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China's Aircraft Carrier Ambitions

As the country builds its first indigenous carrier, what might it have in mind?

By Koh Swee Lean Collin
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The international media landed itself a gift shortly before ushering in 2016, when it transpired at a recent Chinese Defense Ministry press conference that Beijing's first indigenous aircraft carrier, and the second one for the People's Liberation Army Navy (PLAN) after the *Liaoning* entered service since September 25, 2012, is currently under construction.

A Surprise?

The announcement is hardly a surprise, given that open-source intelligence, academic and media commentaries have long reported on China's ongoing aircraft carrier program. Even Chinese reports (see [here](#) and [here](#)) have hinted at PLAN's aspirations to operate more than one carrier. The carrier was even dubbed "Project 001A," and Internet photos of what appears to be the assembly of modules for an aircraft carrier-like platform at a Dalian shipyard have circulated. Chinese officials, including those from the PLA, have also noted the existence of the program.

Compared to the past, Beijing has certainly become more forthright about its defense programs, such as publishing defense white papers since 1998 and holding regular defense ministry press conferences. Of course, one could still claim that these efforts lack real transparency – the white papers, for instance, are rich in policy rhetoric but lack details. Nonetheless, the disparate nuggets of information, whether deliberately intended by Chinese authorities for release into the public domain or otherwise, allow the analyst to formulate a picture, even if an incomplete one.

While imperfect, this picture at a minimum allows a glimpse at what exactly may be in store for China's new aircraft carrier. In a way, the information helped in desensitizing the academic and intelligence communities to the prospective materialization of China's carrier ambitions, in the context of external suspicions towards Beijing's massive military buildup. This was very similar to the earlier case of the unfinished ex-Soviet carrier *Varyag*, which Beijing purchased from Ukraine in the 1990s and subsequently refurbished and refitted prior to adding it to the PLAN as *Liaoning* in 2012. Since the 1990s, the international community was aware of the existence of this program thanks to the availability of fragmentary information, even though it took quite some time for Beijing to officially announce plans to put *Liaoning* into service. As such, the *Liaoning* did not really come as a surprise, even if one continues to question Beijing's underlying strategic intent behind this move.

Based on Beijing's pattern of information disclosure, one may anticipate that in the future, the public will at least have prior snippets of information related to the PLAN's new, follow-on carriers before official announcements are made. But as Beijing's recent clampdown (see [here](#) and [here](#)) on the leakage of militarily sensitive information has shown, there is every attempt to safeguard operational security. At the same time, though, Beijing may also rely on the release of disparate information, through proxy channels perhaps, to help desensitize the international community to its new future carriers. While this certainly falls short of "complete" transparency, it is better than having no information at all.

Defying Speculation

Based on this diverse, if disparate information, there has been considerable speculation about the new aircraft carrier based. Much of it has overestimated the progress China has made with its

carrier program. This is similar to the errors Western intelligence made with the performance of the much-acclaimed Soviet MiG-25 Foxbat interceptor, which was found to be grossly overrated following the defection of pilot Viktor Belenko with one of the jets to Japan in 1976.

For example, earlier speculation put the propulsion as possibly nuclear. But the latest official revelations reveal that the new ship will be conventionally powered. Likewise, the new carrier was initially believed to possess steam-powered aircraft launch catapults, dispensing with a ski-jump flight deck that equips the *Liaoning*. A *PLA Daily* report in April 2012 claimed that China is developing an electromagnetic catapult analogous to the American electromagnetic aircraft launch system (EMALS) installed on board the new *Gerald R. Ford* class supercarriers, thereby fuelling even more optimistic speculation. But as the new official information reveals, the new carrier will still have a ski-jump, indicating that domestic efforts to develop steam or electromagnetic catapult technologies have yet to reach maturity. Zhang Junshe, a researcher with the PLA Naval Military Studies Research Institute, alluded to this, saying that catapults involve more complex technology.

Some Chinese analysts held that virtually every component and subsystem on board the new carrier would be different from those on board the *Liaoning*, an assertion that could potentially be misconstrued as meaning the new ship would be “revolutionary.” Instead, one can assume that the new carrier will be equipped with a mix of mature, tried-and-tested components and subsystems based on valuable insights Chinese naval technicians gleaned from the *Liaoning*. Some of these systems may even be improved or refined domestically to suit specific PLAN needs. But a cautionary note here: It would be prudent not to exaggerate the progress Beijing has made in its carrier quest. Perhaps a more relevant question to ask is: How will the future PLAN carrier battle group (CBG) take shape?

A Possible CBG Approach?

To be sure, while the invariable temptation is to focus on the aircraft carrier itself, it is important to note that such a valuable platform cannot operate independently on its own, but as part of an entire CBG comprising the escorting warships, organic aviation forces and afloat logistics support. The Soviet *Kiev* class “aircraft-carrying heavy cruiser”, though fitted with a battery of P-500 Bazalt (NATO codenamed SS-N-12 Sandbox) 550km-range cruise missiles as its offensive armament and its own shipboard air defense and anti-submarine warfare (ASW) combat systems, still had to operate in conjunction with other fleet assets.

It is clear that Beijing has adopted a concerted strategy in developing a CBG, paying close attention to how established carrier navies operate such forces. As such, while developing the carrier, efforts are long afoot to develop a slew of other capabilities that can help constitute a full-fledged CBG. Notably, the Chinese are churning out new major surface combatants, such as the Type-052C/D *Luyang II/III* guided missile destroyers and Type-054A *Jiangkai II* frigates, which are optimized for fleet air defense and ASW respectively. Even more ominously, but often overlooked, is China’s ambitious program to build more capable ocean-going fleet replenishment vessels. In the past recent years, new units of the Type-903 (plus the improved 903A variant) replenishment vessels have entered service. An even more capable successor, touted the Type-

901 which is said to displace some 40-45,000 tons (just slightly smaller than the new carrier itself), is at an advanced stage of construction.

The U.S. Navy carrier strike group (CSG) is plausibly one that the Chinese aspire towards, but in the distant future. If the *Liaoning*'s air wing is of any indication, the PLAN's carrier-borne aviation looks set to remain limited in the range of capabilities available compared to those of the American CSGs. First, the *Liaoning* air wing has limited airborne early warning (AEW) capacity in the form of Ka-31RLD Helix helicopter that mounts a folding air search radar. But compared to fixed-wing aircraft, such rotary-winged AEW platforms lack the range, endurance and sensor capacity to provide fleet air cover. The Chinese are attempting to rectify this by developing an analogue to the E-2C Hawkeye, touted the JZY-01, but little has come about this project. The Chinese are more likely to employ the larger Z-18J AEW helicopter, which is a refined version of the Z-8 that is in turn a reverse-engineered copy of the old French SA321 Super Frelon design.

Second, the new carrier is said to be equipped with the J-15 Flying Shark carrier-borne fighter jets, which currently equip the *Liaoning*. Plans to develop carrier-borne J-31 multi-role fighters have not materialized, thus leaving the J-15 as the only carrier-borne fighter jet. Suspiciously similar to the Soviet/Russian Su-33 Flanker-D, the J-15 is optimized primarily for fleet air defense while possessing a limited secondary ability for surface strike, mainly anti-ship (especially important since the new carrier will not have shipboard offensive weapons). The *Liaoning* carries a small J-15 complement (possibly slightly over 20 in all) and the new carrier, of roughly the same size, may carry more or less the same number. Moreover, the new carrier's ski-jump configuration limits the J-15's payload, thereby reducing its operational flexibility. In any case, the myriad of envisaged defensive and offensive roles does place an invariably heavy burden on this small fighter component. Although more J-15s being spotted on the *Liaoning*'s flight deck point to serial production, according to a recent *Kanwa Defense Review* report some critical steps of the manufacturing process were performed by human labor instead of automated precision machine tools. This not only slows down production rate but also brings airframe and systems reliability into question.

As such, the PLAN's approach to CBG operations may be aligned more closely with that of the Soviet/Russian Navy, giving primacy to defensive carrier-borne air operations and emphasizing the role of accompanying escorts to share defensive and offensive burden. The Type-052C/D destroyers will have to bear the brunt of the fleet air defense mission by utilizing their "Chinese Aegis" system, which revolves around phased array radars to compensate for AEW shortfalls while employing the S-300FM (Chinese copy HHQ-9) long-range surface-to-air missiles to complement the limited coverage provided by the J-15s. The PLAN's future warship designs may hint at a possible continuation of this approach; there is an existing program to build a new destroyer bigger and more capable than the Type-052C/D. Popularly known as the Type-055, the new ship is envisaged to displace almost 10,000 tons and equipped with a much bigger payload of vertically launched missiles, including surface-to-air, thus bringing its fleet air defense capabilities closer to those of the American *Arleigh Burke* class Aegis destroyers.

Limited Operational Utility?

Notwithstanding those aforementioned limitations of the envisaged new carrier, the PLAN's future CBG is certainly taking shape thanks to immense political will and funding, to not just simultaneously carry out a complex undertaking of parallel platform and systems sub-programs but also to conduct intense training and trials using the existing *Liaoning* and handful of J-15s. The envisaged CBG will certainly expand strategic options available to the Chinese political leadership. Some Chinese thinkers called on the PLAN to acquire a viable carrier capability, arguing that prior to the induction of *Liaoning*, China was the sole great power without an aircraft carrier. From this perspective, an aircraft carrier – the symbol of a modern, blue-water naval power – equates to national greatness. This coincides also with Chinese President Xi Jinping's contemporary "Chinese Dream" vision.

The question remains whether the PLAN carrier fleet will serve more as a prestige asset or one with real operational utility. No matter how advanced the future Chinese carrier will be, and how the CBG is constituted, it remains to be seen how Beijing will choose to employ this newfound naval instrument. Within immediate regional waters in the Western Pacific littorals, the CBG will be a significant addition to the already impressive plethora of weaponry available to the PLA. In a Taiwan Strait conflict scenario, the PLAN CBG may plausibly station itself to the east of Taiwan in an attempt to at least delay or disrupt any American reinforcements coming from Guam or Hawaii, while opening the "eastern front" by coordinating with land-based PLA units operating against the western Taiwanese coast. This prospect is plausibly seen as an alarming one, for the Taiwanese Ministry of National Defense war-gamed the scenario of a PLAN carrier involved in a cross-strait conflict.

PLAN carriers are also believed to be useful assets in the context of existing regional maritime disputes. Northwestward into the East China Sea (ECS), it is possible for the CBG to facilitate military operations against Japanese forces within the vicinity of the Diaoyu/Senkaku Islands. However, the CBG will most likely find itself well exposed to land-based SDF defenses, particularly those arrayed around the remote southwestern Japanese islands and US Forces in Japan. The open nature of ECS waters gives greater room for maneuver by the CBG. But this is not the case for the semi-enclosed South China Sea (SCS) waters. Compared to the land-based PLA forces arrayed along the southern Chinese coast, the CBG may have limited utility and much less survivability in the face of the anti-access and area denial capabilities mustered by some of China's Southeast Asian rivals, especially Vietnam, whose smaller forces may take advantage of local geography for concealment and surprise anti-carrier strikes. Moreover, Hainan Island and the newly constructed artificial islands in the SCS are comparably more survivable as "unsinkable aircraft carriers." The loss of such valuable strategic asset as a carrier to cheaper sea denial weapons such as anti-ship missiles launched by mobile coastal batteries and land-based fighter jets, submarines, and naval mines will be a costly proposition to Chinese defense planners. Or at least, even if Beijing is bent on deploying the CBG in a SCS conflict, it will have to accept its limited operational utility and in the worst case, accept potential losses inflicted upon the CBG.

Even further westwards, the utility of the PLAN CBG, as a result of its inherent capabilities, declines exponentially. Far from its mainland bases, the CBG can no longer count on the kind of land-based reinforcements it might expect in the Taiwan Strait, ECS and SCS. It will have to operate autonomously for the most part, with little support available even if there is access to

friendly bases and ports. PLAN carrier ambitions were often linked closely with growing Chinese strategic and economic interests in the Indian Ocean region. No doubt, the Chinese carrier will be a welcome asset to do “flag-showing” for Beijing in the region. It will prove more than capable in undertaking such low-intensity missions as non-combatant evacuation (similar to those PLAN warships earlier conducted in Yemen) and humanitarian assistance and disaster relief. But in a wartime scenario with India as the adversary for example, the CBG will be vulnerable even if it has ample maneuver space in the open waters of the Indian Ocean. Indian air and naval forces are more likely to secure the local advantage and prove capable of saturating the CBG with kinetic and electronic strikes, even if one factors in Pakistani assistance to the PLAN.

The Unstoppable Chinese

It is a foregone conclusion that China will continue to forge ahead with its carrier ambitions. The carrier currently being built in Dalian is its first indigenous attempt, but certainly not its last. More than just a symbol of national greatness, the Chinese carrier program is an indispensable part of the overall PLAN drive towards a blue-water force befitting China’s stature and Beijing’s desire to play a more active global security role, just as it has recently demonstrated in the Indian Ocean region, including Africa and the Middle East. This strategic conviction, which will likely outlast the term of Xi Jinping, will sustain this ongoing momentum if one observes the intensity at which the PLAN seeks to snap up every opportunity to master the intricacies of aircraft carrier construction and operations.

In fact, ever since its commissioning, the *Liaoning* has gone on multiple long-duration training cruises to stage, in particular, flight training in diverse operating environments such as the SCS and the Bohai Gulf. A cadre of pioneer carrier-borne aviators has also been established, which will sow the seeds for an institutionalized PLAN Air Force carrier-borne aviation training program. Chinese naval planners do recognize the “practice makes perfect” mantra. Future Chinese carriers are tipped to be more capable, especially when Beijing’s researchers yield fruits from ongoing high-tech, carrier-related scientific projects such as electromagnetic catapult and fixed-wing AEW platform.

For a latecomer into the carrier game, the PLAN appears determined to shorten the capacity-building process by funneling vast amounts of time, resources and manpower into the program, even if it means having to adapt lessons through trial-and-error, overcoming the steep learning curve while having to endure painful setbacks, including the loss of life. That said, there ought to be little doubt that notwithstanding the challenges it faces, China will persist in pushing its dream of operating multiple aircraft carriers towards reality. But one also should also temper expectations by not exaggerating the progress Beijing has made in this gargantuan quest.