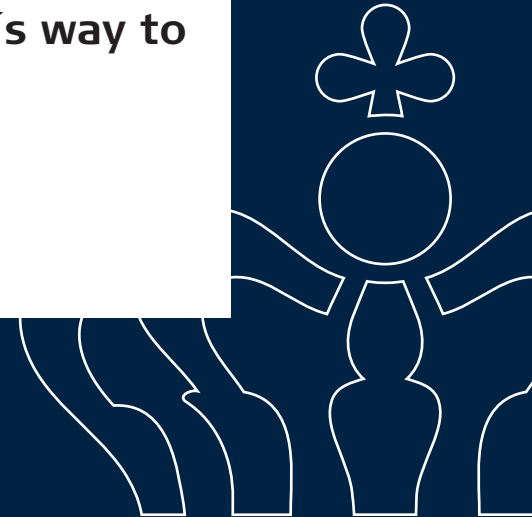


Aircraft Carriers: China's way to Great Power Status?

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Research Paper



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Resumé

There are many indications that China is actively researching the design of an aircraft carrier. It is unknown whether China will initiate the actual acquisition of a carrier, but the indications that are available of their research into aircraft carriers and carrier-capable aircraft, as well as their purchases of aircraft carrier systems, makes it more than likely that the country is preparing such an acquisition. China has territorial disputes in the South China Sea over the Spratly Islands and is also worried about the security of its sea lines of communications, by which China transports the majority of its foreign trade, as well as its oil imports, upon which the country is totally dependent. China therefore has good reasons for acquiring an aircraft carrier to enable it to protect its national interests. An aircraft carrier would also be a prominent symbol of China's future status as a great power in Asia and will balance the carrier acquisitions of the United States, the United Kingdom, Russia and India.

China's current military strategy is predominantly defensive, its offensive elements being mainly focused on Taiwan. If China decides to acquire a large carrier with offensive capabilities, then the country will also acquire the capability to project military power into the region beyond Taiwan, which it does not possess today. In this way, China will have the military capability to permit a change of strategy from the mainly defensive, mainland, Taiwan-based strategy to a more assertive strategy, with potentially far-reaching consequences for the countries of the region.

The Chinese have bought several retired carriers, which they have studied in great detail. The largest is the Russian-built carrier Varyag of the Kuznetsov class, which today is anchored in the Chinese Naval Base at Dalian. If they decide to acquire a carrier, they can either buy one or build it themselves. The easiest way would be to buy a carrier, and if that is the chosen option, then Russia would be the most likely country to build it. Technologically, it will be a major challenge for them to build one themselves and it is likely that they would have to obtain the assistance of another country. But there are indications, that China may choose this more difficult path, since it has bought four Russian carrier landing systems. China is very secretive about this, but when all the information is pieced together, then a picture is created of a Chinese aircraft carrier program, where Varyag will be made operational for training purposes. With this as the model, China will build a similar sized carrier themselves. If this project does become a reality, then it will take many years for China to complete, especially if they develop the complex catapult with which to launch the fighter aircraft, not to mention the possible development of a nuclear power plant for the ship. The Russian press has indicated that China is negotiating to buy SU-33 fighters, which Russia uses on the Kuznetsov carrier. The SU-33 is, in its modernized version, technologically at the same level as western combat aircraft in both the offensive as well as the defensive roles. But Russia and China currently have an arms trade

dispute that is likely to prevent a deal, unless the dispute is resolved. As an alternative China may choose to modify the domestically produced J-10 or J-11 multi-role fighter.

If China does decide to acquire carriers, it would be operationally logical to acquire a minimum of two to three carriers to ensure an adequate and continually available combat capability. A Chinese carrier group, with the associated protection and support vessels, submarines, aircraft and helicopters, is not likely to be fully operational and war-capable until 2020, given the fact that China is starting from a clean sheet of paper.

The United States of America (USA), the United Kingdom (UK), Russia and India are currently building or have made decisions to build new carriers. All these carriers could potentially influence Chinese interests in the future, and this could be a major reason for China to acquire aircraft carriers. The other countries in the region have no large carrier programs and will find themselves in a weaker position when it comes to the military balance of the region should China acquire carriers. Two to three Chinese carrier groups will be a significant military power in Asia which the USA will have to match on behalf of its allies in the region. It is therefore likely that the USA will have to continue as a security guarantor in Asia.

China's research of aircraft carriers



Figure 1: Varyag in the Dalian Naval Base painted navy grey.

In the United States' (US) Office of the Secretary of Defense's Annual Report to Congress on the Military Power of the People's Republic of China (PRC), 2008, China is assessed to have an active carrier design and research program. And it is estimated that, if the Chinese leadership were to choose to do so, the PRC shipbuilding industry could start construction of an indigenous platform by the end of this decade.¹ If that were to happen, it would potentially change the maritime military balance in Asia and naturally lead to speculations as to how the other states will respond to such a decision.

China is very secretive about a possible carrier program, but several statements have slipped out that confirm such a research and design program. On 10 March 2006, the Hong Kong-based Chinese paper *Wen Wei Po* quoted the Chinese general Wang Zhiyuan² for saying that in three to five years "The Chinese army will conduct research and build an aircraft carrier and develop our own aircraft carrier fleet." He continued: "the escort and support ships for this carrier group are either being built or have already been built."³ Later, in March 2007,⁴ first spokesman Huang Qiang and later Chairman Zhang Yunchuan of the Commission of Science, Technology and Industry of National Defense of China (COSTIND) said that they were actively researching building an aircraft carrier.⁵ In spite of these admissions, China is still not prepared to acknowledge officially that they have

an active carrier program. The purpose of this brief is to assemble the information we have about the Chinese carrier deliberations and activities based on public information, and to discuss how such a program might develop and what the potential consequences are for the region.⁶ But first I will discuss why the Chinese would like to have aircraft carriers.

Why does China want aircraft carriers?

In recent decades, China has changed its military strategic focus. Since 1949 the primary focus had been land-centric defense of mainland China. But after the end of the Cold War in 1989, the fall of the Soviet Union and the settlement of border disputes with Russia, China has changed its military focus to other potential crisis areas, such as Taiwan, the Spratly Islands and the Malacca Strait. The common denominator for these is the maritime environment, and China has therefore invested heavily in the People's Liberation Army Navy (PLAN), with an emphasis on submarine capabilities.

PLAN has a significant submarine acquisition and modernization program, and submarines have become a significant part of PLAN's capability to control the seas around China and Taiwan.

China's biggest potential crisis area is the dispute with Taiwan. China claims sovereignty over Taiwan, but on the island there are significant forces working for independence. China is very determined to prevent Taiwanese independence and has made preparations for military action should Taiwan attempt to move in this direction. During previous incidents between China and Taiwan, where China de-



Figure 2: Spratly Islands.

monstrated its willingness to use military force, the USA sailed two carrier groups close to Taiwan and thereby let China understand that it would not stand by passively if China were to attack Taiwan.⁷ China takes this threat seriously and is acquiring military capabilities that will enable the country to attack the American carrier groups should they attempt to protect Taiwan during a Chinese military attack. But when it comes to a potential Taiwan war, an aircraft carrier is more likely to be a liability for China than a militarily useable asset. First, Chinese fighters are able to reach Taiwan from air bases on mainland China, thus rendering a carrier-based capability unnecessary. Secondly a Chinese carrier would be very vulnerable to technologically superior American military forces, such as submarines, missile attack and air power. During the 2000-2008 presidency of Chen Shui-bian, Taiwan's policy towards China was somewhat provocative, making China spend considerable resources preparing for war with Taiwan. With the 2008 election of Ma Ying-jeou of the Kuomintang Party, who is likely to be less provocative towards China, China may attempt to pursue a political solution to the Taiwan issue and spend fewer resources preparing for a potential conflict with Taiwan. That will enable it to focus on the development of a blue-water navy, which China will need in the future if it is to become a great naval power among equals.

China has other territorial disputes that require a blue-water navy and may explain why it wants an aircraft carrier. In the South China Sea, China claims sovereignty over the Spratly Islands, which has potentially large oil and gas reserves. China's demand for oil and gas is steadily increasing, and it needs all the natural resources it can get. Vietnam, the Philippines and Taiwan also claim sovereignty over the Spratly Islands, while Brunei and Malaysia only claim some of them. Skirmishes have occurred several times on or around the islands. In 1988 China established an observation post on one of the islands, which Vietnamese military forces tried to eject. That led to fighting between Chinese and Vietnamese forces, causing the sinking of two Vietnamese military vessels, while a third was set on fire. In other words, this is a dispute where some of the parties involved, including China, do not refrain from the use of military force. More recently, on 21 January 2008, a military C-130 transport plane from Taiwan landed on a newly constructed runway on the island of Taiping, which is one of the Spratly Islands.⁸ This led to great Chinese frustrations. The Chinese ability to maintain their self-proclaimed sovereignty over the Spratly Islands will improve significantly if they have an aircraft carrier.

Another reason why China may want an aircraft carrier is to protect its sea lines of communication. China is very dependent on free passage of its merchant traffic, especially through the Malacca Strait, through which the majority of the maritime traffic to and from China has to pass (see Fig. 3). More than 80% of

China's imports of crude oil are transported by ship through the Malacca Strait, and the Chinese leaders are becoming more alert to the importance of the strait, which they perceive as a strategic vulnerability. In 2003, the Chinese President Hu Jintao declared that "certain major powers were bent on controlling the strait and called for the adoption of new strategies to mitigate the perceived vulnerability".⁹

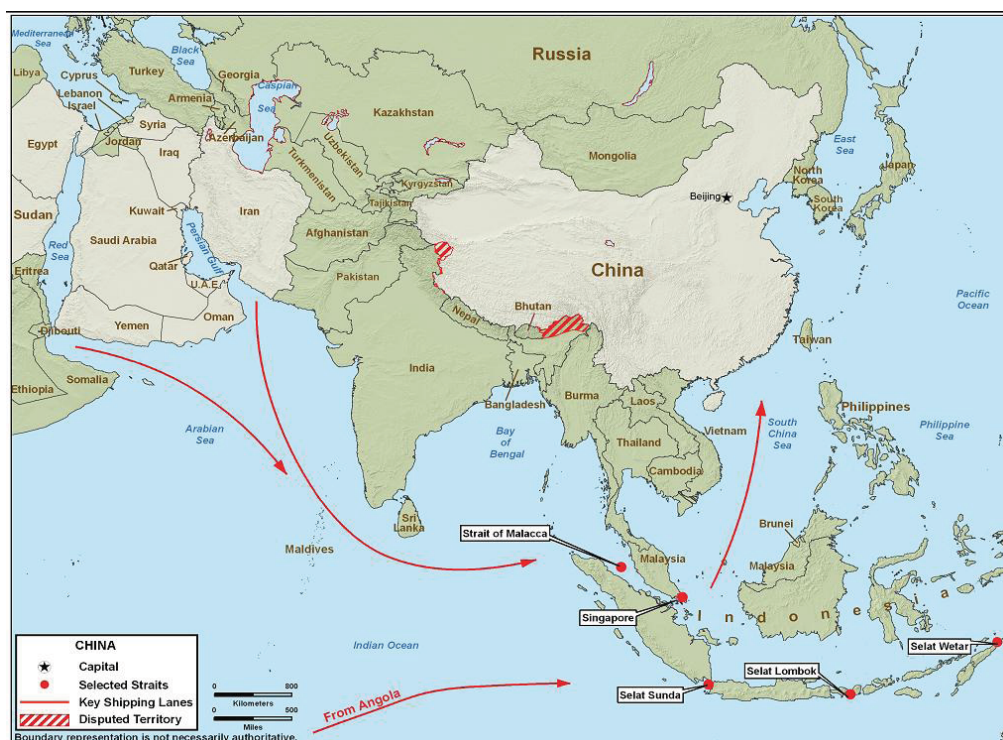


Figure 3: China's Critical Sea Lanes.

Source: Office of the Secretary of Defense, Annual report to Congress, *Military Power of the People's Republic of China 2008*, p.12.

Following this, the Chinese media devoted considerable attention to the country's "Malacca Dilemma," leading one newspaper to declare: "It is no exaggeration to say that whoever controls the Strait of Malacca will also have a stranglehold on the energy route to China."¹⁰ Should a third country attempt to block traffic through the Malacca Strait, then the presence of a Chinese carrier could be the show of force that could ensure the freedom of passage for Chinese ships through the strait (except if the USA were involved). China's self-perceived vulnerability in the Malacca Strait may be a strategically decisive reason for China wanting to acquire an aircraft carrier.

A third reason is the future position of China as a global great power. The Chine-

se are very conscious about what it means to be a great power and what is required of a great power. Some Chinese say that "a nation cannot become a great power without having an aircraft carrier". Lt Gen Wang Zhiyuan, deputy director of the PLA General Armaments Department, stated in 2006 that "aircraft carriers are a very important tool available to major powers when they want to protect their maritime rights and interests. As China is such a large country with such a large coastline and we want to protect our maritime interests, aircraft carriers are an absolute necessity".¹¹ Of the great powers with a potential presence in the Pacific, the USA and India are currently building carriers, and the UK and Russia have made decisions to build 2 and 5-6 carriers respectively. Russia intends to deploy up to three carrier groups in the Pacific.¹² There are therefore many important militarily strategic reasons why China wants an aircraft carrier, not to mention the prestigious symbolic value of the carriers, which the Chinese are acutely aware of.

The Chinese Maritime Strategy

On the grand scale, China is pursuing a three-step modernization strategy of its defense forces, which is described in the Chinese government's "White Paper on China's National Defense 2006".¹³ "The first step is to lay a solid foundation by 2010, the second is to make major progress around 2020, and the third is to basically reach the strategic goal of building informationized armed forces and being capable of winning informationized wars by the mid-21st century." At the recent National People's Congress in Beijing, President Hu Jintao stated that "we must aim at improving the capability to win high-tech regional wars and keep enhancing the ability of the military to respond to security threats and accomplish a diverse array of military tasks."¹⁴ The White Paper describes the strategy for the development of PLAN, which is to "build itself into a modern maritime force of operation consisting of combined arms with both nuclear and conventional means of operation." The White Paper in general emphasizes the Chinese defensive strategy, their territorial defense and the issue of Taiwan being given a high priority. The coastal regions are described as the primary maritime focus area, though in general "the Navy aims at gradual extension of the strategic depth for offshore defensive operations."¹⁵ China's defensive strategy so far has emphasized the modernization of submarines, ballistic missiles and land-based air power, mainly focusing on a potential military operation against Taiwan. If China chooses to acquire an aircraft carrier, then this could represent a continuation of the present strategy or a change of strategy, depending on which type of carrier they get.

Fundamentally they can choose between carriers that operate with either helicopters or fighters. The basic difference is that helicopter carriers can only con-

duct support operations, not offensive operations. If, on the other hand, China acquires a fighter-capable carrier, this will lead to a change of maritime strategy away from the submarine-focused defense of China to a more extrovert strategy focusing on power projection away from Chinese shores.

It is the Chinese goal to be able to gain "sea control"¹⁶ out to a line called "First Island Chain",¹⁷ which is a line defined by a series of islands in the East and South China Sea (see figure 4).¹⁸ In the longer term, the ambition of the Chinese¹⁹ is to be able to conduct a "Sea Denial"²⁰ strategy out to the "Second Island Chain",²¹ shown in figure 4. Presently China does this using a combination of submarines operating around the First Island Chain, ballistic missiles deployed in the Fujian-province and cruise missiles on strategic bombers and maritime vessels.

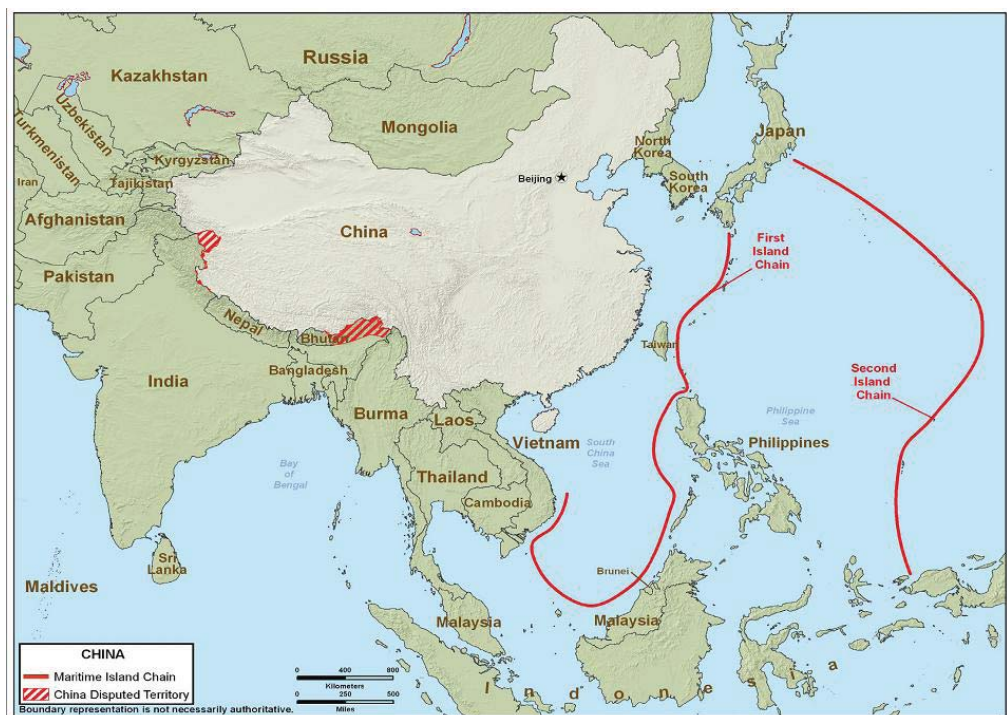


Figure 4: First Island Chain og Second Island Chain.

Source: Office of the Secretary of Defense, Annual report to Congress, Military Power of the People's Republic of China 2008, p.23.

But if China, as a future great power, wants to raise its level of ambition by demonstrating an active presence and influential power beyond the First Island Chain, then this requires the ability to control the surface and sub-surface situation, as well as the ability to maintain air control in the area if necessary. If PLAN were to conduct successful military operations in this area, it would require the

ability to achieve air superiority, as a minimum over the Chinese maritime task force, but also over the objective over which the conflict is fought. To achieve this combat aircraft are required, which is a problem if operations are conducted outside the range of land-based fighters, and this is why an aircraft carrier may be a decisive asset. If China were to possess a carrier, it would be able to maintain air superiority over the Spratly Islands or be able to demonstrate power in the Malacca Strait if anyone were to block traffic through it.

In the following, only the possible acquisition of a fighter-capable carrier will be discussed, since a helicopter carrier will have no significant strategic importance.

What type of carrier?

There are in general three types of carriers. With the first type the fighter starts unassisted powered by its own engines and lands vertically, as on the British carriers of the Invincible class. Flight operations from this type of carrier require the aircraft to be able to land vertically like the British Harrier aircraft. China does not have this type of aircraft, and since this technology is very complicated it is unlikely that it will acquire this sort of carrier.

On the second type of carrier the aircraft also starts unassisted, powered by its own engines, but it lands conventionally using an arresting cable to stop it when it lands. The Russian carrier of the Kuznetsov class uses this technique.

On the last type of carrier the aircraft performs a catapult-assisted start and lands conventionally, using an arrestor cable, as on the US carrier of the Nimitz class or the French Charles de Gaulle class. The main advantage of a catapult-assisted start is that the aircraft take-off weight can be much larger than with unassisted starts. This is especially important when conducting offensive operations using heavy bombs and missiles. Technologically, carriers of the Kuznetsov class are accessible to the Chinese since they would be able to buy it from Russia, but it would be more difficult and take longer to build a catapult-equipped carrier, since the technology is very complicated. And the European Union (EU) weapons embargo prevents the country from buying the technology from France, which means that the Chinese will have to design and construct it themselves or possibly in cooperation with Russia.

The Chinese have studied carriers for the last thirty years. They have visited American, British and French carriers, and they have bought phased-out carriers and studied them in great detail. In 1985, a private Chinese individual bought the Australian carrier HMS Melbourne (15,000 tons), which was studied by the Chinese before it was scrapped. The carrier flight deck was dismantled and used by the PLA Naval Air Force (PLANAF) to practice on.²² In 1998 a private Chinese company bought the Russian carrier Minsk (40,000 tons), which was stripped for

its weapons and electronic components. It was studied and subsequently used as a tourist attraction. A similar fate befell the sister vessel Kiev, which was bought in 2000 and used for tourism. In 1998 the Chinese bought the Russian carrier Varyag of the Kuznetsov class (67,500 tons).

The vessel, which was decommissioned in 1992 after the break-up of the Soviet Union, was only 70% complete, and was bought without an engine, rudder and armaments. Its sister ship, the Russian Kuznetsov, is operational today in the Russian navy operating SU-33 fighters and helicopters. The Kuznetsov has no catapult, which is why there is a limit to the amount of offensive weapons the aircraft can carry.

Although China denies that it is studying the design of carriers, in 2005 Varyag was seen in dry dock being painted in the classic gray paint scheme of the Chinese navy. Sources in the Russian navy say that China has bought four carrier landing systems, capable of handling heavy fighters like the SU33.²³ It is suggested that one system is to be studied and copied, while another is to be mounted on the Varyag, which are to be made ready for training purposes. The last two landing systems are to be used on two carriers, which China denies plans for. But the South Korean newspaper *The Hankyoreh* quotes unnamed Chinese sources close to the Chinese military that China is considering the development of two carriers under project 085, a 93,000 tons Nimitz-sized nuclear carrier, according to a Chinese Communist Party dossier.²⁴ The source also indicates that China has a project 089, a 48,000-ton conventionally propelled carrier, which, fully loaded, will have a displacement of 64,000 tons, approximately equivalent to the Varyag. In accordance with the dossier the 93,000-ton nuclear carrier is to be finished by 2020 and is to be built at the China State Shipbuilding Corporation's Jiangnan Shipyard. The size of this carrier is similar to the unfinished Russian carrier Ulyanovsk, and China may have bought the design sketches of this ship from Russia. I consider it unlikely that China will attempt to build a 93,000-ton carrier for reasons explained in the following.

The Chinese defence industry's two principal shipbuilding entities, the China State Shipbuilding Corporation (CSSC) and the China Shipbuilding Industry Corporation (CSIC), have enjoyed strong production and profit growth over the past few years because of strong demand for their commercial and naval ships.²⁵ Since 2005, the CSSC Jiangnan Shipyard (Group) Corporation, located along the Huangpu River banks near Shanghai city centre, which allegedly is to build a carrier, has been moving to Changxing Island outside Shanghai. The move will be complete by mid-2008, with the first vessel being produced from the new facility in 2009. The Changxing shipyard has four large dry docks, of which the largest is 580m in length and 120m in width, enough to build a 60,000-ton carrier.²⁶ But it is one thing to have the physical capacity to build a carrier, quite another to have the skills and knowledge. Since the late 1990s, the quality and quantity of output from China's commercial and naval shipyards have risen sharply. The

country became the world's third largest commercial shipbuilder in 1995 and has set its sights on overtaking Japan and South Korea within the next decade. It also has the world's largest naval shipbuilding program, with more than eight different types of nuclear and conventional submarines, destroyers and frigates in production or under development. Despite these advances, the Chinese shipbuilding industry still has a long way to go to reach the technological and manufacturing levels of its international rivals. In 2006, Zhang Xiangmu, a senior official with the Commission of Science Technology and Industry for National Defense (COSTIND), which administers shipbuilding affairs in China, said that China still lags far behind the top shipbuilding countries in many ship functions, in structural design and technology.²⁷ It is leagues behind the other players in many key technologies, with no domestic brands to provide support products for exported ocean ships. A lot of key components simply cannot be manufactured in China at the present time. The country's capacity to provide the products required for high-tech and high added-value ships is woefully insufficient. He pointed out that 88.4% of ships built and exported in the first six months of the year used components outsourced from abroad. Overall, at least 60% of shipboard equipment is imported from overseas. Most of the naval hardware being produced is at least one or two generations behind its counterparts in the West. Building a 60,000-tons carrier, three times larger than any other naval vessel yet built in China, will no doubt be a major challenge. They will have to build the complicated catapult, not to mention an engine powerful enough to propel the ship. One option is a nuclear power plant, which will give the carrier a longer endurance without refueling, and China does have knowledge of using nuclear reactors from commercial nuclear power plants²⁸ as well as nuclear-propelled submarines. When it comes to the catapult, China has been seeking alternative ways to obtain knowledge of how to build it. In 2005, the Chinese-born engineer Chi Mak, who worked on US Navy quiet-drive propulsion technology, was arrested in the USA for espionage against the US defense industry. Chi Mak had received written instructions on which military technologies he was to seek. They included "electromagnetic launch systems" for carriers and "aircraft carrier electronic systems". Whether China ever received the information was never made known to the public. On 8 June 2007, a Tsinghua University webpage mentioned that a chief design engineer, Mr. Ma Weiming, was leading a Chinese Electromagnetic Launch System project,²⁹ thus confirming that China is interested in developing a catapult equipped carrier.³⁰ Considering the tenacious efforts that China is prepared to make to overcome the hurdles of designing a large carrier, it is likely that, over a longer period of time, Chinese industry will be able to improve its technology and knowhow and overcome the challenges to build a Varyag-sized carrier.

Since the Chinese are so secretive about their plans, it is hard to say exactly what is going to happen, but we can say with certainty that China is showing

great interest in fighter-capable carriers. If the Chinese were to acquire such a carrier, they could also choose to buy it. If they were to buy a carrier, they would be able to capitalize on other countries' experiences of carrier design. Russia already has plans to build new carriers with offensive capabilities.³¹ By 2012, Russia will start the construction of five to six aircraft carrier fleets, of which some will be attached to the Pacific fleet,³² China and Russia may cooperate in building carriers, though they will have to overcome their current difficult relationship in the arms trade arena, and there are legal and technical arms trade issues that need to be ironed out (see below). As long as the EU maintains its weapons embargo of China, it is unlikely that China will buy a carrier from the EU, even though both France and Spain have shown interest in such a project.³³ If China were to buy a carrier, they would therefore be most likely to buy it from Russia, and this would also be an interesting option for the Russians, since that would provide co-funding of the Russian carrier project.

Alternatively, China will have to build a carrier itself based on the experience of the Varyag. But, as mentioned earlier, this would be a very ambitious project. The Varyag is three times bigger than any navy vessel China has ever built, and there is skepticism among international scholars whether China is capable of building a carrier on its own.³⁴ The acquisition of four carrier landing systems does indicate, however, that China has plans to do just that. It will be a long-term project, and it is very likely that they will require Russian assistance. When the different sources of information are compiled, a pattern of a project appears that indicates that Varyag may be made operational for training purposes and that a medium-sized carrier will be built based on the experiences of the Varyag and of similar size. All these projects are ambitious, but with Russian support, China would obtain the external support that American naval experts in particular consider necessary.³⁵

Aircraft

From a military perspective, states acquire carriers because they need the ability to achieve air superiority over the maritime task force and to be able to use combat aircraft in the area of operations. Thus the choice of fighter is highly significant because, by choosing a fighter, one is also choosing a major combat capability of the carrier group. If the fighter is to start unassisted without a catapult, as from the Varyag class, there will be limitations on how much weight the aircraft can carry. But if the aircraft is capable of air refueling, then it can start with less fuel, meaning less weight, and allow the aircraft to carry a heavier weapon load. China has ten medium-sized H6 tanker aircraft and is purchasing an additional eight II-78 Midas Large tanker aircraft, which will allow minimum fuel take-off from the carrier, provided that the carrier is within range of the tanker



Figure 5: SU-33

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aircraft.³⁶ If, on the other hand, the plane is using catapult-assisted start, then the plane will be able to carry a larger weapons load. A carrier uses fighters to protect the carrier and the carrier task force, as well as to conduct the operations that carrier task forces are assigned to do, which can encompass either defensive or offensive operations. It is therefore useful if the fighter is multirole, capable of doing both offensive and defensive operations. Generally fighters that operate from carriers must have stronger wings and landing gear than other planes due to the forces they are subjected to during take-offs and landings. The Chinese have a domestically produced fighter, the J-10, which is a multirole fighter, but in its current version the J-10 has neither the strength nor the engine power to operate from a carrier. But sources indicate that China is researching how to modify the aircraft, including improving its structure.³⁷ In 2005, the J-10 was fitted with the more powerful Russian-built AL-31FN engine, and the Russians have offered to fit the engines with an all-aspect thrust vector control with an increased afterburning thrust. This would enhance the slow speed performance of the aircraft, but whether it will enable carrier take off and landing is unknown.³⁸ China has not responded to the Russian offer. In 2007 China decided to modify the J-10 with the indigenously produced WS-10A engine, which has a performance similar to the Russian AL-31FN engine. Another option for the Chinese is to modify their newest indigenously produced fighter, the J-11, which is a Chinese version of the SU-27 and therefore in the same family of fighters as the SU-33. The J-11 is still at low production levels,

and it may take longer to modify this aircraft for carrier operations. However, the advantage of this aircraft is that it has two engines, which is a desirable feature in maritime air operations.

At the Moscow 2005 air show, it was revealed that China is exploring the possibility of buying the Russian SU-33, which operates from the Russian carrier Kuznetsov. This was additionally confirmed by Russian newspapers in 2006, which were able to report that China was negotiating with Russian arms dealers on the purchase of up to 50 SU-33s.³⁹ In its modernized version, this plane is equipped with modern radar, active helmet-guided missiles and precision-guided air-to-ground capabilities. This is a modern fighter equivalent to a modern American F-18 E/F, which operates from the American carriers. But recently a problem seems to have arisen between the Russian aviation industry and China. In 2005, China and Russia signed a contract for the delivery of 30 IL-76 transport aircraft and 8 IL-78 air-refueling aircraft at a very low price in US Dollars. The subsequent depreciation of the dollar, combined with the low purchase price of the aircraft, have led the Russians to demand a renegotiation of the contract, which China has refused, and this has delayed any other aviation industry contracts between Russia and China, including the potential purchase of SU-33s and SU-35s.⁴⁰ Another obstacle to the finalizing of a contract is China's possible violation of intellectual property rights regarding the SU-27SK. China bought 200 SU-27SKs, of which 95 were to be delivered already assembled and 105 as sets of parts to be assembled in China. Not long afterwards it was revealed that China had a J-11A fighter program, which Russia claims is a copy of the SU-27SK. This dispute and the contractual difficulties in delivery of the IL-76 and IL-78 is casting doubt on whether Russia is willing to sell SU-33s to China.⁴¹ The significance of the issue was demonstrated by the fact that aircraft and naval technical equipment issues were on the agenda when the newly elected Russian President Dmitry Medvedev visited President Hu Jintao in May 2008. The desired outcome of the negotiations was a resumption of the suspended Sino-Russian Committee for Military and Technical Cooperation, which had not convened since 2006.⁴² This is seen as a precondition for the resumption of major Russian arms sales to China. Given a positive outcome, it was also hoped that the talks about direct supplies of the SU-33 and SU-35 would be fostered. It is therefore unknown at present whether China will be able to purchase the SU-33 from Russia, or whether it will be forced to modify the J-10 or J-11 fighter, which is an expensive and complicated task. It is also reasonable to assume that Russian assistance to a Chinese carrier project or the purchase of a Russian-built carrier depends on the normalization of the Sino-Russian arms trade.

In modern combat, it is necessary to obtain information about the military situation at sea and in the air. China has bought land-based airborne early-warning and control aircraft, and these would be able to support a carrier group within range of its home base. But if a carrier were to operate independently and effec-

tively far from the Chinese mainland, it must have a carrier-based airborne early-warning capability. China has the option of buying the Russian KA-31 Radar Picket naval helicopter with an airborne early-warning capability, which is also used by Russia and India.⁴³

The carrier group and logistical support

A carrier on its own is of no use. A host of supporting capabilities are required to permit independent carrier operations. The carrier must be protected from maritime threats from submarines and surface vessels, as well as from fighter and missile attack from the air. The Chinese are very aware of this threat, given that an important part of their Taiwan strategy is based on deterring the American carrier groups from interfering in a Chinese operation against Taiwan, using mines, submarines, fighters and bombers launching long-range anti-ship missiles. China has an ongoing naval acquisition and modernization program and will be able to protect a carrier with the existing fleet. In the last two years, PLAN has taken delivery of seven new destroyers and frigates.⁴⁴ But if they also want to carry out the existing maritime operations they are already conducting, then it will be necessary to acquire additional naval vessels of destroyer size, including anti-submarine, surface vessel attack and air defense capabilities. A carrier group has very large logistical requirements, and dedicated support facilities are needed to permit the repair and maintenance of such large vessels. But China has apparently also considered this. Satellite photos have revealed that since 2005, China has constructed a naval base close to Sanya on the island of Hainan in the South China Sea. There are two 950m piers as well as three 230m piers, which together could accommodate two or more carrier groups.⁴⁵

Communication and the provision of intelligence would be essential if the carrier were to operate far from mainland China. Communication is required between the ships in the carrier group and back to headquarters at home. Since the carrier planes will have a range which exceeds the range of the carriers' own intelligence-gathering capability, it will be essential that the carrier is provided with up-to-date intelligence information about the operation from a central intelligence source. Especially target information, including pictures, requires a large satellite band width. It must be assumed that China will acquire precision ammunition for their aircraft, and precision weaponry also demands accurate target information, as accurate as the precision capability of the weapon involved which again demands high-precision intelligence-gathering from satellites, drones, human intelligence and other sources. China has an intensive satellite program, including communications satellites and Synthetic Aperture Radar Imagery satellites,⁴⁶ and the country is developing a satellite navigation system, COM-

PASS, consisting of 5 geostationary and 30 orbiting satellites, which is planned to provide global satellite navigation coverage with precision similar to the American GPS system.⁴⁷ This capability will enable carrier operations far from the Chinese mainland.

China will also require a sea replenishment capability that can provide the carrier with the necessary fuel and spare parts to continue operations. China does possess this capability, but it will require additional replenishment ships if the other parts of the navy also need sea replenishment.⁴⁸

Chinese maritime operations and doctrine

If China's ambition to become a regional great power is to be fulfilled, then it must as a minimum be able to control the seas out to the First Island Chain, but China's aspirations to be able to conduct Blue Water operations have been unfulfilled until now for several reasons. One reason is that for many years, China could not afford to build large naval vessels. Secondly, the Chinese had to focus their maritime modernization process on the potential military conflict over Taiwan, which did not justify an investment in large ships. Thirdly, China was always focusing on the defense of the Chinese mainland, and since they have been influenced by Soviet maritime doctrine, China has never developed a Blue Water doctrine or tactics.⁴⁹

Before China can execute effective carrier operations, PLAN will have to go through a prolonged development, education and training process. The Chinese must learn to operate the carrier on its own. They must learn to sail, maneuver, communicate, operate, defend, repair and replenish. Then they must learn how to start and recover aircraft, and the pilots must learn to operate over Blue Water, far from the shores of China. After that, they have to develop, train and optimize similar procedures on a grander scale with the whole carrier group, consisting of the carrier, support ships, submarines, fighters and helicopters. This is very complex task that has to be trained to great perfection before the carrier group is ready for war.

China starts from a very low level. In the last two years there have been reports of five to six episodes of Chinese maritime vessels operating around the First Island Chain and Chinese submarines operating east and south of Taiwan.⁵⁰ In May 2007 the Chinese Frigate Xiangfan participated in an exercise in the Malacca strait together with 12 other states.⁵¹ In other words, China is slowly expanding its area of operations into Blue Water, but it will take many years to develop proper Blue Water doctrine. Carrier operations are technically one of the most difficult types of military operation, since they encompass all the disciplines of maritime operations, air operations and very often land operations as well, which must be coordinated and synchronized, focused on the same military objective.

Development of joint doctrine is a very complex process, which is often impeded by service rivalry and limited knowledge of the other services' requirements for optimizing their operations.

How many carriers?

If a Chinese carrier is to have any strategic relevance, then it must be continuously available, which is why one carrier is insufficient. Carriers require regular maintenance and must stay in harbor for several months at a time. Over a two-year period, an American carrier is only operational for one year. Thereafter it will be docked for maintenance and modernization for six months. Then it will be made ready for operations again. In the first three months, it will go through basic carrier training, which is followed by another three months of more advanced training, where the ship may be used operationally in case of an emergency. That means that over a two-year period the ship is only operational for one year.⁵² If China is to have a continuous carrier capability, it will as a minimum require two to three carriers, depending on how advanced its maintenance technologies are.

China also has to decide how much combat power it wishes to be able to project, which should be measured in the number and types of combat aircraft. The Kuznetsov, which is the sister ship to the Varyag, can carry 28 fighters and 24 helicopters.⁵³ Of the 28 fighters, it can only be expected that 70% are operational at any one time. The remaining aircraft will be non-operational or scheduled for maintenance. This means that only 20 aircraft will be operational, and they will be able to fly only twice in 24 hours. During operations, where there is a threat to the carrier, a number of sorties will have to be allocated to the defense of the carrier group. Air defense operations are flown around the clock with a minimum of two aircraft at a time, which means that 24 out of 40 sorties will have to be allocated to air defense of the carrier group. Thus means that there are only 16 sorties available for the mission the carrier was originally tasked to do. That is not a lot, and it will force the Chinese to consider whether one operational carrier is enough. During the Falklands War, the UK used two carriers, which in total flew 1561 fighter sorties, of which only 126 were offensive. The remaining 1435 sorties were air defense missions in defense of the British Maritime Task Force.⁵⁴ The British carriers are coming to the end of their lifetime and the British have decided to build two new 65,000-tons carriers, capable of operating with 36 fighters and 4 airborne early warning aircraft.⁵⁵ The American Nimitz class carrier, of which they have 10, can operate with up to 82 aircraft, encompassing fighters, support aircraft and helicopters.⁵⁶ Using equivalent calculations as above and with a 70% availability it can conduct approximately

42 offensive sorties a day.

Assuming that China will aim for a medium size carrier, China should acquire at least two to three carriers to be operationally effective, even in a minor conflict.

When will it happen?

Given China's strategic interest in possessing a carrier and its evident activities and research into the matter, it is likely that China will acquire a carrier at some time, but before it can do this, a number of hurdles will have to be overcome. If the carrier is to be built domestically, the move of the Jiangnan Shipyard to Changxing Island will have to be completed first, which will happen in 2008-09. Also, China has to be confident that it either possesses the technology, know-how and skills to build a carrier, or that it can acquire it from abroad. Considering the current amount of foreign parts in Chinese-built ships, this is not an insignificant issue. When it comes to the choice of the essential fighter aircraft, China faces a problem. Buying the SU-33 would be the easy option, but this will require that the arms trade issues with Russia be resolved. If China chooses to use domestically produced aircraft, the choice is between the J-10 and the J-11. Both aircraft will have to go through substantial modifications, including structural changes to wings, fuel tanks, landing gear, arrestor hook, carrier landing systems and changes of software and avionics. It will not make sense to decide on a carrier project before the choice of fighter has been made. And finally, there is the issue of finances. A carrier group is a very expensive investment, and once it is operational it will demand a large chunk of the PLAN annual budget. Therefore the budget has to be of a size that will allow not only funding of the carrier group, but also the other naval financial expenses, as well as the continued PLAN expansion, since acquiring only one carrier group does not make any sense operationally. At least two to three carrier groups are required. If this is to happen, it will demand significant increases in PLAN budgets for many years to come. So when will the decision be made? China does not publicise the decision-making process in these matters, so if one were to speculate, then a project of this magnitude would naturally be a strategic issue to be included in the national five-year plan. A decision could be made with the next five-year plan, the twelfth to cover 2011-15. At best this will allow China to have one operational carrier group by 2020. This is based on the assumption of similar annual increases in the defence budget continuing as seen in recent years.

The regional military balance

China has used its economic growth to improve and expand its relations with

other states in Asia, mainly through significant increases in trade, investments in infrastructure and economic aid, hoping to create strong bonds with such countries and to alleviate anxieties over the accumulation of power that is occurring on their doorstep. However, China's annual double-digit increase in military spending over the past decade has forced other countries in the region to keep an eye on its military build-up. If China acquires an aircraft carrier, it is likely to cause reactions throughout the region.

India is concerned about the increased Chinese presence in the Bay of Bengal and the Arabian Sea, and India considers itself surrounded by less friendly states, who all have good relations with China, such as Pakistan, Bangladesh, Myanmar and Sri Lanka. These states are located along the vital sea lanes to the Middle East and Africa that China is so dependent on, and all these countries have agreed to let China use their deep-sea ports and airfields (also known as the String of Pearls)⁵⁷ and, in the case of Myanmar, to establish intelligence collection facilities close to India.⁵⁸ Of the other Asian states, only India is developing a real carrier capability. India already has an old, small carrier, but it has also bought a modified Russian Kiev-class carrier (INS Vikramaditya, 45,000 tons full load), which will operate with 16 MIG29K (Fulcrum-D). INS Vikramaditya is expected to become operational in 2010. India is building an additional two air defense ships, carriers (37,500 tons) which will operate with 30 aircraft.⁵⁹ The two carriers are expected to go operational in 2012 and 2017 respectively. Given that this will change the military balance in Asia, this would justify the acquisition of carriers by China.

Japan and China have had strained relations for many years, and they have three maritime territorial disputes. First, they disagree on the definition of the Exclusive Economic Zone (EEZ) in the East China Sea. Secondly, China, Taiwan and Japan disagree on the rights to the Diaoyutai/Senkaku Islands, which are believed to have large oil and gas reserves. Lastly, China and Japan disagree on the rights to Okinotorishima Island, a rock located halfway between Taiwan and Guam. Tensions have arisen regularly between the two countries over territorial issues, as in 2004, when Chinese submarines entered Japanese territorial waters,⁶⁰ and Japanese naval vessels have fired at Chinese fishermen violating the self-proclaimed Japanese fishing rights around the Diaoyutai/Senkaku Islands.⁶¹ The Japanese Maritime Self-Defense Force is of a significant size, with 44 destroyers of western standard, and Japan has an impressive history of using aircraft carriers both before and during World War II. However, article 9 of chapter II of the Japanese constitution, drawn up after World War II by the United States, stipulates that "the Japanese people will forever renounce war as a sovereign right of the nation and the threat or use of force as means of settling international disputes". It continues by saying that "the right of belligerency of

the state will not be recognized".⁶² As it is currently interpreted, Japan is therefore constitutionally prevented from acquiring an aircraft carrier with offensive capabilities, which is why it only has helicopter carriers. But if China decides to acquire large carriers, Japan is likely to consider how it will respond. In 2007, Japan took steps towards a revision of its constitution,⁶³ and a decision on a Chinese carrier program could influence the Japanese revision. China, on the other hand, expressed concern over the Japanese initiative, saying that "people have begun to doubt whether Japan will continue its path of peaceful development".⁶⁴ The Chinese concern over a possible Japanese change in defense policies may be an incentive for additional strengthening of PLAN by acquiring aircraft carriers. Within the present constitution, Japan's response to a Chinese decision to acquire carriers may range from acquiring anti-ship missiles and submarines, but it cannot acquire a large carrier. Japan is currently building two helicopter destroyers (13,500 tons) capable of operating with 11 large helicopters. Because this carrier is of a similar size to the British Invincible class carrier and has a classic carrier design with a large flat top. International military experts are discussing whether it will be able to operate with a small number of Joint Strike Fighters in the Short Take Off and Vertical Landing version.⁶⁵ If Japan is unable to change the constitution, and therefore unable to acquire matching aircraft carriers, the alternative might be to enter an official defensive alliance with the USA, with whom China cannot compete militarily. Diplomatic sources indicate that the USA, Japan and Australia are moving to begin a joint security alliance to counter China and Russia.⁶⁶

The Philippines, which has no significant military force, has territorial disputes with China over the Spratly Islands. Tensions eased in 2005 when China, the Philippines and Vietnam agreed on a Joint Maritime Seismic Undertaking (JMSU), which would survey the sea around the Spratly Islands for oil and gas. The agreement was supported by vast Chinese investments in infrastructure that support the stagnant Philippine economy. However, the Philippine government encountered heavy domestic criticism over the arrangement, with allegations of corruption in the distribution of Chinese aid and that the government violated the constitution when agreeing to the JMSU.⁶⁷ A bill is being passed through the Philippines House of Representatives which updates the Philippines archipelagic baseline claims to the Spratly Islands which will be forwarded to the UN Commission on the Limits of the Continental Shelf before May 2009. Beijing's reaction to this was that this would "exert a negative impact on the healthy development of our bilateral relations."⁶⁸ So the Philippines and China may have agreed to do seismic surveys, but that does not mean that the territorial dispute has been solved. The Philippines rests its security on a 1952 US-Philippines Mutual Defense Treaty, and until 1992 the USA States had forces stationed on the Philippines. After 9/11-2001 the Philippines have been very supportive of the US counter-

terrorism campaign, and in 2003 the USA designated the Philippines a major non-NATO ally.⁶⁹ It is therefore likely that the Philippines will look to the USA as a security guarantor if China were to intimidate it militarily over the Spratly Islands.

Vietnam, which has been at war with both the USA (1963-75) and China (1979), is seeking better relations with both major powers, while trying to balance the two. Vietnam has good economic relations with China and receives economic aid and investments in infrastructure from China. But lying next to a rising giant, Vietnam is concerned about an expanding Chinese sphere of influence and of being reduced to an economic appendage to China.⁷⁰ Vietnam and the United States have therefore established better relations, first by normalizing diplomatic relations in 1995, and then, in 2004, by the USA removing Vietnam from the list of "Countries of Particular Concern".⁷¹ Trade has increased between the two countries, and in 2007 they entered an agreement to overcome issues dating from the Vietnam war and to take small steps in terms of defense cooperation. Vietnam has territorial disputes with China over the Paracel Islands, which China occupied in 1974 during the US-Vietnam war, this having led to several skirmishes, most recently in July 2007, when a Chinese naval patrol opened fire on a Vietnamese fishing boat, killing one sailor.⁷² Vietnam also has territorial disputes with China over the Spratly Islands. Vietnam reluctantly agreed to the seismic program (JMSU) with China and the Philippines, so long as it did not survey areas claimed by Vietnam. In 2007 Vietnam agreed with the energy company British Petroleum (BP) to develop two gas fields in the South China Sea 230 miles off the coast of Vietnam, but Chinese protests led to BP withdrawing from the operation.⁷³ In 2008, Vietnam entered a similar agreement in the South China Sea with the American oil company Exxon Mobil. But this is also encountering strong Chinese protests, and given Exxon's significant interests in the Chinese energy market, it is questionable whether the company will carry out the project.⁷⁴ Accordingly, on the issue of the South China Sea, Vietnam faces strong opposition from China and does not have the financial ability to counter the Chinese military buildup or to acquire carriers. But it is possible that Vietnam will respond by acquiring a mine-laying capability, long-range anti-ship missiles or submarines as counters to a Chinese carrier. Paradoxically, it is also possible that an increased Chinese ability to project maritime power in the South China Sea may induce Vietnam to seek support from the USA to counter Chinese pressure.

The USA has the largest and most powerful fleet in the world, with 10 carriers of the Nimitz class, which are larger, more modern and carry more aircraft than any other carrier. The US Navy is also in the process of building two new carriers of the Gerald R Ford Class, equipped with 90 aircraft, including Joint Strike Fighters, Electro Magnetic Aircraft Launch System and a Joint Precision Approach and Landing System. So far two carriers have been commissioned and are expected

operational in 2015 and 2019. They will replace two older carriers. The US armed forces are trained in integrated joint operations across the services, and the country has Air, Navy and Marine Corps bases around the Pacific sufficient to support substantial military operations. The USA would therefore easily be able to counter two to three Chinese carriers. But should China decide to acquire a carrier capability, the USA is likely to acknowledge the Chinese change to a more assertive strategy and decide to improve its military capabilities in the region further, thus ensuring that the USA can continue to act as a security guarantor in the region.

If the tremendous increase in Chinese military expenditure continues over the next decade, it is likely that Chinese maritime capabilities will reach a new level, especially with a Chinese decision to acquire aircraft carriers. Such a capability will substantially change the regional military balance. One possible result of this could be regional polarization, with China on one side and a series of states that will enter into some sort of defense arrangement, at various levels of commitment, with the USA on the other.

Conclusion

The Chinese “White Paper on China’s National Defense 2006” objective for its armed forces is to make major progress by 2020, and the acquisition of a carrier capability would be exactly such a major progress. Only time will tell whether China will deviate from its present military strategy, which focuses on the defense of the mainland of China coupled with a potential Taiwan crisis. If China decides to acquire aircraft carrier groups with fighters that have offensive capabilities, the country will then have a military capability that will enable a change of strategy in a more assertive direction. A Chinese carrier capability will expand its military range significantly, and China will be able to project its power abroad on an unprecedented scale. China will be able to protect its interests and put military might behind its territorial claims in the region, especially when it comes to the Spratly Islands. It will also be able to protect the vital sea lanes from Africa and the Middle East.

China has not officially acknowledged it has have an active carrier program, but the amount of circumstantial evidence that is available, makes it more than likely that it will acquire carriers. Seen from a Chinese perspective of military efficiency, the acquisition of a minimum of two to three carriers is required to enable a continuous military effective capability. Cooperation with Russia, which has experience of carriers, will ease the process, whether China chooses to buy carriers from Russia or build the carriers itself. But Russian participation depends on fin-

ding a resolution to the arms trade disagreements that currently exist between the two countries. There are many indications that China prefers to build carriers in China, and when all the information is pieced together, it points towards the Varyag being made operational for training purposes. China will use the experiences gained from this to build a carrier of a similar size. This will be a major challenge to the Chinese ship building industry, that currently rely heavily on support from abroad.

When it comes to carrier combat aircraft, China can choose either to modify the indigenously produced J-10 or J-11 multirole fighter, or it can buy the Russian SU-33 multirole fighter, again provided that the two countries can come to an agreement.

A Chinese carrier group with the associated support vessels, submarines, fighters and helicopters is unlikely to be fully operational for war until 2020. This assumes that a decision to acquire carriers is made in the 12th Five-Year Plan (2011-15) and that the defense budgets continue to increase to enable funding.

The USA, Russia and the UK are all in the process of acquiring new carriers, and India, a regional great power, is currently developing three aircraft carriers that are expected to be operational in 2017. All these carriers will enable a substantial carrier presence in areas of Chinese interests, providing China with an argument for its own acquisition of carriers. The other nations of the region are not acquiring similar capabilities at the moment, and the military balance will tip out of their favor should China acquire carriers. One, two or three Chinese carriers will be a significant source of power in the region, and it is likely that the USA will have to continue to act as a security guarantor and provide security to its allies in the region.

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