Talk for League of Ancient Mariners by Chris Skinner in Sydney 7th May 2022

By Christopher Skinner

The following article is an expanded version of my address to the League of Ancient Mariners about MV Captain Cook in Sydney Harbour on Saturday 7th May 2022. It covers the content of the talk and highlights from the stimulating question and answer session that followed.

Sister Mary, Sir Peter Cosgrove, League Patron Dr Paul Scully-Power, League President Murray Doyle, ladies and gentlemen. My talk today is in three segments: my early introduction and naval experience in the maritime domain; a selection of historical insights; and an outline of my perceptions for the next few decades in maritime affairs.

Early Maritime Experiences

My first recollection of maritime safety and dangers was as small child with my father in Saint Peter Port, Guernsey, one of four regions of UK where I lived before my family emigrated to Australia by ship SS *New Australia*. The Guernsey experience was in a violent storm my father took me to the port as a yacht was attempting to enter port to shelter but unhappily struck a rocky reef and foundered as we watched and as lifeboatmen tried in vain to save the crew. I can still see the distress flares.

The six-week trip to Australia was fascinating and we took advantage of the several port stops including Suez, Colombo and Fremantle to look around onshore. I recall there was a bus tour available from Port Said rejoining the ship at Port Suez.

Arriving in Sydney we were housed temporarily at Bathurst and then transported by train to Adelaide for permanent residence there, for many years in the Adelaide Hills. My first contact with the military was Army Cadets at Adelaide High School as a Corporal of Signals, and then was accepted, aged 15, for the 1959 entry to the Royal Australian Naval College (RANC) on Commonwealth territory at Jervis Bay.

Naval experience

The college is still there in magnificent condition although the block in which I berthed was attacked by termites and has been replicated. Single-handed dinghy sailing and power-boat handling were necessary qualifications, and we also experienced a cadet cruise in the old HMAS SWAN where we slung hammocks each evening and holystoned the wooden decks.

I crewed in the college yacht Tam-O'Shanter for a Sydney Hobart which was a great experience. I had been selected for an engineering stream but nevertheless won the Seamanship and Navigation prizes at graduation and promotion to Midshipman.

A year at sea as Mids was the foundational experience of the sea and naval affairs. The first six months in HMAS ANZAC with five other Mids, the latter in the aircraft carrier HMAS MELBOURNE berthed in the chest flat right under the aft end of the flight deck. Experience provided included launch and recover in the aft set of the three seat Gannet anti-submarine warfare aircraft.

On another occasion the six of us Mids were dropped in a twenty-seven foot, two-masted, open whaleboat two days sailing south of the Whitsundays and ordered to rejoin MELBOURNE which would be anchored off the islands. The wind was light so we accepted a tow into Hayman Island, slept on the beach and rejoined the ship as ordered, only to be met by the Midshipmen's Nurse, the Assistant Fleet Navigation Officer and told our leave was stopped for a month for not sailing as instructed.

Sadly, the following year the same evolution resulted in loss of six junior officers and the whaleboat in a storm.

There followed a prolonged posting to the UK at the Royal Naval engineering College, Manadon, a suburb of Plymouth in Devon, where there was an active sailing club and some offshore yacht racing but for me mostly the opportunity to travel to the continent for beaches in summer and skiing in the other seasons.

Back to Australia to join as Deputy Weapons and electrical engineering Officer in HMAS PARRAMATTA, a Type 12 frigate fitted with the IKARA ASW missile system for which I was responsible. Deployments included six months based in Singapore as part of the South East Asian Treaty Organisation (SEATO) Strategic Reserve again. Operations extended from Bay of Bengal to South China Sea

My final three ship postings were to all three of the Charles F Adams class guided missile destroyers, or DDGs as they were known, in successively more senior positions in two cases involving extended periods in the USA at several training establishments and for HMAS PERTH joining the ship as it underwent digital systems upgrade in Long Beach Naval Shipyard.

One notable event on my first period in USA was on Armed Forces Day the city of Vallejo California hosted senior officers and staff from the Mare Island Naval Shipyard to a luncheon and I was invited as a foreign military officer. I was surprised at a point in the lunch to see all the senior US Navy officers leave before the event had completed leaving me wondering whether I should have joined them. I discovered on return to the base that the nuclear attack submarine USS GUITARRO had sunk at its pier-side moorings during its overhaul. The inquiry found that the cause was lack of coordination in trimming between two separate workgroups in the forward and aft sections of the boat leading to loss of freeboard and water entry through access hatches that were obstructed by shore cables and hoses.

Another notable posting was on secondment to the US Naval Sea Systems Command based in Crystal City, Washington DC, as the only uniformed member of the six-man Australian team of engineers, logisticians and program managers embedded in PMS399 The Patrol Frigate Program to produce the FFG-7 USS Oliver Hazard Perry class that ultimately totaled 66 ships including six for Australia, from three US shipyards plus two of them built in Williamstown Naval Dockyard, Victoria. My job was to run the test and evaluation program for the lead ship and that included the harbour and at sea trials of FFG-7 and also the oversight of the various T&E programs around the USA that were related to current and future planned systems to be included in the FFG-7 design baseline. A key part of the NAVSEA FFG-7 acquisition strategy was the mandated use of land-based test sites: at Philadelphia Naval shipyard for the two gas-turbine based propulsion plant, and at a Sperry Systems site at Ronkonkoma, Islip New York for the combat systems.

I was called to be interviewed by Rear Admiral Wayne Meyer USN, father of the AEGIS air and ballistic missile defence system as now fitted in Australia's HOBART-class air warfare destroyers. He wanted to know two things: why was a foreigner running the FFG-7 combat systems ship qualification trials (CSSQT) and did I know what I was doing. He was satisfied on both counts.

The mandatory ship shock test took place over four days off Roosevelt Roads, Puerto Rico, leading up to a 5-ton charge at a few-hundred feet displacement that produced a water column that completely covered the ship. After checking for water-tight integrity and damage to propulsion the ship performed a full-power run an hour after the last shot. The purpose of such testing was to ensure the design could withstand the shock stresses of use of US Navy nuclear depth charges.

A later shore posting was as Superintendent Missile and Torpedo Maintenance responsible for three establishments around Sydney, including the Torpedo Firing Range in Pittwater with torpedoes fired towards Lion Island and monitored for speed, depth-keeping and heading from three pontoons located at thousand-yard intervals from the firing point at Clareville.

This was the period that the RAN conducted its own research at the RAN Research Laboratory (RANRL) in Rushcutters Bay, and development of the Oberon Class Submarine Weapons Update Project (SWUP) at the Submarine Warfare Systems Centre (SWSC) within HMAS WATSON at South Head. SWSC was run by then Commander Peter Briggs and Andrew Johnston of Computer Sciences of Australia (CSA).

My most memorable shore posting was as the New Surface Combatant Project Director which oversaw the government approval for the ANZAC Frigate program of ten ships for Australia and New Zealand.

Maritime Historical Insights

Eighty years ago from 4th through 8th May 1942, the pivotal Battle of the Coral Sea marked the limit on Japanese expansion south towards Australia and also was the turning point in allied, mostly United States, fortunes against the Imperial Japanese armed forces in the Pacific and is acknowledged as the first major naval battle of World War 2. Japan had a task force of three groups: a troop force with aircraft carrier Shoho coming from Rabaul in New Britain, intended to invade Port Moresby on the south coast of New Guinea; a support force, and a carrier strike force of two carriers: Shokaku and Zuikaku. Allied forces alerted by code breakers confronting the Japanese force included US carriers Lexington and Yorktown and Australian cruisers Australia and Hobart.

The action continued with air strikes from the carriers wreaking heavy losses including the Japanese carrier Shoho, resulting in the invasion fleet being recalled. Japanese strikes resulted in the loss of the Lexington and damage to Yorktown and loss of other units on both sides.

In the words of Vice Admiral Peter Jones RAN (retired), President of the Australian Naval Institute, writing in The Strategist in 2017: 'The Battle of the Coral Sea in May 1942 has become the touchstone for the Australian-American strategic relationship.'1

The most recent example of this relationship was the AUKUS Enhanced Trilateral Security Partnership between USA, UK and Australia announced on 15 September 2021, but more of that later.

[1] https://www.aspistrategist.org.au/remember-battle-coral-sea/

The Falklands War of 1982

Forty years ago, at this time of year the UK was engaged in an intense localised war in the South Atlantic where on 2nd April 1982 Argentina had invaded the Falklands Islands and South Georgia, British territories. The UK responded to this unexpected attack with a hastily assembled task-force of ships, aircraft, submarines, special forces troops of Royal Marines and Paras and regular troops from several regiments.

A maritime exclusion zone was declared on 12th April to be enforced by the first of four nuclear attack submarines, and ultimately leading to the sinking of the Argentine cruiser General Belgrano. Argentine attacks on the task force were almost entirely by mainland-based air-force aircraft with a handful of Exocet anti-ship missiles and iron bombs, resulting in the loss of six ships, five of the Royal Navy and a merchant ship taken up from trade Atlantic Conveyor. Air defence was provided by aircraft from HMS HERMES and HMS INVINCIBLE, the latter previously earmarked for sale to Australia.

The troops were landed on 21st May under daylight air attack in the north east corner of East Falkland and traversed the island on foot to finally overcome the Argentine garrison force of some 13,000 mostly conscripted troops who surrendered on 14th June.

There are many lessons for Australia today from the Falklands War as I will discuss later, but for the UK it was a wakeup call that their national security obligations were much greater than merely contributing to the NATO stance against USSR. HMS INVINCIBLE was retained and Australia instead ultimately acquired two CANBERRA class LHDs which curiously have a ski-jump intended for STOVL aircraft but a flight deck that is unprepared for their gas-turbine engine efflux.

Fast Forward to the Current Day

Fast forward to 2021 and the AUKUS Agreement that provides for sharing of technical information on several areas considered critical to remaining abreast of technological advances relevant to national security including cyber, artificial intelligence, quantum computing, undersea sensing and the recently added hypersonic weapons. Most notably was the explicit inclusion of nuclear submarine propulsion to support a substitute submarine acquisition program on nuclear powered submarines to be built in Australia, a country without a nuclear power industry.

What has also occurred since the 2016 Defence White Paper is a growing awareness in the uncertainties of national and regional security for Australia leading to the Defence Strategic Update of 2020 and further more recent increases in budgets and other plans for enhanced defence and national security capabilities.

The Nuclear Powered Submarine Task Force is a third of the way through its 18-month program to define a way forward. In a related development the Government has announced the short-listing of three east coast ports for an East Coast submarine base.

The recent announcement of a security treaty between China and the Solomon Islands has caused a major focus on changes in the regional areas that were so important 80 years ago. Retired Australian Major General Mick Ryan writing in the Sydney Morning Herald on Wednesday pointed out the vulnerability of much of Australia's overseas information and communications services relying on undersea cables passing through the Solomon Islands chain.

What might the future bring?

General Ryan is the author of a notable book entitled 'War Transformed' that has received international acclaim and was published by the United States Naval Institute, which is not bad for an Aussie digger. He provides a rich collection of experience, military history and academic research to anticipate a future where the majority of routine transportation and manufacturing is performed by robots and drones, with the maritime domain assumed to follow the same trends without explicitly discussing the special circumstances of the undersea environment.

My own partial foresight assumes much greater knowledge of the static and dynamic undersea environment; extensive use of remotely operated and autonomous maritime vessels and a completely different portfolio of energy sources for the maritime domain ranging from wind and wave-based static power; hydrogen, ammonia and nuclear power for propulsion and even the first limited use of nuclear fusion.

The big changes that will also occur will be in the connectivity for both command and control, and also for information transmission and sharing. The problem will be the opportunity for exploitation of these changes for evil as well as good and will demand continuing attention to regional and national security, crime prevention, ethical treatment of individuals and minority groups, and preparedness for more catastrophic natural and man-made events.

In conclusion let me assure you of my optimistic expectation that Australia will finally rise to realise its full potential as a beacon of democratic society that values truth, freedom and respect for all peoples, and is prepared to do what is necessary to maintain peace and prosperity I our region and beyond.

Discussion with the audience focusing on nuclear power

In the ensuing lively discussion, a number of insightful and very relevant matters were raised which I have paraphrased as follows.

Construction of nuclear submarines in South Australia should be interpreted as final assembly of modules and then final delivery before subsequent first activation of the nuclear reactor. A submarine is simple structure comprising a cylinder with end caps with flooding structures attached at bow and stern and the content of the main pressure hull arranged in modules that can be constructed remote from the final assembly site.

The reactor module in particular would be imported from the source country with the nuclear fuel installed but not yet activated. This is a very safe process and is routinely performed in countries building nuclear submarines.

The nuclear fuel cycle is an important feature that must be managed for its entire extent right through to reprocessing spent fuel after the submarine is decommissioned and defueled, extracting unspent fuel and consigning the radioactive residue to a permanent geologically stable underground repository. This step has not yet been completed by USA or UK due to the pressures of the Cold War but Australia has no such excuse.

The use of Highly Enriched Uranium (HEU) fuel in both the US and UK current nuclear submarines confers the advantage of avoiding mid-life refueling, typically at the full maintenance cycle point of every 10 to 12 years but involves so-called weapons grade uranium with consequential concerns about diversion into weapons production. When AUKUS was announced on 15 September 2021, the opposition Australian Labor Party gave their full support for agreement subject to three conditions

relating to nuclear propulsion: no nuclear weapons, no nuclear power stations and full adherence to the Nuclear Non-Proliferation Treaty (NPT) to which Australia is a long-standing signatory. This latter duty includes the detailed bookkeeping and accounting for all fissile materials throughout their life, and that will continue to be applied by the Australian Nuclear Science and Technology Organisation (ANSTO) for its reactors at Lucas Heights, NSW.

The question was raised on the possible use of nuclear weapons by Russia in its war with Ukraine, to which the I noted that in the Cold War period there was much less distinction made between use of tactical nuclear weapons compared with conventional weapons, and that may apply again should Russia take this deeply concerning step. Retired US Army General Wesley Clark recently commented that the way to dissuade Russian use of such weapons was to show they give no advantage for their use[2].

The possible reduction in submarine capability between the Collins class following their life extension, and the introduction of nuclear powered submarines evoked the question on acquiring a further conventionally powered submarine class to cover the interim. The arguments opposing this option are both the delays this would impose on the nuclear submarine program due to the need to build up a third new infrastructure and workforce, and the much more effective of acquiring extra-large autonomous underwater vehicles (XLAUV) to augment the undersea capability in the long term as has been foreshadowed in several recent announcements.

One question posed the question of the number of submarines needed for homeland defence and the answer quite plainly is none. Submarines are offensive weapons that deliver potent deterrence on an adversary who is never sure whether the submarines are there or not. There are copious Australian Defence and border force assets to cover the beaches

Finally the choice was raised between the US Navy VIRGINIA class and the UK Royal Navy ASTUTE class or derivatives thereof. The ASTUTE program is due to complete several years earlier than the VIRGINIA program and would therefore free up workforce and infrastructure much earlier to be reapplied to an Australian program. Some of the UK workforce might even be prepared to relocate to South Australia as my family had done many years ago.

However the biggest factor in favour of the ASTUTE choice is the common naval culture of specialisations and practices in the Australian Navy is based on that of the RN. The US Navy is highly professional but in a very different way and that would make the transfer more difficult.

In summary therefore the way forward for Australia to acquire nuclear powered submarines is challenging but entirely achievable and will work well with the willing cooperation of both US and UK authorities and specialist workforces to deliver a jointly positive outcome in a timely and affordable manner.

[2] Margaret Weaver. 'How to stop Putin from Using Tactical Nuclear Weapons in Ukraine: Clark' Newsweek. 7th May 2022