Chinese pilots parade in front of their J-10 fighters

Air Power and China in the 21st Century

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Introduction

The Twentieth Century was the 'Air Power Century'. From the birth of powered flight at it's beginning to the first 'space' war at the end, air power and its application played a key role in its shaping. As the Twenty-First Century unfolds it seems likely that the importance of air power will continue to grow. Indeed it could be argued that the Twenty-First Century will be the 'Aerospace Century'. In 2008 the worlds' sole superpower, the United States, has a vast asymmetric advantage in all aspects of air power over its nearest rivals, an advantage that appears unchallengeable in the near future. It is this superiority that enables the U.S. to regularly utilise air power as a foreign policy tool, often of initial recourse and often unhindered. As RAND have noted:

'Aerospace power has become the archetypal expression of the U.S. ability to project force in the modern world.'[1]

However, there are other countries that aspire to be great powers, China chief amongst them. It could be argued that with the a fifth of the worlds population, a burgeoning economy that is currently the worlds third largest and a large military, China is already a great power. But in the 21st Century is it possible to be a great power without considerable air power? This paper will consider China's current air power capabilities, paying particular attention as to how this has changed in the recent past, where it is going in the future and where that leaves China in relation to its regional rivals. China's burgeoning space based programmes will also be examined. Then, by scrutinising China's current national security goals, particularly those identified by the Peoples Liberation Army (PLA), the role of air power in securing each of them will be examined. In identifying and assessing these roles in achieving China's national security agenda, it will be possible to identify to what extent China has been developing its conventional military arm to decisively influence regional power relationships and therefore, whether China can today be classed as a great power.

CHINA'S AIR POWER

'In early February 1991, China's High Command was stunned to realize just how far behind modern militaries the People's Liberation Army (PLA) had fallen. The opening days of the Gulf War convinced PLA analysts that they were witnessing a revolution in military affairs (RMA).'[2]

As Desert Storm unfolded China witnessed with horror as a large standing army, equipped comparably to their own (many of Iraq's tanks were of Chinese origin) and trained to fight along similar lines, was systematically destroyed, largely from the air. It was a profound shock, although as Shambaugh notes, it was not the first time that China had been forced to recognise its military shortcomings. Only 12 years earlier, in 1979, China had performed poorly in its punitive attack against Vietnam. Incredibly, no air power was brought to bear against their adversaries.[3] Prior to this in 1978, the Chinese government under Deng Xiaoping, had recognised the need for general reform and had embarked upon the national strategy of 'Four Modernizations', in agriculture, industry, science and technology and finally, national defence.[4] Deng justified defence as the lowest priority by announcing that the danger of major world war was remote. In 1985 it was declared by the Central Military

Commission (CMC) that the greatest danger faced was no longer "early, major, and nuclear war (as foreseen by Mao) but rather 'local limited war'.[5] Because the threat was low, the PLA could afford to take time to reform and not waste valuable resources that were important for economic growth. A number of events were to upset this mindset profoundly and fuel the drive for transformation. Firstly, as discussed above, was the Gulf War where the combination of aerospace systems demonstrated just how far behind China had fallen. Secondly, the stand off with the US over Taiwan in 1996 raised the prospect of a confrontation with the U.S. military in any future Taiwan crisis.[6]

Finally, the Kosovo crisis of 1999 again emphasised the superiority of NATO air forces and also demonstrated an interventionist stance that alarmed China. This last point coupled with the bombing of the Chinese Embassy in Belgrade resulted in a barrage of invective against the U.S. unequalled since the Cultural Revolution and the Vietnam War.[7] The transformation that has been driven by these events has been impressive. The PLA have evolved from preparing to fight 'local limited wars' through 'local wars under high tech conditions' to the current 'local wars under conditions of informationization'. As the U.S. Department of Defence note:

'The PLA is pursuing comprehensive transformation from a mass army designed for protracted wars on its territory to one capable of fighting and winning short-duration, high-intensity conflicts against high-tech adversaries – which China refers to as 'local wars under conditions of informationization.'[8]

Fig 1 The J-11 China's first modern multi-role fighter[17]

Or in China's own words:

'To effectively fulfill its historic mission in the new stage of the new century, the PLA is speeding up the revolution in military affairs with Chinese features and enhancing in an all-round way its capabilities of defensive operations under conditions of informationization.'[9]

It is recognised that this will take time to achieve, indeed China's aim is to lay the foundation by 2010, make major progress by 2020 and reach the goal of being capable of winning informationized wars by the mid Twenty-First Century.[10] One of the major areas of focus for this transformation has been China's air power capability (or hitherto lack thereof). The People's Liberation Army Air Force (PLAAF), where China's main air power capability lies, has been at the top of the PLA's funding allocations for much of the past decade[11]. The priority for funding in the Tenth and Eleventh Five Year Plans (2001-2005 & 2006-2010) has been the air force, navy and strategic missile forces, while the once dominant ground forces lag behind.[12]

People's Liberation Army Air Force (PLAAF)

In 2007 the U.S. Department of Defence estimated that China had around 2,325 operational combat aircraft[13] a major

drop from the 3400 it had in 2004, reflecting the ongoing modernization programme. A programme that was emphasised in China's 2006 Defence White Paper:

'The Air Force is working to build an informationized air fighting force with both offensive and defensive capabilities. It is reducing the number of combat aircraft, giving priority to the development of new fighters as well as air and missile defence weapons. It is working to enhance command and control systems.'[14]

The majority of these aircraft belong to the PLAAF. However of these only around 300 are modern 4th generation aircraft[15] with the remainder being older 2nd and 3rd generation aircraft of Soviet design, aircraft that have repeatedly proven to be ineffective in combat against modern rivals (for definitions regarding aircraft generations see endnotes[16]). This ratio is gradually improving and will continue to do so in the future, as the older generation aircraft are replaced and more J-10s, J-11s and SU-30 variants come into service.

It is these aircraft that provide China's first true modern multi-role capability. It is assessed that the indigenous J-10, that the Chinese claim to have a performance similar to that of an F-16 and the Japanese F-2[18], will form the backbone of the PLAAF, with the U.S. Defence Intelligence Agency estimating a total PLAAF requirement for 1200. Currently only around 100 J-10s are in service and as Table 1 shows this means that in reality China's balance of modern aircraft with its nearest neighbours and rivals is not as healthy as it initially appears. Meanwhile, they continue to rely on the imported Russian or licence produced SU-27 and SU-30 variants for an all-weather, precision capability.

Table 1. Total combat aircraft[22]

Country	Total	Total Modern[19]
China	**3,418**[20]	**299**
U.S.	**3,652**	**3,567**[21]
Taiwan	**432**	**343**
Japan	**260**	**190**
India	**826**	**564**
South Korea	**505**	**165**

The production of an indigenously designed and built engine is an important step in China's aerospace industry, as China currently relies on engines from Russia or the U.K. (Rolls Royce). Indeed Kogan has noted that along with underdeveloped avionics and poor radar development, the engine sector has been, and still is, the single weakest element to hamper the Chinese aviation industry.[26] Although in some cases these systems have been in development for two decades or more (JH-7 & J-10 for example)[27] the introduction of these aircraft, systems and weapons allows the PLAAF to begin to achieve it goals of

'speeding up its transition from territorial air defense to both offensive and defensive operations, and increasing its capabilities in the areas of air strike, air and missile defence, early warning and reconnaissance, and strategic projection.'[28]

What is clear is that although this transformation is occurring quickly, inherent weaknesses are still evident. Despite the acquisition of these newer aircraft a central weakness remains the inability to project power effectively due to a lack of aerial refuelling capabilities

Fig 2 FC-1 multi-role fighter[25]

and more importantly an airborne warning and control aircraft (AWAC).[29] This lack of an AWAC capability is one of the major problems facing the PLA.[30] In the late 1990's, China attempted to purchase 4 highly capable Phalcon AWAC aircraft from Israel, in an effort to rectivy this problem, but this deal collapsed in 2000 after heavy political pressure from the U.S.[31] China has subsequently tried to develop its own AWAC system, the KJ-2000, based on the Russian A-50 platform. However, this programme suffered a major setback when one of the two development aircraft crashed in June 2006.[32] As work continues on this programme, it is possible that four aircraft have now had fixed AWACs radomes fitted. At the same time, efforts have been ongoing to configure the Y-8 medium transport aircraft into an AWAC platform along similar lines to the Swedish active phased-array Erieye system.[33] When fully operational, these systems will substantially increase the PLA's ability to conduct aerial surveillance and co-ordinate and direct offensive and defensive air and naval operations.[34]

Until then, China will have to rely on its rigid ground control system and would, therefore, be at a distinct disadvantage if encountering an integrated, AWAC equipped opponent. The U.S., Taiwan and Japan all operate highly advanced AWAC aircraft.[35]

China is also making a major effort to improve its air-to-air refuelling capacity. Although the PLAAF currently has 10 HY-6 refuelling aircraft, which are based on the H-6 bomber, these have seen little use in the past. However, a contract was signed with Russia in 2005 to provide 8 IL-78M tankers that would support the SU-30 variants. Indeed, for some time SU-30 training has been reported to include tanker training in Russia to familiarise operating with the IL-78M.[36] These improved capabilities are fundamental to China if it wants to fulfil its goal of transforming its military capabilities into a credible regional military power. Both the refuelling and the AWACs programme have raised concern, particularly in the U.S., as they would allow China to conduct extended air operations well into the South China Sea.[37]

Future Developments

Since the end of the Cold War there has been more research and development activity into fighter aircraft in China than anywhere else in the world. Today, China is perhaps the only country believed to be undertaking the development of six different types of aircraft.[38] Integrated into the policy of

'improving the innovation mechanism for defense-related science and technology, and weaponry and equipment to support the independent, leapfrogging and sustainable development of new and high-tech weaponry and equipment,'[39]

China may be developing as many as three 5th generation aircraft.[40] The most mature of these is the XJ-1 (or J-X) fighter project, which is tipped to be the most modern aircraft to be developed by China. Kondapalli reports somewhat optimistically that the Xinjian-1 (XJ-1) would be in the same class as that of the American F-22 aircraft and would also have stealth features. According to the U.S. Office of Naval Intelligence, the XJ-1 project could come to fruition in about 2015, although given how poor China's past record has been with the J-10 and JH-7, this is unlikely.[41] This does however raise a number of significant issues. Firstly, although China is keen to receive technological assistance from Russia, it is not participating in the development of the joint Russian/ Indian, multi-role 5th generation aircraft.[42] This means that outside of the U.S., China will be the only country that will be unilaterally developing multiple 5th generation aircraft, a fact that is testament to recent improvements in China's aerospace industry. Secondly, if the XJ-1 does enter service by 2015, then it will still be far behind the U.S. in terms of introducing a first 5th generation aircraft.

As has been shown by the purchase of Russian aircraft, China is happy to look abroad to fill capability gaps whilst waiting for new systems to be introduced. Numerous reports contend that China is prepared to purchase 210 Mirage-2000 fighter-bombers from France as soon as the EU arms embargo is lifted.[43] There has also been interest in buying the Tu-22 Backfire strategic bomber from Russia whilst waiting for an indigenous long-range strike capability to develop.[44] Indigenous development of UAVs and UCAVs is ongoing whilst the external acquisition of both, particularly the Harpy UCAV from Israel, has expanded China's options for long-range reconnaissance and strike.[45]

Fig 3 Concept Chinese UCAV – 'Anjian' (Dark Sword)[46]

Training

Although Chinese aircraft are armed with an increasingly sophisticated array of air-to-air and air-to-surface weapons, satellite and laser guided precision munitions and cruise missiles, Chinese military analysts are well aware that military strength is not just about technology.[47] Training and doctrine are also of fundamental importance. There is no doubt that the both the PLA in general and the PLAAF in particular will have to make substantial changes in their operating procedures to be able to use more technologically sophisticated military equipment in an effective manner.[48] Key to these changes will be an improvement in training. The recent Defence White Paper notes that the PLAAF:

'stresses mission-oriented and confrontational training, increasing combined tactical training of different arms and aircraft types, and conducts training in flying refitted new aircraft and using new

weaponry and equipment in an active and stable way.'[49]

However, it will take a considerable period of time for China to catch up with its regional rivals and in doing so it will face a number of challenges. Although SU-27 and SU-30 pilots may fly around 180 hours per year, which is broadly equivalent to Western standards, pilots of older aircraft may see as little as 80 hours flying time.[50] Much of this flying is also basic in nature and is coupled with a reliance on a system of rigid ground control which discourages initiative and autonomy on the part of aircrew.[51] The result is that, although demonstrating that some lessons of the Gulf War had been identified,[52] the SU-27s performed poorly during the 1996 Taiwan crisis.[53] More recently, following a Sino-Russian joint exercise in 2005, the Russians were unimpressed with China's skills and particularly a lack of jointness and communication.[54] Conditions are improving, however, with reports that the PLAAF are using "Blue Team" squadrons to improve realism and are conducting more complicated day and night sorties[55], although these have only become common recently.[56] China is also pursuing more regular exercises with Russia and is seeking a first multilateral military exercise with the 10 member Association of Southeast Asian Nations (ASEAN) as well as continued exercises with the Shanghai Cooperation Organisation (SCO).[57] These steps, coupled with the introduction of modern jet training aircraft and simulators, will rapidly help to improve the standard and war fighting ability of the PLAAF. One thing that China cannot replicate though is invaluable operational experience. There can be very few pilots remaining who have any wartime experience in the PLAAF. In contrast, the U.S. has been conducting combat operations in all spectrums throughout the last 17 years, building up an indispensable breadth of experience across all ranks.

Naval Air Power

China's naval air forces, the impressively named Peoples Liberation Army Naval Air Force (PLANAF), are also an important repository of Chinese air power. Consisting of around 792 combat capable aircraft[58], many in an anti-ship role (including 48 SU-30MK2, China's most advanced aircraft), this force is central to China's anti-access strategies out to the Second Island Chain and the PLAN's 'active defence' doctrine.[59] As China rapidly expands its Navy into a blue water fleet, speculation mounts as to whether it is building an aircraft carrier or not. The aircraft carrier is one of the most potent symbols of national strength and a key power projection asset. China is currently the only permanent member of the UN Security Council not to possess such a capability. Even its regional rivals, India and Thailand, possess aircraft carriers, much to China's chagrin. Additionally, India is in the process of receiving into service a former Russian carrier whilst at the same time building a second carrier indigenously[60]. The recent deployment of an Indian carrier fleet to the Straits of Malacca highlighted to China just how far behind it is in this area. The acquisition of a carrier capability has been a longstanding intention of China and speculation is mounting that these efforts are intensifying.[61] In October 2006 Lieutenant General Wang Zhiyuan, Vice Chairman of the Science and Technology Commission of the PLA's General Armament Department stated that the:

'Chinese army will study how to manufacture aircraft carriers so that we can develop our own…[A]ircraft carriers are indispensable if we want to protect our interests in oceans.'[62]

An indigenous carrier research programme of some scale has been ongoing for a number of years. It began in 1985 with the purchase of the WWII British built, Australian carrier, HMAS Melbourne, which was intensively studied and a mock up of the deck built on land to practise landings.[63] A Chinese scrap concern also purchased a mothballed Essex class carrier from a U.S. east coast yard.[64] Having failed in negotiations with a Spanish company to purchase two carriers, in 1996 China enquired about the possibility of purchasing the retiring French aircraft carrier Clemenceau.[65] Although unsuccessful, China was subsequently able to buy three former Soviet carriers, the Kiev class Minsk and Kiev from Russia in 1998 and 2000 respectively, and the incomplete Kuznetzov class Varyag from Ukraine, also in 1998.[66] Both of the Kiev class carriers have been made into theme parks after study, but it is the Varyag that has provoked significant interest. Recent refurbishment work on the ship, including the painting of PLAN markings, and reported interest in purchasing the SU-33 naval fighter from Russia have rekindled debate about a Chinese carrier fleet.[67] It is possible that the Varyag could be made fully operational, but what seems more likely is that it will be used for training and testing while an indigenous carrier is built. It is assessed that the likely route that the PLAN have adopted is to build two or possibly three medium-sized carriers (roughly 40,000-60,000) tonnes, but these are unlikely to enter service before 2018, although some analysts think an operational carrier is a possibility as early as 2015.[68] Although these dates are optimistic, what is clear is that a carrier of some sort is coming and when it arrives, will provide China with a power projection capability beyond the First Island Chain. In the words of Hempson-Jones & Chen:

'The question is not 'if' the Chinese are building this power projection capability, but 'when'.[69]

Space and Counterspace

A recent People's Liberation Army Daily and National Defence News article argued that "information dominance cannot be separated from space dominance. We can say that seizing space dominance is the basis for winning informationalized war."[70] Learning from the impressive U.S. military campaigns of the past 20 years, recent PLA writings highlight the importance of information dominance in fighting modern wars. It has been recognised that because of the reliance on space systems for the collection, transmission, dissemination and application of this information, information dominance requires space dominance. Otherwise the ability to undertake the kinds of operations needed to win such a war would be compromised. As a result, China is estimated to be developing around 15 types of satellites that include imagery reconnaissance, electronic intelligence and signals intelligence reconnaissance satellites; small and micro-sized satellites for imagery, navigation and communication roles; and anti-satellite weapons.[71] China's current array of space systems are primarily intended to facilitate national economic growth, but do contain important dual use capabilities that support the PLA

requirements that Cheng notes as including:

i. The ability to find enemy forces

ii. The ability to coordinate one's own forces, which may be multi-service

iii. The ability to locate and move one's own forces to within reach of the enemy

iv. The ability to undertake precision, long range strikes against the enemy, assess the results, and either sustain those attacks or move on to new targets[72]

The dual use of China's space programme is not preventing them from developing the systems that are assessed as necessary for winning informationalized war. For example advanced imagery, reconnaissance and Earth resource systems that may be used for disaster relief can readily provide data of military use. China has also launched four BeiDou navigation satellites that have an accuracy of 20m over China and surrounding areas whilst at the same time utilising GPS and GLONASS and investing in the EU's Galileo system. It is assessed that China may have a requirement for as many as 200 military, civilian and dual use satellites in the first two decades of the Twenty-First Century. The PLA is also heavily involved in the lunar programme as well as the ongoing Shenzhou manned space flight enterprise. Many of the developed systems could be put to military use. [73]

Having noted that space based systems are vital in modern war, the PLA have also concluded that U.S. space-based systems are vulnerable to attack, as a Liberation Army Daily article shows:

'Currently, space systems have increasingly become systems in which countries key interests lie. If an anti-satellite weapon destroys a space system in a future war, the destruction will have dealt a blow to the side that owns and uses the space system, stripped it of space supremacy, and weakened its supremacy in conducting information warfare, and even its supremacy in the war at large. Anti-satellite weapons that can be developed at low cost and that can strike at the enemy's enormously expensive yet vulnerable space system will become an important option for the majority of medium-sized and small countries with fragile space technology.'[74]

As the destruction of a low earth orbit satellite with a direct ascent anti-satellite (ASAT) weapon in January 2007 demonstrated, China already has this ability. It appears that this test was part of a larger effort to develop a range of ASAT capabilities including ground based lasers and jammers,[75] in an effort to generate the capacity to deny others access to outer space.[76] These measures have caused considerable concern particularly in the United States, where the Institute for National Strategic Studies (INSS) has noted that China may potentially be able disrupt higher orbiting satellites including GPS, which would significantly affect most U.S. military operations in the Pacific.[77] As Neill has observed:

'…the Chinese space programme, or Project 921 as it is fondly known to the PLA, has far more significant implications beyond simply propaganda value and national prestige for the People's Republic, and has long-reaching consequences for the global space industry and international security.'[78]

While the Chinese achievements in space have been impressive much of the PLA's new doctrine remains aspirational as Shambaugh, when examining the modernization of China's military in 2002, concluded:

'In sum, there remains a large gap between theory and aspirations of the PLA's new doctrine of fighting 'limited wars under high-technology conditions' and its actual capabilities.'[79]

With the doctrine having evolved to 'limited wars under conditions of informationization', it would be fair to apply the same statement in 2008. However, the improvements that have been made in China's burgeoning air power capabilities and the speed of that transformation have been startling indeed and show no sign of abating, as long as economic growth continues. Only 10 years ago, the PLAAF was a large, cumbersome, and obsolete air force with only small numbers of modern aircraft. Today with 300 modern multi-role aircraft China, for the first time, possesses a sophisticated, all- weather, precision strike capability along with a defensive and offensive counter-air capability. China's aerospace industry is growing rapidly and is currently developing 5th generation aircraft and a wide range of space-based platforms. As this growing capability is integrated with improved training, AWACs and the improved space-based systems, China's status as a regional military power will grow. The original goal was to be capable of winning informationized wars by the mid Twenty-First Century.[80] China is indeed making steady progress in that direction. In the meantime, although far behind the U.S. in terms of overall air power capabilities, it is clear that China's current air power assets could play a significant role in influencing a number of regional scenarios.

THE APPLICATION OF CHINA'S AIR POWER

'To uphold world peace, promote common development and seek cooperation and win-win is the common wish of the people around the world and an irresistible trend of our times. Committed to peace, development and cooperation, China pursues a road of peaceful development, and endeavours to build, together with other countries, a harmonious world of enduring peace and common prosperity.'[81]

Mulvenon notes that China has currently four key national security goals, all of which are subsumed within the desire for a peaceful rise. The first goal is to ensure the survival of the Chinese Communist Party (CCP) regime and maintain political stability and national unity. Closely tied into this is the second goal of maintaining the current high rates of economic growth upon which the CCP's legitimacy now relies. Thirdly is the need to prevent Taiwan from permanently separating from the mainland. Finally, increasing China's 'comprehensive national power', which includes economic, diplomatic, political and soft power options, as well as military growth.[82] China has recognised that states no longer need to pursue military conquest to prosper and that in theory, trade and economic integration pave a surer path to growth. Beijing has noted how much adhering to this philosophy helped Japan and Germany emerge from the ruins of World War II.[83] However, a peaceful rise may only be possible if these four key goals are successfully balanced. The PLA's conception of Chinese national security and national interests is not

necessarily synonymous with that of the senior political leadership, although it is broadly similar.[84] The PLA remains inextricably linked to the foreign policy decision making process and internal methods of economic development and political control[85]. Chinese military strategists consistently emphasise the need to maintain three 'conditions' for China to survive and prosper. These are national unity, stability and sovereignty. Accordingly, the PLA's threat perceptions and strategic planning are configured to maintain these conditions.[86] These themes are echoed in the 2006 Defence White Paper:

'China's national defense, in keeping with and contributing to the country's development and security strategies, aims at maintaining national security and unity, and ensuring the realization of the goal of building a moderately prosperous society in an all-round way.'[87]

These strategic goals are important as they drive current and future procurement and doctrine. If the PLA's strategic planning and threat perceptions can be understood then the air power procurement programmes and capabilities discussed above can be put in context, providing an insight as to how the PLA thinks that China's air power may be employed in the future. The most important threats for the PLA that will be discussed are:

i. U.S. military and foreign policies particularly in relation to Taiwan.

ii. Japan's re-emergence as a regional military power.

iii. India's growing military power and regional influence.

iv. Border and coastal defence including territorial waters and airspace.[88]

The United States & Taiwan

'Taiwan independence means war and separation will lead to no peace…the People's Liberation Army's millions of troops stand in combat readiness, are on high alert, and will never allow and sit idly by for any attempt to split China to succeed…We will adopt all measures to firmly crush any attempts to divide China and will realize the complete reunification of the motherland.'[89]

Clearly Taiwan is at the top of the PLA's list of potential tensions and possible conflicts. The central development of all the near term modernisation that we have seen is to acquire capabilities to allow the PLA to secure a quick and decisive victory against Taiwan, while deterring U.S. intervention.[90] Mulvenon notes that China's goal of preventing Taiwan's permanent formal separation from the mainland will probably have a greater impact on Beijing's defence modernization than any other national security goal.[91] After 1996, China recognised that any potential conflict over Taiwan could also involve the United States and therefore, this is where recent improvements have been aimed, particularly in those capabilities that would deter U.S. intervention and prevent deployment of their forces into the region (anti-access capabilities).

Until very recently, it has been thought thought, and many still believe, that China, despite recent transformation, lacks the ability to physically capture the island of Taiwan. Furthermore, many experts believe it will be several years before the PRC will acquire this

capability.[92] However this assessment may have to change. In 2000, a senior PLA colonel when questioned over China's ability to seize Taiwan noted that:

'We are accustomed to asymmetric war – we may not possess superiority in weapons over Taiwan, but our whole history of the PLA is to achieve victory over superior forces. The gap today is not nearly as great as in the Korean War. The PLA is not well prepared for war against Taiwan but we have never been well prepared for past wars and have always met our objectives. Our capabilities in information warfare and electronic warfare are not that strong, but more likely are missile attacks and possibly blockades.'[93]

In the seven years since this statement, China has brought into service numerous systems or demonstrated technology that would significantly influence any conflict over Taiwan. The majority of these systems belong to the aerospace revolution. Firstly is simple air power. China already now possesses approximately 300 modern multi-role aircraft both with a precision targeting and counter air capability and intends to have at least 1200 in the long term. At the same time there are increasing numbers of special mission aircraft, UAVs and UCAVs, including the anti-radiation Harpy, which would be effective at suppressing Taiwan's air defence radars. In any conflict, PLA air defence would play a key role:

'PLA air defence has shifted from point defence of key military, industrial and political targets to a new Joint Anti-Air Raid Campaign based on a modern integrated air defence system and offensive and defensive counter-air operations. These operations extend beyond the defence of Chinese airspace to include strikes against an adversaries bases (including aircraft carriers) and logistics to degrade the adversary's ability to conduct air operations.'[94]

It is likely that any attack on Taiwan would open with an attack against airfields and air defence sites not only with aircraft, UCAVs and cruise missiles, but also with ballistic missiles. China has more than 900 in garrisons opposite Taiwan alone, and these are increasing at almost 100 per year[95]. The integration of these missiles with indigenous satellite navigation systems such as BeiDous renders Taiwanese airbases extremely vulnerable and is a qualitative increase in threat. Ballistic and cruise missiles would also form, along with submarines, the cornerstone of the anti-access missions that would try to ensure that the U.S. could not intervene without significant cost. SU-30MK2 Flankers equipped with advanced anti-ship missiles would also be crucial in this regard. New air defence systems, including the S-300PMU-2 and other SA-10 and SA-20 variants, would also ensure that Taiwan and, to a lesser extent, the U.S. would be unable to effectively strike back. One of NATO greatest fears during the Kosovo campaign was that somehow Milosevic would acquire and assemble an SA-10 unit near Belgrade. At the same time, China would be using its so-called 'Assassin's Mace' weapons such as its ASAT capability and technical attack (computer hacking) to disrupt communications, navigation and intelligence satellites. RAND assess that, although these measures could not defeat the U.S. militarily, it could allow China to achieve its military and political objectives, while preventing the U.S. from accomplishing some or all of its objectives.[96] One of the aims of the ASAT test in January was to signal

to America and to it allies in Asia, Taiwan and Japan in particular, that it has ways of countering the space-based technology on which the American forces rely.[97] In 2007, O'Hanlon argued that China would have to rely on surprise against Taiwan, otherwise any attack would probably fail. He does however acknowledge that China has a good chance of achieving some level of air superiority, which may be all that would be required.[98] Contrast this to his statement of 2000:

'China cannot invade Taiwan, even under its most favourable assumptions about how a conflict would unfold. Nor will it be able to do so for more than a decade, if not much longer.'[99]

What this demonstrates is how far China has come in such a relatively short period, particularly with regard to its air power capabilities. This transformation continues and as time progresses, more and more modern aircraft and systems will enter service, altering the balance further. This is especially true, considering that Taiwan's defence budget has been falling in recent years. However, it is still to be seen as to whether the PLA, and the PLAAF in particular, could successfully coordinate and mount such a large-scale operation, it has yet to attempt it in training.

Japan

PLA analysts have begun to pay increasing attention to Japan. As noted in the 2006 Defence White Paper:

'The United States and Japan are strengthening their military alliance in pursuit of operational integration. Japan seeks to revise its constitution and exercise collective self-defense. Its military posture is becoming more external-oriented.'[100]

History still casts a shadow over Sino-Japanese relations and tensions have been fuelled by rising nationalism within the PLA[101] such that:

'The anti-Japanese sentiment one encounters among the PLA at all levels is palpable. Distrust of Japan runs deep, transcends generations, and is virulent among a generation of PLA officers in their fifties and sixties.'[102]

Of particular concern for the PLA at present is what they see as Japanese defence policy shifting from being locally to regionally directed and from passive to active defence.[103] The creation of a cabinet level Ministry of Defence in 2007 (for the first time since 1945) coupled with the ongoing pursuit of closer integration with the United States and the procurement of new offensive air and naval platforms continues to cause alarm[104]. Some in the PLA see this as a 'contain the China threat strategy.' In a recent exercise with U.S. forces, Japanese F-2 aircraft, their latest fighters, flew 1,700 miles from Northern Japan to Guam to drop live bombs on a range, a major step for a country that allows forces only for defence. Although perhaps designed to send a signal to North Korea, it is safe to assume that China was watching closely. Japan is also acquiring four air-to-air refuelling tankers and two helicopter carriers that will enable them to project power much further. Japan has also repeatedly expressed a desire to purchase the F-22 from the U.S., which would give it a qualitative edge over all its regional rivals, including China in the short term. Japan houses a number of American bases and is also a partner in the Theatre Missile Defence programme (TMD). As a consequence, Japan could potentially be dragged into

Fig.4 The First and Second Island Chains[106]

any Taiwan conflict, if, for example, the country is struck as part of any Chinese Joint Anti-Air Raid Campaign. Based on offensive and defensive counter-air operations, these operations extend beyond the defence of Chinese airspace to include strikes (by aircraft or missiles) against an adversaries bases (including aircraft carriers) and logistics, to degrade the adversary's ability to conduct air operations.[105] Chinese anti-access strategies aimed at preventing U.S. interference in any Taiwan campaign could also involve projecting naval and air power out to the Second Island Chain (with the SU-30 armed with anti-ship missiles for example), which would take them right up to Japan.

The potential for an incident, deliberate or accidental, on either side would be considerable and almost inevitable. China also has an ongoing dispute with Japan over the Diaoyutai/Senkaku islands[107] and has shown its willingness in the past to forcefully assert its territorial claims.[108] Again, Chinese naval air power and, in the future, any aircraft carrier would play a large part in any such incident, although it has to be stated that currently, China is at a distinct disadvantage against Japan's large modern navy.

India

China has long seen India as a regional rival and even fought a war over the disputed border in 1962. Despite the 2005 visit to India by Premier Wen, in which principles were agreed to guide a final settlement,[109] the PLA still looks upon India as a threat. This perception was heightened after the 1998 nuclear tests, especially when there were noises from within India about them being aimed at China.[110] Economic conflict seems likely, with the world's two largest countries with the two fastest growing economies competing globally for the same resources. Some commentators argue that it will be India that will outstrip China in the long run.[111] Another bone of contention are the sea-lanes of communication in the Indian Ocean and straits of Malacca, along which eighty per cent of China's external commerce and the majority of its oil are carried.[112]

President Hu Jintao has called this China's 'Malacca Dilemma', a point that was emphasised with the recent Indian deployment of a carrier group into the Straits. As already noted, this has fuelled China's desire for its own carrier capability. It has also prompted China to seek naval bases in Pakistan and Myanmar that could provoke tensions in the future. The PLA has also looked on enviously as India's armed forces have modernised and worked through many of the issues that China is currently struggling with, particularly AWACs and refuelling aircraft for example. India also enjoys the advantage of being able to buy Western as well as Russian equipment. As with its concerns with Japan, China is also concerned at increasing U.S.-Indian military ties, which some in the PLA have begun to view as increasingly aimed at containment.[113]

Border and coastal defence including airspace and territorial waters

China also faces a number of potential disputes over territory, including both airspace and territorial waters. For example, China is in rivalry in the South China Sea with Vietnam, over the Paracel Islands, and with Vietnam and the Philippines over the Spratly islands[114]. Protecting China's airspace has long been a concern of the PLA, and it was whilst defending this airspace that the EP-3 incident occurred in 2001. An incident such as this is perhaps where we will next be given an indication as to how far China's air power capabilities have developed. PLA literature on defending Chinese sovereignty often mentions territorial claims in the South China Sea as one of its key areas of responsibility and this is highlighted in the Defence White Paper of 2006.

CONCLUSION

In 2008, it is clear that air power (perhaps we really should call it aerospace power) is of fundamental importance. Not only is it the primary method of inflicting casualties and material damage upon a foe, it has also become, for certain states, a foreign policy tool of choice. It plays a key role in gaining information superiority, which is of critical importance for winning modern wars in the contemporary environment. According to the PLA's assessments of recent wars, the key to victory lies in the ability to gain and exploit information, while denying an opponent the same ability.[115] China has watched these developments and realised that to become a credible regional military power it has to transform its military and fast. In 2002, Shambaugh noted, in regard to the events of 1991, 1996, 1999 and 2001/2, that:

'Not only was the PLA High Command thus obliged to witness a series of powerful demonstrations of modern military prowess, but it also had to reflect on the prospect that, while it was trying to upgrade its equipment from the 1960s to the 1970s, and its doctrine from the 1980s to the 1990s, the already impressive American military of the late twentieth century was on the verge of a significant leap forward into the twenty-first century.'[116]

In an effort to close the gap, China has been attempting its own leap forward as it attempts to build a force that will enable it to fight and win local wars under conditions of informationization. It has made massive progress in this regard, particularly in the aerospace power arena. China is currently developing more aircraft than any other country and is rapidly bring into

service modern multi-role aircraft and improving training and doctrine. In as little as ten years China could have its own 5th generation aircraft and new aircraft carriers. It is also working hard to improve its already impressive space-based capabilities. However, China still lags behind in some crucial areas. The lack of an AWAC platform puts China at a real disadvantage, especially if it were to come up against any of its regional and global rivals, particularly the U.S. Command and control also remains poor, so that co-ordinating any large-scale joint operation would currently pose considerable challenges. As a result, by utilising its burgeoning aerospace power capabilities, China would be able to significantly influence any regional scenarios, but perhaps not decisively. In any potential Taiwan conflict, China would need to achieve total surprise, particularly from the U.S., to have a chance of succeeding. If this could be achieved and the U.S. prevented from interfering through anti-access strategies, then China could achieve its goals. However, although its anti-access capabilities are improving, it is unlikely that China could militarily prevent U.S. carrier groups from getting involved without using nuclear weapons. Japan also currently holds a qualitative edge over China in naval terms and could gain a significant air power advantage, in the short term, it if manages to purchase the F-22 from the U.S. India, although lagging behind in terms of its indigenous aerospace industry, is currently ahead of China in operational air and naval air power, and China is unable to defend its vital sea-lanes of communication as a result. On this basis, it has to be argued then that, based on its air power capabilities, China is currently a credible regional military power but is not yet a great power. However, the progress that China has made in the last ten years has been stunning, particularly in the aerospace environment. China's goal is to be able to fight and win local wars under conditions of informationization by the middle of the 21st century, and it is currently on course to do so. Three fundamental questions arise. Firstly, can China's military maintain this growth in capability and development? Secondly, will its regional rivals be able to keep up? Finally, and perhaps most importantly, how far ahead will the U.S. be able to stay?

Notes

1 Z Khalilzad & J Shapiro, (eds). United States Air and Space Power in the 21st Century. (RAND, Santa Monica, 2002), iii

2 D Shambaugh. Modernizing China's Military: Progress, Problems and Prospects. (University of California Press, Los Angeles, 2004), 1

3 ibid, 2

4 D J Blasko. The Chinese Army Today. (Routledge, Abingdon, 2006), 5

5 ibid

6 Shambaugh. Modernizing China's Military, 4

7 ibid

8 U.S. Department of Defence. Annual Report to Congress: Military Power of the People's Republic of China 2007, 1 (accessed from http://www.defenselink.mil/pubs/pdfs/070523-China-Military-Power-final.pdf on 30 June 2007)

9 People's Republic of China (PRC) Information Office of the State Council (IOSC), China's Defence White Paper 2006, Ch II, Para 1 (accessed from http://www.fas.org/nuke/guide/china/doctrine/wp2006.html#0#0 on 30 June 2007)

10 ibid

11 E Kogan. Chinese Procurement and Capabilities. (Conflict Studies Research Centre, Defence Academy of the United Kingdom, April 2006), 4

12 T Hu. "Marching Forward – China Country Briefing." Janes Defence Weekly, 25 April 2007, 24

13 U.S. DoD Annual Report to Congress, 38

14 PRC IOSC, China's Defence White Paper 2006,

Ch IV, Para 7
15 Janes. "China – Air Force" Sentinel Security Assessment – China And Northeast Asia. 13 June 2007. (accessed from www.janes.org 19 June 2007)
16 For the purposes of this paper 2nd generation is broadly equivalent to MiG 15 to MiG-21. 3rd generation = MiG 23/27 and F-4. 4th generation = MiG 29, SU-27, SU-30 also F-15, F-16, FA-18. Eurofighter Typhoon would be late 4th generation. 5th generation is F-22 onwards.
17 Picture from http://www.fas.org/nuke/guide/china/aircraft/j-11_15.jpg
18 D A Fulghum, & D Barrie. "Dragon's Teeth: China's Advanced Capabilities Attract Attention." Aviation Week & Space Technology. Vol. 166, Iss.16, (23 April 2007), 22
19 Modern in this case is assessed as 4th Generation or from F-15/16 or MiG-29 onwards
20 US DoD asses that many of these aircraft may have recently been withdrawn leaving a total of around 2325 operational aircraft
21 Includes the worlds only operational 5th generation aircraft; 19 F-22A Raptor
22 Figures taken International Institute for Strategic Studies (IISS). The Military Balance 2007. (London, Routledge, 2007) Balance 2007
23 A joint project with Pakistan
24 Hu. "Marching Forward", 24
25 Picture from http://www.globalsecurity.org/military/world/china/fc-1-pics.htm
26 Kogan. Chinese Procurement and Capabilities, 18
27 K Crane, et al. Modernizing China's Military: Opportunities and Constraints. (Santa Monica, RAND, 2005), 153
28 PRC IOSC, China's Defence White Paper 2006, Ch II, Para 12
29 L M Wortzel, The Chinese Armed Forces in the 21st Century. (Carlisle, Strategic Studies Institute, 1999), 191
30 Kogan. Chinese Procurement and Capabilities, 18
31 D. Shambaugh, Modernizing China's Military: Progress, Problems and Prospects. (Los Angeles, University of California Press, 2004), 265
32 Hu. "Marching Forward", 29
33 Janes. World Air Forces, No.25 (accessed from www.janes.org 19 June 2007)
34 ibid
35 IISS, The Military Balance 2007,44, 356, 374
36 Janes, World Air Forces, No. 25
37 U.S. DoD, Annual Report to Congress, 38
38 S Kondapalli, "China's Military Capabilities in 2000-2010." RUSI China Military Update. (5 August 05), para 13 (accessed from www.rusi.org on 27 May 07)
39 PRC IOSC, China's Defence White Paper 2006, Ch IV, Para 31
40 Janes, World Air Forces, No. 25
41 Kondapalli, "China's Military Capabilities", para 14
42 Hu. "Marching Forward", 29
43 Janes, World Air Forces, No. 25
44 ibid
45 U.S. DoD Annual Report to Congress, 38
46 Picture from http://english.people.com.cn/200705/30/eng20070530_379205.html
47 Economist. "The long march to be a superpower." Economist 4-10 August 2007, Online Edition (accessed from www.economist.com 2 Aug 07), 21
48 Crane, et al. Modernizing China's Military, 4
49 PRC IOSC, China's Defence White Paper 2006, Ch IV, Para 7
50 IISS, The Military Balance 2007, 350
51 Janes, World Air Forces, No. 25
52 Shambaugh. Modernizing China's Military, 101
53 Janes, World Air Forces, No. 25
54 Economist. "The long march to be a superpower", 22
55 Janes, "China – Air Force", 21
56 Kondapalli, "China's Military Capabilities", para 13
57 R Karniol, "China Seeks Joint Exercise with ASEAN Countries." Janes Defence Weekly, (25 April 2007), 14
58 IISS, The Military Balance 2007, 348

59 Hu. "Marching Forward", 29, (see Figure 4, for a map of the First and Second Island Chains)
60 For an examination of the current aircraft carrier project in India as well as those in the US, UK and France see RUSI Defence Systems, Summer 2006.
61 Hu. "Marching Forward", 30
62 U.S. DoD Annual Report to Congress, 24
63 J Hempson-Jones & T Chen, "Projecting Blue-Water Power: A Chinese Aircraft Carrier." RUSI China Military Update. (26 Apr 06), 2
64 J R Lilley & D Shambaugh (eds), China's Military

Faces the Future. (Washington, American Enterprise Institute, 1999), 170-171
65 ibid,
66 Hempson-Jones & Chen, "Projecting Blue-Water Power", 3
67 U.S. DoD Annual Report to Congress, 18
68 Hempson-Jones & Chen, "Projecting Blue-Water Power", 4,
69 ibid
70 From an article that appeared simultaneously in Jiefangjun Bao and Guofang Bao [People's Liberation Army Daily and National Defence News,
71 Hu. "Marching Forward", 26
72 Cheng, D. "Civil-Military Integration and China's Space Programme." RUSI China Military Update. (26 Apr 06) (accessed from www.rusi.org on 27 May 07)
73 Hu. "Marching Forward", 26-27
74 J C Mulvenon, et al. Chinese Responses to US Military Transformation and Implications for the Department of Defence. (Santa Monica, RAND, 2006), 68
75 P C Saunders, China's Global Activism: Strategy, Drivers and Tools. (Washington, NDU Press, 2006), 1
76 U.S. DoD Annual Report to Congress, p18
77 Saunders, China's Global Activism, 1
78 A Neill, "Project 921: China's Quest to Conquer Space." RUSI China Military Update. (26 Apr 06), 1 (accessed from www.rusi.org on 27 May 07)
79 Shambaugh. Modernizing China's Military, 107
80 PRC IOSC, China's Defence White Paper 2006, Ch II, Para 1
81 Ibid, Preface
82 Mulvenon, et al. Chinese Responses, 6
83 K Mahbuhani, "Understanding China." Foreign Affairs, Vol. 84, No.5, (September/October 2005), 49
84 Crane, et al. Modernizing China's Military, 192
85 Z Song, "The structural influence of the military in China's foreign policy-making", Asian Studies Review, Vol 24, No.1, (March 2000), 85
86 ibid
87 PRC IOSC, China's Defence White Paper 2006, Preface
88 Crane, et al. Modernizing China's Military, 193
89 Shambaugh. Modernizing China's Military, 307
90 Hu. "Marching Forward", 5
91 Mulvenon, et al. Chinese Responses, 11
92 W E Bunn, "Shock and Awe With Chinese Characteristics; China's Increased Weapons Precision and the Taiwan Scenario." RUSI China Military Update. (2005), 1 (accessed from www.rusi.org on 27 May 07)
93 Shambaugh. Modernizing China's Military, 310
94 U.S. DoD Annual Report to Congress, 18
95 ibid, 3
96 RAND Project Air Force Research Brief – "China Could Use "Anti-access" Strategies to Counter U.S. Military Superiority. (Santa Monica, RAND, 2007)
97 Economist. "Stormy Weather; The Test Of An Anti-Satellite Weapon Rattles China's Potential Enemies." Magazine Edition. (27 January 2007)
98 R C Bush & M E O'Hanlon, A War Like No Other: The Truth About China's Challenge to America. (New Jersey, John Wiley & Sons, 2007), 189
99 Bunn, "Shock and Awe", 1
100 PRC IOSC, China's Defence White Paper 2006, Ch II, Para 1
101 S Shirk, "Changing Media, Changing Foreign Policy in China" Japanese Journal of Political Science, No.8, (2007), 47-48
102 Shambaugh quoted in Crane, et al. Modernizing China's Military, 196
103 Shambaugh. Modernizing China's Military, 300
104 ibid
105 U.S. DoD Annual Report to Congress, 18
106 PRC Military theorists conceive of two island "chains" as forming a geographic basis for China's defensive perimeter. Image from U.S. DoD Annual Report to Congress, 16
107 Kondapalli, "China's Military Capabilities", 3
108 S S Kim (ed), The International Relations of Northeast Asia. (Oxford, Rowman & Littlefield, 2004), 154
109 C R Mohan, "India and the Balance of Power" Foreign Affairs, Vol. 85, No.4, (July/August 2006), 21/22
110 Shambaugh. Modernizing China's Military, 306
111 see L Johnson, "India will outpace China in the long run. " Sunday Telegraph. 23 Apr 2006
112 Hu. "Marching Forward", 4
113 Crane, et al. Modernizing China's Military, 197
114 Kondapalli, "China's Military Capabilities", 3
115 Cheng, "Civil-Military Integration and China's Space Programme.",1
116 Shambaugh. Modernizing China's Military, 8