military Affairs Bureau, Akira Muto thought that there was no better way to avoid a war than withdrawing from China. He implored his IJN counterpart, Takazumi Oka by saying that "if the IJN does not want to wage a war, say it clearly so that I can contain the IJA's war [mongers]". [6] By that time it was too late, and Oka avoided making a clear reply, saying instead "the IJN is not in the position to officially deny waging a war – what we must do is obey the decision of the Prime Minister." In other words, Oka failed to recognize that the situation was beyond the IJN's capability to deal with and shifted strategic responsibility (and future blame) to the Japanese Government.

The IJN was therefore also complicit due to its involvement and support of the inevitable 'dead end' of the Continental Policy. To make matters worse, since the IJN refused to place itself under joint IJA leadership during Army and Navy joint operations, the IJN and the IJA respectively assigned separate commanders – resulting in many ineffective operations and operational miscalculations being made by both the Army and Navy.

After the Manchurian Incident and the Shanghai Incident, the IJA's unilateral actions intensified anti-Japanese movements and further delayed Japanese-Chinese settlement negotiation. Japanese policy after the Russo-Japanese War also made the situation worse by hardening attitudes and limiting the scope of negotiations. After the Russo-Japanese War, Japan adopted a national policy of enhancing interests in Manchuria by ignoring the Chinese people's right to nationhood and self-determination. The policy created further risk that subsequent Japanese campaigns would be fought without constraint.

I think that Japan misunderstood and underestimated growing resentment; inevitable Chinese aspirations for independence and nationhood (including the rise of nationalism), and that its thinking fatally lagged behind adapting and seeking to accommodate changes in China and on the international stage.

Thirdly, this impacted upon the original missions of the Navy and how national policies should be set. Since the Meiji era, Japan took on three different positions: the Japanese Government was influenced by Preussen (Prussia) in the Continental Policy; the IJA by France in the Continental Policy, and the IJN by Britain. As a result, the Continental Policy (supported by the majority of factions) was adopted as the national policy.

Because the IJN was not sufficiently knowledgeable about the Continental Policy and failed to take into account understandable Chinese demands for independence and nationhood, it made a number of critically mistaken assumptions. If Japan had made Manchuria open to other countries, it may have faced less hostility from them. In fact, the IJN might then have engaged in protecting the freedom of the seas that was vital to free trade; so contributing toward establishing world peace in accordance with the League of Nations.

In reality, Japan waged a Pacific War. Considering the sense of values and political climate even at this late stage (after 80 years) Japan needs to be more critical in thinking through how war might have been prevented. This is as important for understanding the region today but is work for another day. ■

Acknowledgments: I deeply appreciate the support of Mr.Masashi Kuratani and Ms.Jyun Hanawa, who have translated from Japanese sentences into the English.

About the Author: Professor (Dr) Koichiro Kageyama is a former professor at the National Defense Academy of Japan, and former professor at Teikyo University. After graduating from the National Defense Academy in 1965, Professor Kageyama assumed responsibility for the introduction of the P-3C (Orion). On completing the Australian Staff College in 1981, he served in Maritime Staff Plans and Operations Division, as section head of long-term planning and as chief researcher at the National Institute of Defense Studies Center. He served as chairman of the Military History Society of Japan, and as a member of the Political Economy and Economic History Society and the Naval History Studies Society. He is widely published, including: "A military history of early modern Japan"; "Encyclopaedia of the Japanese Navy", and "British and French Garrisons at Yokohama and the Foreigner Enclave".

NOTES AND REFERENCES

[1] The Prime Minister Aritomo Yamagata protected the 'sovereignty line' and bringing action against encroaching 'gain line establishments' for its protection.

[2] In 1880, both Yamagata and Tsugumichi Saigo stood in support of important Government decisions, as exhibited by the "Navy Staff Office disuse opinion" For example, Hirofumi Ito, Shigenobu Okuma, and others attempted acquisition of Navy by Army.

[3] "Go North" meant towards Korea, Manchuria, and Siberia; "Go South" meant towards South Qing, the South Sea Islands, and South America.

[4] It was a requirement of the lease continuation for South Manchuria; the South Manchuria Railway and Shandong peninsula interests. The major supporter of the attack was the 5th (Directorate) - responsible in Japan for advising on politics, diplomacy, military, and other trade and economic fields.

[5] Michihiro Kobayashi, others. Uchida Kousai Kankei Shiryou Shuusei Vol.III -3 : Kashiwashobo, 2012.

[6] Taiheiyo-sensou kennkyukai, Hiwa de yomu Taiheiyo-sensou : Kawade-shobo Shinsha, 2001.

SYSTEMS THINKING & INNOVATION

Wednesday 28 November saw the conclusion of the third iteration of the Fleet Air Arm Master's Level System Thinking Innovation Pilot Course conducted in conjunction with University of Sydney Business School Executive Education.

Since the first iteration in April 2017, 71 participants ranging from Fleet Air Arm, Navy, Public Service, RAAF (all ranks, with or without first degrees) and industry who succeeded in the rigorous selection process graduated, receiving in the process a certificate of achievement from UniSyd Business School providing recognition of learning at the Master's level.

This program is designed to encourage participants to consider the role and significance of critical, systems and design thinking in the context of operating in a complex environment where innovation is the basis of change and in which ethics and codes of conduct are fundamental to solving critical problems and enabling change. The syllabus critically examines design and systems thinking, with ethics as the overarching theme, exploring innovative methods, tools and techniques employed by business, industry and Service. It considers how ethics, civic virtue, values and codes of conduct can be applied to these systems with regards to decision-making and taking by using case studies. It looks at how behaviour can be shaped or modified by understanding bias whilst influencing and communicating values and culture.

The program is the outcome of a brainstorming session between COMFAA, Commodore Chris Smallhorn, and Captain Simon Reay Atkinson PhD, with Professors John Shield and Jean Bogais (USBS), which looked at innovative mechanisms to attain readiness in a rapidly changing environment with ethics as an overarching element. The programme consists of four blocks with readings and assignments in accordance with academic requirements, supported by individual and group poster presentations.

The next iteration will occur in April 2019 and expressions of interest notices will be circulated early during the year across Defence, APS, and industry, Navy, RAAF and Army.

Professor John Shield and Commodore Chris Smallhorn present the 'best presentation' award to SIT course students for their research into 'inventive and innovative techniques for recovering practice torpedoes'.

THERE SEEMS TO BE SOMETHING WRONG WITH OUR BLOODY SHIPS TODAY [1]

R.C. Blake NLA Senior Defence Adviser

The sinking and potential catastrophic loss of HNoMS HELGE INGSTAD (F313) in November 2018 has raised serious concerns and been the subject of considered debate across all NLA Divisions. The sinking raises significant questions regarding:

- command,;
- navigation and seamanship;
- seaworthiness;
- crewing, and;
- survivability.

The Norwegian Defence Accident Investigation Board (AIBN) Reported:

> The collision between the Norwegian frigate HELGE INGSTAD and the Aframax tanker *TS Sola* was caused in part by the INGSTAD bridge team's impression that *TS Sola* was a fixed object.

In the early hours of November 8, the INGSTAD was inbound along the Hjeltefjorden on the approaches to Bergen. The watch on the INGSTAD changed at 0345, and the incoming watch believed that the *TS Sola* decklights were part of the well-lit terminal. At 0357, the pilot aboard *TS Sola* detected the INGSTAD's radar signature, making 17 knots on a southbound course.

> **NLA Comment:** The frigate was…doing 17 knots, which seems rather fast in those waters at change of watch in the middle of the night.

TS Sola tried to contact the unidentified target by other means - including signal lamp. The *TS Sola* pilot also ordered a 10 degree course change to starboard. When the collision occurred the HELGE INGSTAD was making 17 knots, and the *TS Sola* 6-7 knots – giving an impact speed of 23-24 knots (43-45 km/h):

> **NLA Comments:** it seemed that the watch keepers in the frigate must have had a surfeit of information available to them which should have alerted them to the fact that the tanker was moving - i.e. AIS and the communications
>
> Setting aside the design issues resulting from the consequences of the damage, one must wonder about the capability of the frigate's crew. Following the FITZGERALD and JOHN S MCCAIN collisions, the USN decided to turn AIS transmission on in crowded waters.
>
> One wonders at not only the design which may have an element of lack of WAR experience in Spain, but at the standard of training of the entire crew and the leadership and experience of all involved.
>
> Could one factor be over-use of simulators in training particularly bridge and radar controllers?
>
> Surely after a few minutes even lowly-trained operators and officers would have noticed that the "land" was underway, and that there was no island in that part of the fiord!

RCB Comment: a significant problem with digital (as opposed to analogue) sailors is that they are used to the binary-immediate (1 or 0); being able to push the replay button (so no-one collides); the comfort of having information presented to them; and a reluctance to look or go outside 'the virtual office' into the real world particularly on a cold autumn night…

There is also a surfeit of information telling command and sailors precisely where they are, to such a degree of confidence that increasingly they (and their systems) no longer pay attention to 'where they are heading'. As a metaphor for the modern age, 'many such digital sailors know precisely where they are (to within +/- 1.5m at the 1 sigma level) but no longer know where they are heading'.

> **NLA Comments:** the RN standard (based on Sarchin & Goldberg [2]), and DEFSTAN 02-109 requires that a warship survive 'damage anywhere along its length, extending 15% of the waterline length, or 21m, whichever is greater' when the ship's waterline length exceeds 92 m. The Norwegian frigate's WL length would be about 125 m. As a ship belonging to a NATO Navy, I would expect that the frigate design would be required to meet a similar standard to DEFSTAN 02-109.
>
> The amount of energy which had to be

Figure 1 HNoMS HELG INGSTAD partly submerged near Bergen.

dissipated in the collision would have been enormous.

The damage described, including the gear room and forward and aft engine rooms, would exceed 21 m so the ship was going to sink – as surely as Titanic was going to sink with six compartments broached.

The real questions, are why:

a. The gear room flooded through the shafts (or at least one, on the side of the damage)
b. The stuffing boxes (I presume they mean the bulkhead penetrations for the shafts and drives from the diesels and gas turbine in the forward and aft bulkheads of the gear room) failed.

This raises questions regarding damage control in respect of Navantia ships.

An alarming commentary on the frigate's officers and its builder.

The inadequacy of its bulkheads is particularly worrying in view of all [RAN] Navantia ships.

The AIBN interim report found:

Safety critical issues that it cannot be excluded that the same applies to vessels of a similar design delivered by Navantia, or that the design concepts continue to be used by similar types of vessels.

To start with, flooding occurred in three watertight compartments on board KNM HELGE INGSTAD: the aft generator room, the orlob deck's crew quarters and the stores room. There was some uncertainty as to whether the steering engine room, the aftmost compartment, was also filling up with water. Based on this damage, the crew, supported by the vessel's stability documents, assessed the vessel as having 'poor stability' status, but that it could be kept afloat.

Next, the crew found that water from the aft generator room was running into the gear room via the hollow propeller shafts and that the gear room was filling up fast. From the gear room, the water then ran into and was flooding the aft and fore engine rooms via the stuffing boxes in the bulkheads. This meant that the flooding became substantially more extensive than indicated by the original damage. Based on the flooding of the gear room, it was decided to prepare for evacuation.

The AIBN considers:

the vessel's lack of watertight integrity to be a safety issue relating to *Nansen-class* frigates and therefore issues the following two safety alerts.

Interim safety recommendation MARINE No. 2018/01

…conduct investigations into the issues identified during the initial investigation and implement measures as necessary to address safety.

Interim safety recommendation MARINE No. 2018/02

[AIBN] recommends that Navantia, the vessel's designer, conduct investigations into the issues identified during this initial investigation and to ascertain whether this is also an issue relating to other vessels. Furthermore, that Navantia issue a notification to relevant shipbuilding yards, owners and operators, advising on necessary measures to address safety.

NLA Comments: what about the crew, not so much the CO, Navigator, OOW, and Watchkeepers for losing the ship and evacuating in very short order? Perhaps it was because they were in home waters?

Should we also be considering the crew-seaworthiness balance? To save a ship (as to fight it effectively) requires courage and commitment and know-how and sheer bloody minded command and leadership (and control not management) from the CO and engineers down to the most junior sailor. Remove that vital ingredient and any ship is lost – just look at those remarkable ships that struggled into Malta in WW2 (*SS Ohio* amongst them).

Perhaps we should not over quickly blame the builder – which is the easy route. And not to leave it at blaming the CO, NO, and OOW and watchkeepers for the collision.

There is a need to look at the crew-seaworthiness balance – and the excess claims for automation, and the HR regimes of soft management controlled by OHS to the extent it prevents thinking and creates deliberate knowledge blindness. Crews may no longer be able to speak the obvious truths to power (Politicians, Bureaucrats, Defence Industry, Scientists, Admirals, Experts).

UNDER-CREWING/ INVESTMENT IN FRIGATES AND DESTROYERS

R.C. Blake NLA Senior Defence Adviser

Work undertaken by Philip Pugh [3] considered cost per unit size, or cost per kilogram of Basic Mass Empty (BME). He applied this modelling to Frigates / Destroyers (FF/DDs) and to Submarines (specifically SSNs). Further research was undertaken at [4] and continues to be the subject of scrutiny.

Taking forward cost per BME it is possible to develop modelling for Complement (or crew size) per BME over the timespan from the last Revolution in Maritime Affairs (the 1970s) to 2015, and to compare FF/DDs with SSNs. [5]

Considering figure 2, taking into account the historic rate of inflation the actual cost of an SSN has reduced over the last 40 years, as forecast by Pugh in 2007. At the same time the crewing BME has remained in line with the reduction in real costs.

This means that a submarine with almost 2/3 more tonnage of a SSN built in 1975 costs the same or slightly less in 2015. This can only be achieved through sustained investment in design – giving more bang for the buck! From a design perspective, there are two submarines: Gen 2.0 (2000s) being up to 60% different to Gen 1.0 (1970s). In other words, they are two substantially different submarine-classes, 1975-2000, and 2001-.

Crewing sizes have also remained commensurate – with BME (size) supported by investment in new submarine designs. There is no cross-over between Crew and Cost BME. In real terms, a *Swifture-class* submarine with a crew of 118 and displacement of 4400 tons built in 1975 cost almost the same as an *Astute-class* submarine built in 2015 with a crew of about 100 and a displacement of 7400 tons.

Defence Cost Inflation

Figure 3 tells a completely different story. Based upon a T42 built in the 1970s and a Type 45 in the 2000s, the Cost BME curve indicates that there has been no fundamental change in designs between the 1970s, and today. No Revolution in Maritime Affairs for

Figure 2

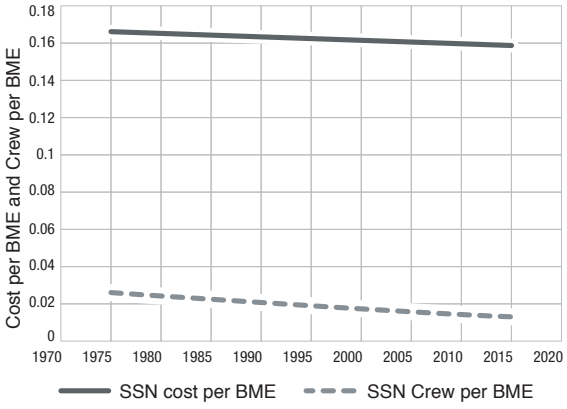
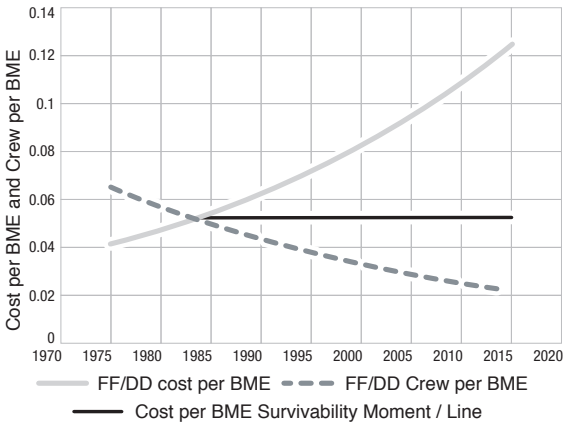


Figure 3



FF / DDs, unlike submarines. In practical terms, allowing for historic inflation, the cost of a Type 45 in 2010 is twice the cost of a Type 42 (per BME) in 1975. Meaning that the UKRN could afford only 6 Type 45s in 2010, as opposed to 12 Type 42s in the 1970s – or the RAN 3 AWDs. This is not the case for submarines, which are now costing less per BME. If an equivalent BME had applied to FF/DDs in 2015, it might have meant the choice between 20 Type 45s at the same size as a Type 42 – or 12 at the current tonnage.

In real terms costs are now similar – a Type 45 costs around £1.1 billion and an Astute about £1.2 billion. As significantly, the Type 45 design per cost BME is almost 70% the same as it was in 1975. The design simply has not changed. This is a bit like keeping on building the same Mini Minor design (with its basic safety features, lack of airbags, Bluetooth, radio, etc.) and selling it at twice the [real] price today as it cost in the 1970s. The Brits tried it and failed – like the Soviet Trabant! Eventually the UK sold off the remains of their car industry (to China); while foreign car builders now export more cars built in the UK than ever before (at improved quality and quantity). And BMW builds Minis in Oxford…

Survivability

Considering figure 3, a cross-over occurred between the cost and crew BME curves. This is significant, because it would appear that risk was being taken against crews – assets were being sweated, rather than investing in new designs and crewing models. Figure 3 predicts that HNoMS HELGE INGSTAD at 5290 tons would have a crew of about 150. She reportedly had 137 crew, on sinking. If the cross-over is used as the 'survivability moment', then for this design of FFs (tracing back to the FFGs / T42s of the 1970s) the INGSTAD should have had a crew of about 275. Risk had been taken against the crew – putting survivability of this frigate-version at risk.

There have been a number of ship-life threatening incidents; including HMS BRAZEN (F91) in 1995; HMS NOTTINGHAM (D91) in 2002; and more recently USS FITZGERALD (DDG-62) and USS JOHN S. MCCAIN (DDG-56). In each incident, the ship was saved despite grave risk of sinking – after the automated fixtures had failed and relying on their crews alone. In all examples the crews were 220-280 strong and above the survivability line, figure 3.

Fitting the crew or crewing the fit?

Just as for ships, a power law applies: one sailor or one ship can only occupy so much space at any one time. Automation will only go so far. In the case of FF/DDs it appears that newer ships have in fact been dis-automated. The crews no longer fit the ship – they are operating unknowingly and sub-critically below the 'survivability line'.

Another more serious consideration is what happens when a ship is hit. The damage to USS COLE (DDG-67) attacked in 2000 looks very similar in size and place to that suffered by KNM HELGE INGSTAD. USS COLE with a crew of 280, and despite losses survived. The 2016 attack on the Incat-built *HSV-2 Swift* left it battered but not sunk – and capable of maintaining steerage and way. This raises worrying questions as to whether the INSTAD could survive such a relatively low-intensity attack?

There appears to be a juncture – current FF/DD versions are no longer 'fit for purpose', or fitted to the sailors that crew them. The Type 26, *Hunter-class*, despite many strengths, at £1 Billion a pop, a crew of 118 and at 6,900 tons, is not a fundamental redesign. In fact it may be 'maxed out'; at the end of the limb (like the Navantia designs) – another 1970s Mini. The UKRN needs 20 such ships, it is getting 8 – and this NLA examination suggests the crew necessary to guarantee its survivability in combat needs to be at least twice as large.

GREENWICH STATION

In October 2018 BAE-Lockheed Martin announced the successful sale of the Global Combat Ship design to Canada and for 15 Canadian Surface Combatant (CSC) ships. In total 32 vessels are under order including 9 *Hunter-class* frigates for RAN – only 8 Type 26s will be delivered to the British Royal Navy.

Dostoevsky observed that 'the degree of civilization in a society can be judged by entering its prisons'. In maritime nations 'the degree of civilisation can be judged by their Navies'. By this yardstick Britain is in crisis – the Royal Navy was the UK, and Britain its Royal Navy. Warned not to treat its people poorly and redund too hard (by RAN and USN in 2010) the RN went ahead. They broke the covenant – and now cannot recruit even from high-unemployment, traditional seafaring communities. Hence recruiting French and US Coast Guard sailors – and now opening the door to 'whole of Commonwealth'.

An indication of the crisis – which may only be resolved on Brexit – occurred in December when the head of MI6, Alex Younger, warned 'Russia or any other state intent on subverting our way of life not to underestimate our determination and our capabilities, or those of our allies.' UK Deterrence no longer works, and with up to 500,000 Russians living in UK/London (equivalent to the city of Kirov on the Volga) who is kidding who? Russia has done its homework – the RN can no longer deter and the state of its Navy (ships and crews) will take decades to repair, if ever. A real tragedy just as the world needs the UK back on deck. ■

NOTES

[1] Admiral of the Fleet David Richard Beatty, at the Battle of Jutland, 31 May-1 Jun 2016.

[2] Sarhin, T.H. and Goldberg, L.L. (1962) Stability and Buoyancy Criteria for US Naval Surface Ships, *Transactions SNAME*, 1962.

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

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

[5] Atkinson S. CJ, Skinner, K.F. Joiner, & N.H.M. Caldwell. (2018) Naval Ship Design's Critical Juncture: An imminent Revolution in Naval Affairs. *Unpublished - at Final Draft for publishing Presented as Awaiting the next Revolution in Naval Affairs*, International Maritime Conference, 3 October 2017

DRY BULK SHIPPING

In the October- December issue 'I' described the duties of a Shipbroker.

Now if you want to charter a ship, there's a range to choose from. How much do you want to load and where do you want it to go ?

Vessels

particularly in the Dry Bulk sector vary immensely in size, from around 3,000 to over 300,000 tonnes, many designed to meet the limitations of worldwide ports they serve.

Mini Bulk Carrier

100 – 130 m in length, less than 10 m draft – range 3,000 – 23,999 DWT.

These ships are generally employed as feeder ships, for short sea voyages or accessing smaller ports without restriction.

Handysize

Medium size bulk carriers between 24,000 – 35,000 DWT (130 – 150 m) in length, 10m draft. As the name implies they are capable of carrying a variety and quantity of bulk cargoes and generally 5 holds and fitted with their own cargo gear for loading and discharge.

Handymax

Covering bulk carriers in the 35,000 – 50,000 DWT range, 150 – 200 m, 11 – 12 m draft. Primarily used for dry bulk cargoes such as parcels of iron ore, coal, cement. fertilizer, steel products and grain. Generally 5 holds and almost invariably geared.

Supramax

Vessels of this type have become more popular, 50,000 – 63,000 DWT

Very popular with dry cargo shippers, 5 holds, geared with 25 – 40 t cranes and grab fitted.

Panamax

Vessels constrained by the former dimensions of the lock chambers of the Panama Canal 1,050 ft (320.04 m) in length, 110 ft (33.53 m) width and 41.2 ft (12.56 m) draft and an air-draft not exceeding the height of the Bridge of the Americas at Balboa. Therefore the strict ship dimensions were not to exceed 965 ft (294.13 m) in length, 106 ft (32.31 m) in width and 39.5 ft (12.04 m) in draft. This restricted bulk carriers to about 76,000 DWT or container ships to around 5,000, 20 ft containers (teu).

New Panamax

In 2009 the Panama Canal Authority published the dimensions of a third lane of locks to accommodate larger ships known as New Panamax. New Panamax limits are 1,200 ft (366 m) in length, 160.7 ft (49 m) in width and 49.9 ft (15.2 m).

The new locks opened in 2015. This excludes ships in the Ultra Large Crude Carrier (ULCC) and Very Large Crude Carrier (VLCC) range and container vessels exceeding 13,000 teu.

Capesize bulk carriers

230 – 270 m in length, 17m in draft, 80,000 – 199,000 DWT , 7 – 9 hatches, too large for the Panama Canal, trade from the Atlantic via the Cape of Good Hope.

Very popular in the Australian coal and iron ore trade, though the trade now commonly employs, Very Large Bulk Carriers (VLBC) 200,000 DWT plus.

Suezmax

the largest vessels which can pass through the Suez Canal, which is dictated to by draft, previously 62 ft (18.90 m), now…..

There are a number of important seaways and ports which have their own recognised restrictions and dictate the draft and dimensions of ships.

Malaccamax

330 m approx., 20 m draft, 300,000 DWT. The largest vessel which can pass through the Straits of Malacca.

Setouchimax

299.9 m max. 16.1 m draft 205,000 DWT maximum allowed for ports in Setouchi, Sea of Japan.

Newcastlemax

(Usually Capesize) 185,000 DWT – Maximum allowably beam 47 m.

Dunkirkmax

289 m. max 175,000 DWT approx. Maximum allowable beam for eastern harbour lock at Dunkirk.

Kamsarmax

Approximately, 81,600 DWT Bulk CarrierMaximum length overall 229 metres, larger than a Panamax, suitable to berth at the Port of Kamsar (Republic of Guinea), where the major loading terminal for bauxite is restricted to vessels not more than 229 metres.

Seawaymax

226 m max. 7.92 m draft 28,502 DWT, the largest vessel that can pass through the locks of the St Lawrence Seaway.

The New Panama Canal Extension Opening in 2016.

THE VICISSITUDES OF A SHIPMASTER

A letter to Head Office

Dear Sirs:

It is with regret and haste that I write this letter to you. Regret, that such a small misunderstanding could lead to the following circumstances, and in haste in order that you will get this report before you form your own preconceived opinions from reports in the world press. For I am sure that they will overdramatise the affair.

We had just picked up the pilot and the Apprentice had returned from changing the 'G' flag for the 'H' flag, and this being his first trip, he was having difficulties in rolling up the 'G' flag. I therefore proceeded to show him how it should be done. Coming to the last part I told him to "let go". The lad although willing was not too bright, necessitating my having to repeat the order in a sharper tone of voice.

At this moment the Chief Officer appeared from the chartroom where he had been plotting the ships passage, and thinking that it was the anchor that was being referred to, repeated the " let go " order to the Third Mate on the foc'sle. The port anchor, having been cleared away but not walked out, was promptly let go. The effect of letting the anchor drop from the pipe while the vessel was proceeding at full harbour speed proved too much for the windlass brake, and the entire length of the port cable was pulled out by the roots. I fear that the damage to the chain locker may be extensive. The braking effect of the anchor naturally caused the vessel to sheer in that direction and towards a swing-bridge that spans a tributary to the river up which we were proceeding.

The swing-bridge operator showed great presence of mind by opening the span for my vessel to go through. Unfortunately he had not thought of stopping the vehicular traffic. The result being that the bridge partly opened and deposited a Volkswagen, two cyclists and a cattle truck on the foredeck. My ships company are at present rounding-up the contents of the latter, which from the noise, I would say are pigs. In his effort to stop the progress of the vessel, the Third Mate dropped the starboard anchor. Too late to be of any practical use, for it fell on top of the swing-bridge operators control cabin.

After the port anchor was let go and the vessel started to sheer, I rang 'full astern' on the engine room telegraph, and personally telephoned the Engine Room to order maximum revolutions. I was informed that the sea temperature was 53 degrees,and was asked if there was going to be a film tonight. My reply would not contribute constructively to this report.

Up to now I have confined my report to the activities at the forward end of my vessel. Back aft they were having their own problems. At the moment the port anchor was let-go, the Second Mate was supervising the making-fast of the after tug,and was lowering the ships towing spring onto the tug. The sudden braking effect of the port anchor caused the tug to 'run in under' the stern of my vessel, just at the moment when the propeller was answering my double ring for 'Full astern'. The prompt action of the Second Mate in securing the inboard end of the towing spring delayed the sinking of the tug by some minutes thereby allowing the abandonment of the tug.

It is strange, but at that very moment of letting-go the port anchor, there was a power cut ashore. The fact that we were passing over a 'cable area' at the moment could suggest that we may have touched something on the bottom of the riverbed. It is perhaps fortunate that the high-tension cables brought down by the foremast were not live, possibly they had been replaced by the underwater cable. But owing to the shore blackout, it is impossible to say where the pylon fell.

It never fails to amaze me, the action and behaviour of foreigners during moments of crisis. The Pilot for instance, is at the moment huddled in the corner of my day-cabin, alternately crooning to himself and crying, after having consumed a bottle of my gin in a time that is worthy of inclusion in the Guinness Book of Records. The tug captain, on the other hand, acted violently and had to be forcibly restrained by the Steward, who now has him handcuffed in the ship's hospital where he keeps telling me to do impossible things with my ship and my person.

I enclose the names and addresses of the drivers and the insurance companies of the vehicles on my foredeck which the Third Officer collected after his somewhat hurried evacuation of the foc'sle. These particulars will enable you to claim for the damage that they caused to the railings at number one hold.

I am enclosing this preliminary report, for I am finding it difficult to concentrate with the sound of the police sirens and their flashing lights. It is sad to think that had the Apprentice realised that there was no need to fly pilot flags after dark none of this would have happened. For the weekly Accountability Report I will assign the following casualty numbers : T75001 to T75100, incl.,

Yours very truly,

Master

An apocryphal Merchant Navy 'story' from the 1960s/1970s.

The Free Sea

The American Fight for Freedom of Navigation

James Kraska and Raul Pedrozo

Naval Institute Press (15 July, 2018)

ISBN-13: 978-1-682471166

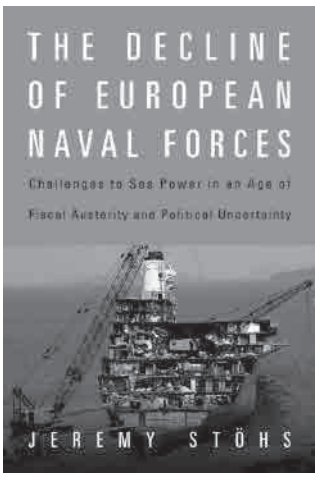
Hardback: $55.50

James Kraska as a retired USN Officer served as ocean and law and policy advisor to the US Joint Staff. He is Chairman and Howard S. Levie Professor at the U.S. Naval war College and has taught at Harvard Law and Duke. Raul Pedrozo is a retired U.SN Officer and served as the senior legal adviser to Navy Special warfare Command and U.S. PACOM. He is a visiting fellow at the U.S. War College Stockton Center for International Law.

This is an important book to begin 2019 on, and makes a fundamental contribution. It traces the historical virtues of laws of the sea, and their interpretation through Grotius, to the U.S. Revolutionary wars, through to the current day and the South China Sea. It traces the USN's established position of precedence to challenge any claims that limit and constrain Freedom of Navigation on the High Sea. Only the RN can offer a similar longstanding position – although, unlike the U.S., the UK is a signatory of UNCLOS and no longer really has the power to support the U.S. in FONOPS. China similarly is a signatory to UNCLOS but has chosen to interpret the laws to its advantage and to create a clear challenge to the U.S. Australia's position is much more nuanced, and it appears most unlikely that (despite a number of close approaches), the RAN and DFAT will mount a concerted FONOPS campaign in support of the U.S., on its own.

Challenges on the High Seas are not new – but as discussed in the following reviews, the U.S. has to come into the dragons parlour, its bays and peninsular – and the PLAN can wait it out close to its new bases. The central Malaysian peninsular is pivotal, and core to that is the Mekong. The current western approach (rich in human rights hypocrisy) rather than enabling natural maritime allies to align is doing rather more to push them towards China. For example Myanmar, Thailand, and even the Philippines. Interestingly and not reported on, President Trump has done more to bring these countries into the tent, and to mount the first concerted pol-mil resistance to Chinese expansionism in a decade.

The problem with this book is that it stresses an American-alone approach; rather than a America-with-allies strategy. FONOPS it is claimed is a public good – but many in the region see it more as a public nuisance. A key reason is that ASEAN nations see the U.S. Navy as being overstretched, no longer peerless, and too small now to mount an effective regain on at least a dozen fronts, including in Europe. This points back to the review of Frigate / Destroyer designs presented in Flash Traffic. To be effective, the USN needs to be twice its size, today. And current USN designs and budgets are not going to allow for the concerted expansion in the necessary timeframe to match the PLAN, locally. Nevertheless this is an important read, pertinent and illuminating.



The Decline of European Naval Forces

Challenges to Sea Power in an Age of Fiscal and Political Uncertainty

Jeremy Stöhs

Naval Institute Press (15 Apr, 2018)

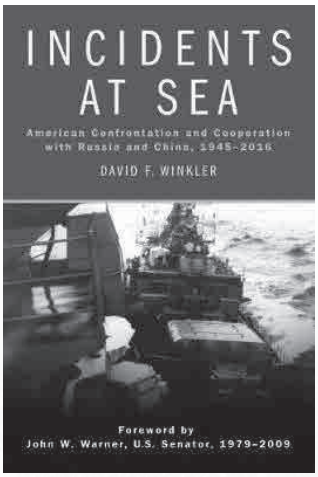
ISBN: 978-1-68247-308-5

Hardcover: $52.50

Jeremy Stöhs spent five years as a Police Officer, Austrian Federal Police He is an Austrian American defence analyst and PhD candidate at the Institute for security Policy at Kiel University and a non-resident fellow of the Austrian Center for Intelligence, Propaganda and Security Studies.

The authors details are generally set out at the beginning of *THE NAVY* book reviews exactly because our readers like to know the connection between the author and the sea. It is essentially the question we all ask the 'new joiner' – "where have you come from, what have you done, who do you know?" We also want to know who has served, and who has not – exactly so we can determine whether to listen, or pass. On this basis, the author from a 'central European nation' and a land-locked country, whose Navy (then the Austro-Hungarian Navy) was disbanded a 100 years ago at the end of WW1, does not get off to a good start! And yet, and yet this is an important book exactly because it is written by a European from a continent that is increasingly sea blind, and really now has only one Navy of International reach and import – the French Navy (La Royale). There are parallels and echoes of this book to be found in Douglas Murray's (2017) book *The Strange Death of Europe: Immigration, Identity, Islam* in which Murray explores why European civilization has failed and is facing catastrophic collapse caused first by the combination of mass migration of new peoples into the continent together with Europe's anaemic birth rates; and secondly by what Murray describes as "the fact that… at the same time Europe lost faith in its beliefs, traditions, and legitimacy". It is this loss of belief, traditions and legitimacy that Stöhs gets at, which of course has singularly contributed to the mass migration to Europe's borderless borders, generally by sea. As Professor Julian Lindley-French (a *NAVY* contributing-author) observed in his 2010 Hudson Lecture 'New Britain, New Navy': "a Navy without a strategy is no Navy at all". Stöhs apposite analysis gets at this, a continent that has lost or squandered its "belief, traditions and legitimacy" no longer has the ability to think in terms of its own interests, necessary to form a strategy. In fact, such a policy – which is at the heart of the EU (if not Europe) – is, as we now know, a policy of appeasement, disarmament, and de-industrialisation. Or taking the toys from the boys – which lay at the origins of the European Steel and Coal Pact (forerunner of the EU) to pacify the Ruhr between France and Germany.

This is an important book from a social scientist who actually tries to get inside the science and to understand the reasons why European nations have 'traded away' their navies for security and access to own and global markets – in which real power is an overhead. There has been a fundamental mis-understanding of the role of Navies in President Theodore Roosevelt's words 'not to provoke war, but ensure and guarantee the peace' – which Stöhs addresses. While he gets at the failures, he does not necessarily understand the Defence economics provided in this issue, see Flash Traffic. He has in effect failed to match designs, with costs, with crewing – as if the decline was not also connected to design, and therefore the ability to design. Back to strategy… Stöhs conclusions make for grim reading – and he is right to observe '(after Colin S. Gray) 'that over the last 500 years…great sea powers or maritime coalitions have either won or occasionally drawn every major war in modern history'. A conclusion Stöhs might also have drawn is that EU membership is antithetical to Navies – the UKRN can only recover by Britain leaving the EU. And other nations, including France, are also now considering this option. A good book and summer read!



Incidents at Sea

American Confrontation and Cooperation with Russia and China, 1945-2016

David F. Winkler

Naval Institute Press (15 December, 2017)

ISBN-13: 978-1-682471975

Hardback: $45.00

David F. Winkler served in the USN between 1980 and 1990 and has been a Naval historian at the Naval History Foundation, Washington, since 1997 and vice president, oral history mid-Atlantic region (OHMAR), since 2003. He has been a Commander United States Naval Reserve, since 1996. He took a Bachelor in Political Science, Pennsylvania State University in 1980, a Master of Arts in International Affairs, Washington University, St. Louis, 1991 and his Doctorate in History is from the American University (1998).

At a time when incidents at sea are again on the rsie this is a timely and well-researched book. It does however pose the problem all authors face – whether to publish, or to wait a little longer before publishing. Written in 2016-17, and published at the end of 2017 and covering the period up to 2016 the book may be prescient, and too early to capture the rapidly changing contours to our North. The critical issue that the authors explore is how the Soviet Union and the U.S. managed – sometimes through third parties, and occasionally through signalling akin to the 'Prisoner's Dilemma', to find ways of coexisting at sea. The book explores the diplomacy that allowed the Cold War to be managed, and ways in which innovative approaches could diffuse complex rivalries – often at more junior levels. The comparisons are though less moot with regard to the Dragon's Spear, and making comparisons with the 1972 Incidents at Sea Agreement. The Soviet Union never really challenged as peer US Navy dominance – and always had to reach out from limited warm-water ports that might easily be blockaded. As in the Bosporus. It had a blue water reach – but limited capacity. And 1972 was another time when Russia needed the rules to survive and avoid the type of 1980-1985 arms race (star wars) that ultimately broke them. China is not in the same place, and it is the U.S. that has been bankrupted on the battlefields of Iraq and Afghanistan and during the financial crisis. Its Fleet is increasingly ageing and its refresh (build) rates are in decline. Under current projections despite a nominal increase it will reduce in size again over the next 25 years – see Flash Traffic. The same is not the case with China, which is reaching out from the home base along its belt and connected sea roads to both bind the world to its order – and project hard power into the region from within its inner and outer string of pearls – the Dragon's Spear policy. China has no reason to agree to a revision of INCSEA – and such a revision, which may have been likely under Obama, is less likely under Trump. Trump will negotiate but he knows he would be arguing from a point of weakness – and he blames the Obama Presidency for appeasing China and allowing them to seize the South China Sea. It may be too late – and while this is an interesting technical treatise from a lawyers position, it actually offers few if any practical ways for redressing the situation. While giving praise for the USN and PLAN officers who have negotiated through Military Maritime Consultative Committees it is clear from recent incidents that they have not had the desired effect. In fact the situation may be escalating. No reason to stop jawing, of course – but maybe the time for negotiation not lawyering? Paper 3 by George Gadorisi in this issue of *THE NAVY* on the '...Law of the Sea...' probably offers more. A worthy read.

1ST PLACE

THE IMPORTANCE OF THE INTERNATIONAL LAW OF THE SEA TO AUSTRALIA'S GROWING ROLE AS A MARITIME POWER

By George Galdorisi

Few would argue that Australia has earned a well-deserved reputation as a nation committed to peace and stability in the Indo-Asia-Pacific region. This commitment depends not only on having a strong and capable Australian Defence Force, but also involves working with regional and global partners to achieve this goal. As the most recent Defence White Paper put it, "An important part of the Government's strategy is to continue to strengthen our alliances with regional and international partnerships to meet shared security challenges."

INTRODUCTION

Australia has achieved the goal of being recognized as an important regional – as well as a growing international – power for more than two centuries by combining both hard and soft power. And as all Australians know, given the geography of the Indo-Asia-Pacific region, the most visible manifestation of Australia's power is demonstrated in the maritime regime. This has been true since the establishment of the nation, and is even truer today.

There is little question that Australia is enhancing its ability to wield hard power – especially in the maritime domain. The ADF and RAN are embarked on an ambitious program to upgrade Australia's Defence Force – and especially the Royal Australian Navy. The Defence White Paper sets out the most ambitious plan to regenerate the RAN since the Second World War. Recently, the Government's Naval Shipbuilding Blueprint laid out details of this plan, including a wide range of new large and small naval combatants.

Australians know that hard power is not enough. The nation has exercised soft power extensively – and successfully – to secure the safety and security of the Australian people, as well as the defence of the nation's territory and interests. Now that the Naval Shipbuilding Blueprint has been revealed and Australia's ability to field hard power in the maritime domain seems to be well on track, it is fair to ask: Can Australia do more in the soft power realm to cement its reputation as an important maritime power? If so, might Australia do more to leverage the 1982 United Nations Convention on the Law of the Sea (otherwise known as UNCLOS) in support of its core national interests?

31 October 1958 Signature of the four convenstions adopted by UNCLOS.

WHAT IS UNCLOS AND WHO BENEFITS THIS TREATY?

Column space doesn't permit a detailed explanation of the 1982 United Nations Convention on the Law of the Sea. For those readers of *THE NAVY* interested in the detailed history of this accord – the most comprehensive international treaty ever negotiated – a host of Australian scholars have written extensively about this convention. As of this writing, 168 states – including Australia – are parties to this international treaty.

For nearly 350 years from the times of Grotius and Selden in the early 17th Century until the 1950s and 60s, the international law of the sea was a largely static phenomenon dictated by Western maritime powers. The freedom of the seas was the dominant paradigm, with only a narrow belt of territorial sea under the jurisdiction of coastal states.

All this started changing, however, with the greater number of independent states in the period of de-colonization following World War II. The influence of these states on the law of the sea is evident in the UNCLOS, particularly with its introduction of a twelve mile limit to the territorial sea, the regimes of the exclusive economic zone (EEZ), and that of the archipelagic state.

These trends associated with the evolution of the international law of the sea have coincided with the shift of economic and maritime power from the West toward the East. While the centuries when the Western maritime powers view of the law of the sea prevailed and were primarily Euro-Atlantic focused, the 21st Century view of the law of the sea will be the Indo-Asia-Pacific focused.

Ships involved in Senkaku Diaoyu Diaoyutai Islands Dispute in the 1990s.

An important trend in the Indo-Asia Pacific region is the movement by coastal states towards increased regulation of their adjacent waters. Greater concern for the protection of the marine environment is a driving force for this development although regional countries, including all of the major Indo-Asia-Pacific Nations, such as China, India and Japan, are also seeking increased control of their waters due to security concerns.

Trends toward broader coastal State control of adjacent waters and the growing territorialization of the EEZ are evident in the Indo-Pacific region. The long littoral is literally awash with dilemmas for maritime security, the provision of good order at sea, and the management of regional seas. From east to west, major issues relate to the Strait of Hormuz, the Horn of Africa and the Arabian Sea, the Bay of Bengal, the Malacca and Singapore Straits, and the South China Sea.

Closer to home, the maritime environment around Australia is becoming more complex and contentious. Over the past decade, there have been increased differences between Indo-Asia-Pacific nations on maritime issues, such as the disputes between China and Southeast Asian nations in the South China Sea; the disputes between China and Japan over the Senkaku Islands in the East China Sea; North Korea's sinking of the South Korean warship *Cheonan;* and the differences of view between the United States and major Asian nations over freedoms of navigation.

The situation in the South China Sea began to deteriorate even further earlier this decade. Robert Kaplan puts it starkly, "Just as German soil constituted the military front line of the Cold War, the waters of the South China Sea may constitute the military front line of the coming decades." Incidents involving patrol vessels, military aircraft, fishing vessels or seismic research vessels of the claimant countries have become regular occurrences.

China has been involved in most of these incidents leading to perceptions of increased Chinese assertiveness. The claims by China and Vietnam to all the features of the sea are the most intractable aspect of the sovereignty disputes. More generally, the unilateral assertions of sovereignty by the countries claiming jurisdiction over offshore features in the South China Sea is a major stumbling block to effective management of the sea and its resources, as well as to good order within it.

Paradoxically and perhaps unintentionally, Australia seems to have supported, rather than opposed, these trends of more exclusive coastal state control of adjacent waters with actions such as the introduction of compulsory pilotage in the Torres Strait, the declaration of prohibited anchorage areas around undersea cables in the EEZ, the introduction of mandatory ship reporting in parts of the EEZ adjacent to the Great Barrier Reef, and the declaration of the entire Australian EEZ as a submarine exercise area.

While Australia does not flout maritime rules laid down in UNCLOS, it is fair to ask whether the nation would be better served toning down some of these assertions of jurisdiction, and more fully supporting UNCLOS as a demonstration of the nation's commitment to the rule of law on the oceans. A more faithful adherence to UNCLOS would serve two purposes: Better protect Australia's security and prosperity, while also demonstrating its commitment to wielding soft power in the region and beyond.

AUSTRALIA'S GEO-STRATEGIC MARITIME ENVIRONMENT

The most common map of the world is the Mercator Projection centered on the Greenwich meridian. The large land masses of Europe, Asia, Africa and the two Americas are the main eye-catching features of this map. Australia is tucked away in the corner with the largest of the world's oceans, the Pacific Ocean, split in two. The Western Pacific barely appears on the right-hand side of the map with a little more of the Eastern Pacific on the left-hand side. This map is the *continental* view of the world.

As Robert Kaplan suggested, first in his Foreign Affairs article *"Center Stage for the 21st Century,"* and later in his best-seller, Monsoon, such a map completely ignores the political, economic, strategic, and military shifts that are *already* making the 21st Century not a American-Euro Century, or an Asian Century, but and Indo-Asia-Pacific Century. And only one nation is firmly situated at the nexus of three important oceans – Australia.

This alternative map of the world can help Australians understand this new opportunity and obligation is one centered on the meridian of longitude of 180 degrees. The eye is caught by the immensity of blue that dominates the land masses. The Pacific and Indian Oceans are now the most prominent features of the world. Such a map provides an *oceanic or maritime* view of the world with a true impression of the 70% of the earth's surface covered by water.

This oceanic or maritime view of the world is the one that Australians should embrace. It is a powerful visual image both of the importance of the oceans to Australia and of the emerging need for Australia to play a leading role in the management of oceanic affairs in the adjacent oceans. While the map puts Australia near the centre of the world, it also places Australia at the heart of a great oceanic domain formed by the Pacific, Indian and Southern Oceans.

The Indo-Pacific region includes the "long littoral" stretching from the Persian Gulf and the Red Sea to the South and East China seas.

In 1999 North and South Korea disagreed over crab-fishing rights in the Yellow Sea and sent Frigates to patrol.

Australia has one of the largest areas of maritime jurisdiction in the world. This is vitally important to the nation's future prosperity and security, but managing this area is a major national challenge. Within this region, Australia has the largest area of maritime jurisdiction with an EEZ of 8.51 million square kilometres (mill.sq.km) followed by Indonesia (6.16 mill.sq.km), India (2.30 mill.sq.km), the Philippines (1.89 mill.sq.km) and China (1.36 mill.sq.km).

WHY AUSTRALIA SHOULD FULLY EMBRACE THE LAW OF THE SEA TREATY

As a nation with growing regional interests, and one that is recognized as a proponent of the rule of law on the oceans, Australia has a major stake in supporting and the rule of law at sea, as well as using the law of the sea as a tool to validate Australia's position as a maritime power. Australians would be well-served to ask the Government the following questions: How can Australia work more proactively with its neighbours to promote a stable regional environment that reflects shared maritime concerns and mitigates the emergence of threats? How can Australia merge the hard power of its naval capabilities with the soft power it already delivers through its well-recognized reputation as a proponent of the rule of law, as well as participation in a complex network of international forums?

Australia has the potential to do more to facilitate effective management regimes for adjacent oceans and seas, particularly through promoting a common understanding among regional countries of key maritime regimes under the international law of the sea.

Direct threats in the maritime environment around Australia include the risks of interstate or intrastate conflict; maritime terrorism; piracy; trafficking in drugs, arms or people; and Illegal, unregulated and unreported fishing. Indirect threats include food insecurity, energy insecurity, climate change, loss of marine biodiversity, marine pollution, ocean acidification, marine natural hazards, and the impact of the oceans on drought. Most of these threats are increasing.

These direct and indirect security and management challenges are inextricably linked, and Australia should be on the cutting edge of finding effective solutions and mobilizing multi-lateral action. With the RAN's long tradition of cooperative engagement with the navies and coast guards of the region, it is well-positioned to play an important leadership role in leading these international naval dimensions of these multi-lateral actions.

A fundamental challenge with the provision of good order at sea in the Indo-Asia-Pacific region is that most regional countries have very different perspectives of key law of the sea issues, particularly the ability of a warship to transit the territorial sea without providing prior notification to the coastal State, and rights and duties in the EEZ.

As mentioned earlier, Australia claims an EEZ of 8.51 million square kilometres around the continental land mass and island territories. This is the third largest EEZ in the world. This EEZ increases to 10.19 mill.sq.km if the EEZ claimed around the Australian Antarctic Territory (AAT) is included (The legal continental shelf off the continent and territories has an area of 10.8 mill.sq.km (or 13.52 mill.sq.km if the one around the AAT is included).

The Commission on the Limits of the Continental Shelf adopted recommendations that confirmed the location of the outer limit of Australia's continental shelf in nine distinct marine regions. This decision gives Australia jurisdiction over an additional 2.65 million square kilometres of continental shelf that extends beyond 200 nautical miles from its territorial sea baseline (excluding a possible

Chinese Coast Guard confronting Filipino fishermen near Scarborough Shoal in the South China Sea 2015.

0.68 mill.sq.km of extended continental shelf from the AAT). These figures mean that the maritime domain over which Australia has at least some jurisdiction is nearly twice the size of the continental land mass of Australia.

When Australia's claim to the AAT land mass is included, Australia becomes the country with the largest jurisdictional claim to an area of the earth's surface - approximately 28.5 mill.sq.km, of which about half is over ocean or sea. The AAT is nearly one half of Australia's land territory but, even without this area, Australia would still rank second (after Russia) in terms of the area of the earth's surface under some form of national jurisdiction. This makes Australia an oceanic and environmental superpower with a clear responsibility to take a leadership role in managing regional oceans and seas.

WHAT AUSTRALIA MIGHT DO TO BETTER LEVERAGE UNCLOS

As the only country comprising a continent surrounded by water, Australians recognize that the 21st Century represents a decided shift "from Mackinder to Mahan." Said another way, perhaps the most profound difference between the 20th and 21st centuries is this: Europe is a landscape, the Indo-Asia-Pacific is a seascape. The nexus of world power is shifting dramatically to this region. As the only country-continent fronting the Indian, Pacific and Southern Oceans, Australia is a critically important player in this region with a clear responsibility to promote maritime cooperation in all its dimensions.

It is for this reason that Australia should do more to leverage its positive international and regional reputation and the growing prominence of the RAN as a trusted partner to regional navies. Australia's future largely depends on how it *acts* as a maritime

The Pakistan Port of GWADAR an extended Pearl of China's One Belt One Road Policy.

The View Going South from Quo Vadis Australia, SRA&JJB© 2018

power. Australia has a large stake in the security and management of the Indian, Pacific and Southern oceans, as well as the seas lying to its north—the Timor, Arafura and Coral seas. The vehicle for the effective management of these waters – one agreed to by 168 states parties – is the 1982 United Nations Convention on the Law of the Sea.

As noted earlier, Australia is well on its way to building a modern, blue water navy that can wield hard power – when and if needed – to ensure the security and prosperity of the nation, as well as its allies and friends. Australia can most effectively demonstrate its commitment to soft power – diplomacy, economic assistance and adherence to the rule of law – by demonstrating its commitment to the letter and spirit of UNCLOS. Among the actions the Australian Government should take:

- Except where issues of vital national security are concerned, demonstrate Australia's commitment to the rule of law by strictly adhering to the UNCLOS provisions, especially with respect to its territorial sea, international straits and EEZ.
- Leverage Australia's security and economic relationship with the island nations of the South Pacific by helping them develop the capability *and* capacity to effectively enforce UNCLOS provisions in their areas of maritime jurisdiction, including maritime surveillance and enforcement, search and rescue, marine scientific research and resource management.
- File diplomatic protests where regional nations make excessive maritime claims that not comport with UNCLOS.
- Join other nations conducting freedom of navigation patrols, especially in areas with overlapping claims such as the South China Sea. Such patrols are not, as many think, targeted at China. While China has expansive claims in this body of water, other nations – Malaysia, the Philippines, Taiwan and Vietnam, all have rival claims in the South China Sea.
- Host international conferences and symposia that support discussions on issues regarding the law of the sea. The Sea Power Centre-Australia has a well-earned international reputation for enhancing thoughtful dialogue on maritime issues. The Royal Australian Navy Sea Power Conference is another venue for enhancing this interchange.
- Some of the most well-respected writing regarding the importance of international law of the sea has come from Australian experts in this area such as Commodore Sam Batman, Anthony Bergin, Jack McCaffrie, Chris Rahman and others. Australia's Government and academic institutions must continue to nurture scholarship in this important area.
- While many consider the widely divergent views of the United States and China regarding maritime rights and freedoms in the South China Sea intractable, it is in no one's interest – especially Australia – if the maritime tensions between these two superpowers spin out of control and threaten regional stability. If any country is capable of having these two nations back away from their seemingly intractable positions – it is likely Australia.

Australia enjoys a well-deserved standing as a nation that is committed the rule of law. The 1982 United Nations Convention on the Law of the Sea protects the rights of Australia as both a maritime nation and a coastal state. Few nations benefit more from this international treaty than does Australia.

That said, the provisions of this accord must be both respected and enforced. For a host of reasons, many nations in Australia's neighbourhood have chosen to interpret UNCLOS in ways that threaten the peace and stability of the global commons. And if this peace and stability is undermined, Australia may well suffer more than most nations.

Australia has demonstrated a commitment to building a navy that can exercise hard power in the region and beyond, whenever the nation's security and prosperity is threatened. Now it would be well served to leverage UNCLOS to enhance its soft power. The result will be a more peaceful and prosperous Indo-Asia-Pacific region. ■

About the Author: Captain George Galdorisi, USN (Ret.) is a naval aviator who began his writing career in 1978 with an article in *U.S. Naval Institute Proceedings* and is a regular contributor to *The NAVY*. His Navy career included four command tours and five years as a carrier strike group chief of staff.

In addition to *The Coronado Conspiracy*, and *For Duty and Honor*: Rick Holden thrillers published by Braveship Books, he has written thirteen other books distributed by mainstream publishers, including four *New York Times* best-sellers: *Act of Valor*, the novelization of the Relativity Media film, as well as three novels in the rebooted *Tom Clancy's Op-Center* series. He is the author of *The Kissing Sailor*, which proved the identity of the principals in Alfred Eisenstaedt's famous photograph.

He is currently the Director of Strategic Assessments and Technical Futures at the Navy's C4ISR Center of Excellence in San Diego, California.

1ST PLACE

THE PEOPLE'S LIBERATION ARMY NAVY'S TYPE 001A AIRCRAFT CARRIER AND ITS IMPLICATIONS FOR AUSTRALIA

By Kelvin F Kurnow

The launch of China's first domestically constructed aircraft carrier on 26 April 2017 marked the most momentous paradigm shift, not only in the Chinese People's Liberation Army Navy's (PLAN's) strategic philosophy but it also introduced a new and important participant into the areas of carrier construction and operation. No longer was the West the primary proponent of aircraft carrier aviation, the launching of the Type 001A (tentatively named as the SHANDONG [CV-17] by some observers) meant the reality that this pre-eminence would not go unchallenged. In the UK and USA 2017 marked important developments in the areas of aircraft carrier design and construction, but the launch of the Type 001A marked a significant shift in the strategic balance.

INTRODUCTION

The Type 001A is a design derived from the *Kuznetsov-class* carrier LIAONING (Type 001) which was purchased as a hulk from Ukraine in 1995, refurbished and commissioned into service with the PLAN on 25 September, 2012. The LIAONING (CV 16) was laid down on 6 December 1985 at Shipyard 444 in Mykolaiv Ukraine, the only shipyard in the former Soviet Union which had built aircraft carriers including the four Kiev and the two Kuznetsov class.

THE TYPE 001A DESCRIBED

Incredibly the story of the LIAONING began with an ex-PLA basketball star, Xu Zengping, who sealed the sale for what would become China's first carrier. On March 19, 1998, Xu Zengping, in an open auction, outbid rivals from the US, Australia, South Korea and Japan. Secured for a knock down price of USD$20M the deal crucially included the sale of 40 tonnes of blueprints. This would have significant ramifications. It gave China access to the blueprints used

PLAN LIAONING (CV 16) Carrier Battle Group enters the Taiwan Strait en route to Hong Kong Jul 2017.

Type 001A (PLAN SHANDONG (CV-17)) Aircraft Carrier leaves Dalian Shipyard for Sea Trials May 2018.

for the construction for the LIAONING, and crucially plans to support construction of the Type 001A. Aided by access to these technical drawings China's development and deployment of aircraft carriers has been spectacular. In November 2016, less than four years after it was commissioned, LIAONING and her air wing were considered fully operational and ready for combat. Just eighteen months later, on the 13 May 2018 the Type 001A left a port outside the Dalian Shipyard for its first sea trial, signalling that China had completed its first domestically produced aircraft carrier in stunning rapidity.

While superficially similar to the LIAONING, the Type 001A (CV 17) is very different in concept. Both the ADMIRAL KUZNETSOV and LIAONING suffer from the misconception that the Kuznetsov class was built to operate as an aircraft carrier, as understood by Western navies. Russia describes the KUZNETSOV as a *Tyazholiy Avianesushchiy Kreyser* (TAKR or TAVKR) – 'heavy aircraft-carrying cruiser', and that is exactly what she is, relying on her missile armament for her main means of attack and defence, together with a complement of a few fighters to provide a further layer of self-defence. The Chinese comprehend it differently, and follow the doctrine and operating procedures of Western navies which consider the aircraft carried as the primary means of both attack and defence. Hence, in the LIAONING the silos for the twelve P-700 Granit (SS-N-19 Shipwreck) anti-ship surface-to-surface missiles located below the flight deck in the KUZNETSOV have been removed. This has freed up storage space for fuel or ammunition. In the Type 001A in addition to storage for more fuel and ammunition, this area is probably used for additional hangar space.

Superficially similar to the LIONING the Type 001A features both significant and minor design changes. The ship weighs about 70,000 tons full load, is 1,033 ft (315 m) long and has a beam of 246 ft (76 m) at the flight deck, which makes her approximately 4,000tons heavier and 34.5 ft (10.5 m) longer than her predecessor. There are many examples of where the Chinese have not merely reverse engineered the former Soviet vessel but have refined it, each pointing to her being used as an aircraft carrier in the strict sense of the term. For example, the 001A's ski jump has an angle of 12.0° instead of the 15.0° on the LIAONING. This is an angle ideal for launching the Shenyang J-15 fighter. Together with the enlarged hangar, the island which has been made smaller by 10%, and extended on sponsons in the aft-starboard quarter, space has been freed up allowing for up to eight more aircraft and helicopters to be carried. The island includes a second glazed deck which permits the bridge and flight control areas to be separate creating greater operational efficiency. It also features a faceted upper area of four AESAs for the Type 346A S-band radar.

THE AIR WING

The most significant component of the Type 001A's air wing is the Shenyang J-15 Flying Shark fighter. The J-15 is a reverse-engineered copy of the Russian Sukhoi SU-33 naval fighter designed to operate from the Short Take Off Barrier Arrested Recovery (STOBAR) carriers of the *Kuznetsov-class*. China has refined the design, equipping it with weapons, radar and systems of domestic origin which are superior to that of the Russian Sukhoi. Nevertheless, operating from a STOBAR carrier imposes severe limitations on an aircraft the size of the J-15 which at an empty weight of 17,500 kg (38,600 pounds) makes it over 6,000 pounds heavier than a Boeing F/A-18F Super Hornet. This makes it impossible for the fighter to launch with a full fuel and weapons load. Operating from the LIAONING J-15s have been seen carrying a pair of PL-12 medium-range air-to-air missiles (AAMs), along with a pair PL-8 short-range AAMs. Other J-15s were seen carrying YJ-83K Eagle Strike 83 anti-ship missiles (AShMs). In comparison to F/A-18, Lockheed Martin F-35C or Dassault Rafale M catapult launched carrier fighters these are very light loads. The difficulty of launching with a light fuel load is partially ameliorated by post-launch refuelling from other

Shenyang J-15 NATO designated Flanker Air Battle Group operationg from PLAN LIAONING (16).

J-15s carrying a Shanyang centreline buddy refuelling store. Despite the limitations imposed by STOBAR operations, the J-15 flown by a competent pilot would be a match for its western counterparts. Developments of the J-15 include the two-seat J-15S and the J-15D, an electronic warfare aircraft analogous to the EA-18G Growler. Each variant will offer additional capabilities over the baseline aircraft but will come with the additional problem of greater weight, only exacerbating the difficulty of operating these aircraft at heavy loads. Lacking catapults, both the LIAONING and Type 001A rely on Changhe Aircraft Industry Group (CAIG) Z-18J and Kamov KA-31 helicopters to provide airborne early warning (AEW). A typical airwing of the carriers would normally consist of four Z-18J early warning helicopters, six Z-18F Sea Eagle anti-submarine helicopters and two Harbin Z-9C search and rescue (SAR) helicopters.

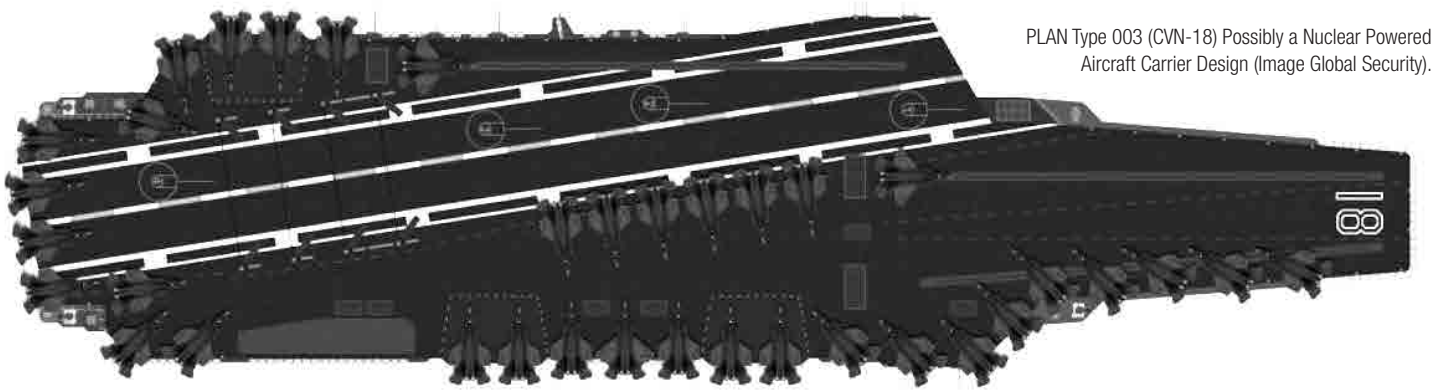
DEVELOPMENTAL PROBLEMS

Despite having proven their substantial credentials in the ability to reverse engineer both ships and aircraft, the Chinese copies of the Russian designs have suffered considerable difficulties. The Type 001A put to sea on 13 May 2018 for her first set of sea trials and returned five days later. Chinese state media declared it had completed 'all of its assigned tasks'. However, the carrier was returned to dry dock immediately after her maiden voyage. It is not possible to state why the carrier was laid up. Nevertheless, a possible insight is given by the fact that Sun Bo, the general manager of the China Shipbuilding Industry Corporation (CSIC) responsible for building the aircraft carrier, is now being investigated by the Communist Party's internal police for 'suspicion of serious breach of the party discipline and the law'. This would indicate that Sun Bo is being investigated for 'corruption', a charge levelled by President Xi Jinping against those who fail to meet his expectations. It would therefore appear that both its designer and the carrier itself have not met the President's expectations and problems with the vessel may be of major proportions.

The J-15 has also suffered from major problems. Referring to two crashes in April 2016 an unnamed Chinese military source told the *South China Morning Post* that 'the J-15 is a problematic aircraft – its unstable flight control system was the key factor behind the two fatal accidents two years ago'. As a result of the incidents the J-15 fleet was grounded for three months. Even though Chinese authorities have only admitted two crashes it has been reported by the same newspaper that out of a total of twenty jets produced, four have been lost. In addition to a series of unspecified mechanical problems with the aircraft, the shortcomings of STOBAR operations has not been lost on Chinese military press, which in 2013 articles described the Flying Sharks as 'flopping fish'.

THE FUTURE

Signifying a significant development, in mid-September 2016 photographs appeared online of a J-15 with a nose gear launch bar used for catapult launches. The aircraft has reportedly been tested using both the steam catapult and Electromagnetic Aircraft Launch System (EMALS) at Huangdicun Airbase in Liaoning province, northern China. Both catapult tracks are approximately 460 ft (140 m) long. (This is not the first occasion on which the PLAN has undertaken tests with catapults. In 1985 the catapult, arresting gear and landing sight were removed from the former HMAS MELBOURNE (R21) and installed at a base in Dalian on a replica flight deck where a modified Shenyang J-8 II was used for flight tests.) These trials are in preparation for the service entry of the Type 002 CATOBAR 85,000 ton aircraft carrier, probably in 2024. An image of the carrier was posted on Chinese social media service WeChat this year (2018) by the No. 701 Research Institute of the CSIC. It indicated that the carrier will be equipped with two bow and one waist catapult. PLAN sources have claimed the carrier will have EMALS rather than steam catapults. Given that the Type 002 will be conventionally powered and EMALS requires significant electrical power, usually provided via nuclear reactors, it is a significant achievement if indeed the Chinese have married the two technologies.



PLAN Type 003 (CVN-18) Possibly a Nuclear Powered Aircraft Carrier Design (Image Global Security).

The published image showed J-15 fighters and Xian Aircraft Corporation KJ-600 AEW aircraft parked on the flight deck. The KJ-600 is similar to the Northrop-Grumman E-2 Hawkeye and will provide a quantum leap in capability over the AEW helicopters carried by both the LIAONING and 001A. Speculation has long surrounded the future of the J-15 which has been a useful introduction for the PLAN into operating fighters from carriers, but it is now a dated design. It may possibly be replaced by the Shenyang J-31 Gyrfalcon fifth-generation stealth fighter, which is similar in size to the F-35, although it is powered by two engines as opposed to one on the Lockheed Martin fighter. If the Type 002 and subsequent PLAN carriers carry both the KJ-600 and the J-31 this would not only represent a significant increase in technologies, but also present a serious threat to USN supercarriers.

IMPLICATIONS FOR AUSTRALIA

The rapid and dramatic transition of the PLAN from a brown-water to a blue-water navy has considerable implications for Australia. China's growth as a naval power should be seen in the context of her desire to impose hegemony within the nine dash line, a nominal boundary within which the Chinese want to exercise sovereignty and control over all of the features, land, water, and the seabed. The South China Sea occupies most of the area within this line. Chinese claims within the boundary have led to armed confrontation, notably

with Vietnam and the Philippines which together which with denial of freedom of navigation signals that China is absolutely serious in pursuing its claims, legitimate or otherwise.

China is also seeking to expand its economic power through the Belt and Road Initiative (BRI) by developing infrastructure within China, across Europe, Asia, states in Eastern Africa and throughout the Indian-Pacific region. Chinese investment, through this and other initiatives, in what have been considered Australian spheres of influence are of great concern, not the least because investment comes in the form of loans. An inability to repay loans will inevitably lead to pressure being exerted and reparation required in one form or another. It is in this context that the Chinese desire to build a naval base in Vanuatu must be considered of huge concern.

Growing Chinese assertiveness, together with an increasingly belligerent Russia and the unresolved conflict with militant Islam means that the US and her allies could possibly be faced with multiple contiguous threats.

In the worst possible scenario western forces may be confronted by belligerent actions short of all-out war in the Baltic Sea, the South China Sea and the Strait of Hormuz. The USN would find it difficult, if not impossible, to confront major naval actions by Russia, China and a Middle-Eastern country simultaneously. At the core of any response would be a USN Carrier Battle Group (CBG) however, there would be insufficient resources available to respond to these three scenarios. In this instance the US would look to both the RN and MN (Merchant Navy) to provide carriers to supplement or even supplant US carriers to free up the latter for actions elsewhere. The US would also look to Australia to provide forces for support. Australia has an impressive naval shipbuilding programme going forward with the *Hunter-class* frigates and the Shortfin Barracuda submarines. Despite this impressive build-up Australia will lack one key component, which is organic sea-going naval airpower. In the face of China's stated aspiration to build at least three aircraft carriers, both Japan and Korea have determined that their navies will require carrier-borne fighters to respond to any potential aggression. To this end Japan and Korea are actively studying the deployment of F-35Bs on their *Izumo-class* helicopter destroyers and *Dokdo-class* amphibious assault ships respectively. Such thinking should signal to Australia that equipping the *Canberra-class* Landing Helicopter Docks with F-35Bs is prudent to provide fleet air defence, assistance to the USN and to protect its own interests in the face of any form of hegemony.

HMAS MELBOURNE II (R21) - Image: Naval Historical Collectection.

Maersk Triple-E Ship in build at night - a possible Versatile Modular System - Air Transport Carrier (VMS - ATC 01).

CONCLUSION

Given the huge technological and qualitative advances the PLAN has made, particularly over the past decade, China can no longer be regarded as an irrelevant brown-water navy. The launch and subsequent operational deployment of the LIAONING signalled that Beijing had serious aspirations to become a naval power and to match the USN in the Indian-Pacific region at least. The type 001A and the Type 055D destroyers are further signs of this intention. Even though the Type 002 will mark a step change in capability it cannot be ignored that the Type 001A is the most significant factor so far in securing the future of Chinese aircraft carrier construction, and her growing naval airpower. These realities, and given the current strategic environment, Australia could do well to prepare an adequate response to protect her own assets and those of her allies. ■

REFERENCES AND NOTES

1. For more extensive comments on this matter see my earlier article "F-35s for the Canberra Class LHDs: Choosing an LHD Design", *The Navy* April-May 2016, Vol 78 No 2, 11-14.

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HATCH: November 2018 RAN begins construction of its new OPVs at Osborne South Australia (Image Lurssen).

MATCH: US Navy Commissions Freedon-class variant littoral Combat Ship USS SIOUX CITY (LCS 11).

PROBABLE DESPATCH: HNoMS HELGE INGSTAD (F313) after collision and sinking Nov 2018.