

Troubled waters: the implications of China's first aircraft carrier

Ashley Townshend and Shashank Joshi

RUSI Commentary

16 August 2011

Far from transforming Asia's naval balance, the launch of China's first aircraft carrier will only begin to expose China to the rigours of modern naval warfare. The region should respond to the strategic ripples by steering carefully between complacency and alarmism.

The seas have always had a special pull on strategy. From 1898 to 1912, Germany's five Naval Laws saw it establish a fleet of battleships intended to secure the country's 'place in the sun'. Britain, sensing the Royal Navy's supremacy was coming under threat, quickly stitched up alliances with Russia, France, and Japan. A decade later, Japan launched the world's first purpose-built aircraft carrier, the *Hôshô*, from a dockyard in Yokohama. The Imperial Japanese Navy not only matched the United States Navy for total displacement by 1940, but a year later it also launched the *Yamato*, a battleship of unprecedented size and firepower.

The adoption of new and symbolic military technology by rising powers produces inevitable strategic ripples. China's launch of the ex-Soviet carrier *Varyag* is no exception. But do its sea trials herald a Sputnik moment for the Indo-Pacific? And is the refurbished *Varyag* actually capable of projecting Chinese sea-power throughout Indo-Pacific Asia?

A glance at the warship's operational potential suggests there is little to fear about China's first carrier.

An imperfect new carrier

Although its Cold War-era hull has been outfitted for the twenty-first century, the ex-*Varyag* is an entry-level carrier by modern naval standards. At a modest 60,000 tonnes, China's newest warship will be dwarfed by every one of the United States' eleven *Nimitz*-class nuclear-powered super-carriers. The Japan-based USS *George Washington*, for instance, displaces over 100,000 tonnes, carries up to 90 fixed-wing aircraft and helicopters, permits simultaneous catapult-launch and aircraft recovery, and can sail for over 20 years without having to refuel.

By contrast, the refurbished ex-*Varyag* carries just twenty-six fixed-wing aircraft and twenty-four helicopters, exhibits a 'Stobar' [1] deck configuration which forgoes steam-powered catapults for a less versatile ski-jump, can travel for just forty days before needing to refuel, and is replete with new sensors and weapons systems that have yet to be integrated into People's Liberation Army Navy (PLAN) doctrine and expertise.

The ex-*Varyag*'s ability to deploy aircraft into combat also appears questionable. While the PLAN's first carrier-based airframe, the J-15 'Flying Shark', may soon have the potential to perform close-in fighter operations, maritime/ground strike, and air support missions, it is not particularly well-suited to the ex-*Varyag*'s ski-jump flight deck. As Gabriel Collins and Andrew Erickson explain, using a ski-jump for take-off imposes strict limitations on the size and weight of the aircraft being launched. This means that China's J-15s, however advanced, will have to compromise on payload and fuel in order to safely take-off from the carrier's deck. [2]

Making matters worse, the ex-*Varyag* will be unable to launch the hefty tankers, cargo aircraft, and fixed-wing surveillance and reconnaissance assets that carrier power projection

missions invariably require. This will further reduce the combat radius of China's J-15s and force the ex-*Varyag's* crew to rely on suboptimal helicopter-based aerial early warning - a longstanding PLAN weakness.

The challenges of carrier warfare

Leaving the ex-*Varyag's* technical limitations aside, carrier warfare is one of the most complex challenges any modern military can undertake. The PLAN's own doctrine has been oriented towards crippling carriers, not using them in battle. Learning new ways of fighting is time-consuming and hard. Mike Horowitz, in a recent study of disruptive military innovations, has argued that:

carrier warfare is one of the only ... major military innovations requiring high levels of both financial intensity and organisational capital to adopt ... operating a floating airfield and the ship itself, plus coordinating with support ships, is simply a much harder set of tasks than lining up the big guns of a battleship and firing. [3]

Just how difficult carrier operations are is evident from figures, recorded by Robert Rubel, which show that between 1949 and 1988 the US Navy and Marine Corps lost 12,000 aircraft and 8,500 aircrew. In 1954 alone, despite having practiced carrier warfare for some time, these services lost a total of 776 aircraft and 535 personnel. [4] These are remarkable attrition rates. China only possess 311 combat-capable naval aircraft [5] and is estimated to be training just fifty pilots to operate fixed-wing aircraft from carriers - meaning its capacity to incur training losses is perilously low.

These challenges, moreover, extend beyond landing planes at sea. The US Navy spent four decades intensively honing its anti-submarine warfare (ASW) against a determined Soviet adversary. Yet despite continuous and impressive innovation, the US continually found itself outpaced by technological improvements. India has operated aircraft carriers for over fifty years - starting nearly fifteen years before the USSR - but is yet to master combat-capable carrier groups. The PLAN, for its part, has less than a dozen maritime patrol aircraft, essential for warding off hostile submarines, and its new hull-mounted sonars are 'too small for long-range [threat] detection'.

While China has acquired many of the support ships it requires for a carrier group, deploying these together will require decades of practice. More importantly, this will demand improved C4ISR, logistics, and integrated air support - all of which have hindered PLAN operations in the past. Without the institutional and doctrinal knowledge accruing from intensive usage over time, China's command, control, and defence of carrier groups in combat will remain precarious at best.

Finally, it is important to note that the terms of trade between sea-control and sea-denial have been shifting in favour of the latter - 'insurgency at sea' may have become fundamentally more effective. [6] The PLAN understands this trend. Its own doctrinal writings have discussed how 'a carrier battle group can be destroyed with multi-wave and multi-vector saturation attacks with cruise missiles' and, now, ballistic missiles. [7] China's own DF-21D anti-ship ballistic missiles (ASBMs) - the world's first ballistic missiles theoretically able to hit a moving carrier strike group - are now deployed in southern China with 'initial operational capability'. [8]

But China's opponents either possess or are developing similar asymmetric capabilities. Taiwan's HF- anti-ship missiles, though their status remains unclear, are likely to pose a formidable challenge to PLAN warships. Under the surface, China's ability 'to deny access to US SSNs [attack submarines] and SSGNs [cruise missile submarines] ... is very limited' to

the point that 'US submarines can currently operate freely in Chinese coastal waters'. [9] In short, the ex-*Varyag* and its successors will remain deeply vulnerable in East Asian waters.

The Taiwan Strait

In light of these operational challenges, few analysts have challenged Chinese Defence Minister Geng Yansheng's depiction of the ex-*Varyag* as a 'platform for scientific research, experiment and training'. It is nevertheless prudent to consider what combat purpose, if any, China's first carrier could fulfil.

The potential for PLAN carrier use in a confrontation over Taiwan is frequently cited as a major concern. Until the late 1990s, advocates of China's 'near-coast defence' supported the construction of carriers for aerial defence and maritime strike inside the 'first island chain' [10]. While the 1996 Taiwan Straits Crisis led the PLAN to refocus its doctrine and capabilities on anti-access/area-denial (A2/AD) - favouring submarines over ships - some see still carriers as altering those priorities.

In 2011, Taiwanese Vice Admiral Lan Ning-li (Rtd.) explained that by bolstering the PLAN's southern fleet, the *Varyag* would 'allow China to expand naval activities ... east of Taiwan'. This, it has been argued, could leave Taiwan vulnerable to attack from multiple axes by enabling limited power projection operations in the Straits. [11]

But there are two problems with this reasoning. First, China does not require carriers to threaten or intimidate Taiwan. Beijing already has over 1,300 ballistic missiles pointed at the island, mustering far more destructive power than China's ex-*Varyag* will ever possess. Alongside the PLAN's improving A2/AD assets, this arsenal has already raised the costs of intervention for US carriers and warships in the Western Pacific - making it difficult to see what strategic value China's carrier would contribute [12].

Second, assuming, as is likely, that such a crisis would still attract US military involvement, China's entry-level carrier would be highly exposed in the face of its formidable US equivalents. With poor ASW capabilities, limited range, and no combat experience, the ex-*Varyag* would be little more than a large, valuable target for the US Navy to sink.

The South China Sea

A more likely scenario is that Beijing could consider deploying the ex-*Varyag* to intimidate its less well-armed neighbours in the disputed South China Sea. Over the past 18 months, China has stepped up its harassment of trawlers and oil-exploration vessels from Vietnam, the Philippines, and Indonesia - all of which Beijing accuses of illegally operating in Chinese-claimed territories [13]. The launch of the ex-*Varyag*, coupled with these deepening maritime tensions, has led some to speculate that China might use its first carrier to coerce South-East Asian claimants into submission.

Yet, again, we should be sceptical about the ex-*Varyag*'s suitability to this task. Sending an aircraft to the South China Sea would be a serious and counterproductive escalation of the dispute. It is one thing to use patrol craft and fisheries administration vessels to intimidate commercial ships, but it is quite another to wield a hulking carrier to achieve the same result. Indeed, such ratcheting-up of China's gunboat diplomacy would risk emboldening the ASEAN's counterbalancing tendencies and may trigger even greater US involvement in the dispute. [14]

Moreover, the only scenario in which a carrier's airpower would be militarily usable is where the US has retrenched its forward position in Asia or where the target in question is entirely

isolable from its partners. Neither situation is plausible. Accordingly, if China was seeking to strengthen its resolve in the South China Sea dispute it would likely turn first to the PLAN's frigates and destroyers.

Even if the *ex-Varyag* ended up in littoral South-East Asia it would be exceedingly vulnerable to both land- and sea-based threats. Although the ASEAN states have inferior navies, like China they have also sharpened their A2/AD assets. In recent years, Vietnam has bought six *Kilo*-class submarines and twelve *Sukhoi* fighters, Malaysia has ordered two *Scorpène*-class boats, Indonesia is set to purchase two submarines this year, and the Philippines is seeking the funds to buy one. Alongside various ground-launched missiles, like the Taiwanese HF-3, this repertoire of carrier-killing armaments would pose a very grave threat to China's entry-level carrier.

Blue-water operations

The *ex-Varyag* will fare little better further afield, making blue-water combat operations highly unlikely over the next two or three decades. China's 'peaceful development' doctrine demands a stable and secure external environment to facilitate domestic economic growth and development - the antithesis of the vision that prompted the German Naval Laws.

This doctrine took a blow in 2010 after China aggressively reasserted its South China Sea claims and rapidly escalated a crisis with Japan in the East China Sea. Not all of its behaviour was intentionally belligerent, and in many cases confrontations were inadvertent, but the broad pattern of Chinese actions provoked widespread concern. Japan, alongside the Philippines, Vietnam, and India (in private), publicly warned that Chinese military modernisation was 'a matter of concern for the region and the international community'. [25] Like the ASEAN states, Tokyo upped its submarine numbers. It also shifted its strategic gaze towards the southern islands around Okinawa - turning its back on Russia and refocusing on China.

To be sure, Chinese warships will increasingly venture into the Western Pacific. But carriers are perceived as inherently offensive platforms. As such, any major Chinese deployment there or, eventually, in the Indian Ocean would risk hastening the formation of an anti-Chinese naval coalition involving the US, Japan, Australia, India, and Indonesia. By the time the *ex-Varyag* matures, India could have a three-carrier fleet and Article 9 of the Japanese Constitution, restricting its military activities, may have long since disappeared. Beijing, despite its recent muscle-flexing, will thus likely proceed with caution at sea.

What about China's so-called 'String of Pearls' strategy? It is true that China has financed port developments in Pakistan, Sri Lanka, Bangladesh, and Burma. Yet predictions that these could morph into logistical hubs for an expeditionary PLAN force remain far-fetched at best. [16] Not only would such far-flung naval facilities become prime targets of opportunity for enemy aircraft and missiles, but most South Asian states would be hesitant to accept the risks associated with hosting such high-profile sites. Pakistan, the only probably outlier, may want a modest Chinese tripwire at Gwadar, but neither side has any wish to drag itself into the crises of the other. Furthermore, any scenario in which China would need to project its naval aviation is likely to be one in which the level of military contestation would be so high as to imperil its carrier's logistical network.

Why bother with carriers?

If carrier warfare presents such overwhelming strategic, operational, and diplomatic challenges, what, then, is the point of China's shiny new ship?

One obvious answer is that the ex-*Varyag* will be a useful training carrier, kick-starting the PLAN along a steep learning curve. The long period of technological gestation must start somewhere, and China's rumoured indigenous carriers will certainly benefit from lessons gleaned today. In strategic terms, the ability to deliver missiles to new destinations and to supply air cover for offensive naval operations could, by itself, dissuade some of Asia's smaller powers from picking fights with Beijing unless they had full confidence in US backing.

But the real meaning of this carrier probably lies in what political scientist Robert Ross has called 'China's naval nationalism'. Ross argues that a 'land power[s] pursuit of extensive maritime power' - whether China, France, Germany, or the USSR - 'reflects the effect of nationalism ... [and] the demand for great power status and domestic legitimacy ... upon a state's evaluation of its capabilities and interests'. In other words, aspiring great powers can take to the seas for the pursuit of prestige - great powers require great navies. If this seems implausible, consider reports that 'more and more Chinese have offered their personal funds to support [the] construction of an aircraft carrier'. [17]

Navigating Asia's maritime future

China's aptly-named 'starter carrier' evidently has a long way to go. Yet, like the Royal Navy's *Dreadnaught* and the United States' *Nimitz*-class supercarrier, the PLAN's hefty new warship will spook potential adversaries into action. This progress may have already begun. As the ex-*Varyag* set sail, Taiwanese authorities provocatively displayed their newest carrier-killing missile against a billboard depicting an ex-*Varyag*-like carrier being devastated by airstrikes. Four days later, USS *George Washington*, at a port in southern Vietnam, treated some of the country's top civilian and military leaders to a rare tour of the warship.

Though these gestures mean little in themselves, they highlight the United States' ongoing strategic commitment to North and South-East Asia, and the importance that regional powers attach to this presence. China's embryonic carrier fleet may not trouble Washington today, but its very existence foreshadows Beijing's potential coming of age as a great naval power - a strategic challenge that cash-strapped America has long sought to prevent. For Asia's smaller nations, the PLAN's new capital ship is likely to stoke existing appetites for submarine acquisition, maritime strike aircraft, and a deepening enmeshment with the US alliance network.

An overreaction will do little more than strengthen the hand of Communist Party hardliners and give a fillip to the more belligerent strands of popular Chinese nationalism. The more prudent course of action will be to recognise Beijing's legitimate maritime interests while ensuring the PLAN's offensive potential remains blunted by balancing coalitions and a US commitment to Asian security. This should be built around a narrative of 'freedom of the seas' coupled with an understanding of Beijing's quest for growth-enabling stability. Such efforts must also be proportionate to China's actual foreign behaviour, rather than resulting from predictions of an inevitable Asian Cold War.

As the carrier gains its sea legs, the region's ongoing challenge will be to steer carefully between complacency and alarmism.

Ashley Townshend is a Research Associate at the Lowy Institute for International Policy, Sydney. Shashank Joshi is an Associate Fellow at RUSI.

Notes

[1] 'Stobar' stands for 'short take off but arrested recovery'. It refers to a carrier launch system where conventional naval aircraft take-off using their own power and the assistance of a ski-jump, but land with aid of arrestor wires.

[2] Gabriel Collins and Andrew Erickson, 'Flying Shark' Gaining Altitude: How Might the New J-15 Strike Fighter Improve China's Maritime Air Warfare Ability?', *China SignPost*, No. 38, 8 June 2011.

[3] Mike Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Politics*. Princeton University Press, 2010, p. 62.

[4] Robert C. Rubel, 'The US Navy's Transition to Jets', *Naval War College Review*, Vol. 63, No. 2, Spring 2010, pp. 51-52. It is important to situate these figures in the context of the US naval service's unusually high number of flying hours. The 1954 data amounted to 50 losses per 100,000 flight hours.

[5] *The Military Balance*. International Institute for Strategic Studies, March 2011, p. 233.

[6] Shashank Joshi, 'Insurgency at Sea: the Currency of Carriers', *Pragati: The Indian National Interest Review*, 1 February 2010.

[7] Lyle Goldstein and William Murray, 'Undersea Dragons: China's Maturing Submarine Force', *International Security*, Vol. 28, No. 4, Spring 2004, pp. 161-196.

[8] Andrew Erickson and Gabriel Collins, 'China Deploys First Long-Range, Land-Based 'Carrier-Killer': DF-21D Anti-Ship Ballistic Missile (ASBM) Reaches 'Initial Operational Capability' (IOC)', *China SignPost*, No. 14, 26 December 2010.

[9] Owen R. Cote Jr., *Assessing the Undersea Balance Between the US and China*. SSP Working Paper, MIT, February 2011, p. 3.

[10] Nan Li and Christopher Weuve, 'China's Aircraft Carrier Ambitions: An Update', *Naval War College Review*, Vol. 63, No. 1, Winter 2010, p. 17.

[11] Ibid., p. 27 and 'China Carrier Could Threaten Island: Ex-Admiral', *The China Post*, 8 April 2011.

[12] Department of Defense, *Annual Report to Congress*, p. 2 and p. 29.

[13] On the worsening South and East China Sea disputes, see Rory Medcalf, Raoul Heinrichs, and Justin Jones, *Crisis and Confidence: Major Powers and Maritime Security in Indo-Pacific Asia*. Lowy Institute for International Policy, Sydney, June 2011.

[14] In September 2011, the US-ASEAN Leaders Meeting raised the partnership to the strategic level, with participants articulating concerns about China's assertive behaviour in the South China Sea. See Ernest Bower, '2nd US-ASEAN Leaders Meeting: Elevating the Partnership to a Strategic Level', *Southeast Asia from the Corner of 18th & K Streets*, CSIS, Vol. 1, Iss. 30, 28 September 2010

[15] Jithin S. George, 'Japan's Nuclear Hedging', *Maritime Affairs: Journal of the National Maritime Foundation of India*, Vol. 7, No. 1, 2011, pp. 65-84.

[16] Ashley Townshend, 'Few Reasons to Fear China's 'pearls'', *The Australian*, 27 May 2011.

[17] Robert S. Ross, 'China's Naval Nationalism: Sources, Prospects, and the U.S. Response', *International Security*, Vol. 34, No. 2, Fall 2009, p. 62