

9. CHINESE DEFENSE MODERNIZATION AND THE SECURITY OF TAIWAN

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INTRODUCTION

Taiwan's role as the catalyst for containing and changing China has become increasingly important as the European powers continue their retreat from Asia and China finds itself freer from external threats than at any time since the Opium Wars. For China's neighbors, a rising, great power China is increasingly "uncontained" with the PLA free to redeploy its forces from the north to the south and the east. China is expanding its naval capabilities with new destroyers and frigates equipped with anti-ship and anti-aircraft missile systems. It is training marine and airborne forces in amphibious landings and has increased its naval activities in the South and East China Seas. To support its offshore claims, China has modernized its *Badger* B-6D and developed a new fighter bomber, the FB-7. Equipped with anti-ship missiles and protected by China's newly acquired long-range Su-27 fighters, the B-6D and, prospectively, the FB-7, give China a maritime strike capability with the range to cover most of the South and East China Seas. China's acquisition of Su-27 *Flanker* long range fighter aircraft (and the license to produce them) as well as long range transport aircraft, inflight refueling technology and other means to project military power, reflect a quest for improved mobility, greater lift and longer reach.¹

For the region, including Australia, evidence of Chinese expansionism is manifest in the construction of an air strip in the Paracel Islands in the South China Sea and, in 1995, a Chinese move further south to Mischief Reef in the Spratly Islands. These moves can be seen as stepping stones that facilitate a Chinese military presence in the very center of the South China Sea.²

Finally, fears of Chinese expansionism were reinforced by Beijing's March 1996 military exercises near Taiwan. As Australia's most recent Defense White Paper stated: "over the next decade, China is likely to be the most powerful new influence on the strategic affairs of our wider region."³ It is "increasing its military capabilities, especially its maritime forces and is likely to continue to pursue its strategic objectives by a combination of diplomatic, political and economic means that are underpinned by its growing military strength."⁴

These perceptions of China have awakened interest in Taiwan as a democratic market economy with strong military force. In realist terms, Taiwan is seen as a pro-Western Chinese middle power that might contain and eventually transform communism on the mainland.

CHINA-U.S. RELATIONS AND THE SECURITY OF TAIWAN

Over the next decade, the settlement of the Taiwan issue will be the PLA's most important and pressing priority. The PLA must also be prepared for the possibility of U.S. military intervention in support of Taiwan. Taiwan's then Foreign Minister,

Frederick Chien, claimed in 1991 that "if the PRC used force against Taiwan, the Taiwanese expect Washington to intervene."⁵ The Clinton Administration might prefer to be more ambiguous, but if China did threaten Taiwan, it would be bound to do something, whether a show of force with carriers sailing through the Taiwan Straits or flying in C-5 *Galaxy* loads of F-16s and replacement missiles.

China's largest political advantage over Taiwan was in the early 1980s, in the immediate aftermath of U.S. recognition of Beijing and derecognition of Taipei. At that time, the main American concern was containment of the Soviet Union and in that context, a strategic partnership with China was extremely useful. In June 1981, the U.S. Secretary of State, Alexander Haig, foreshadowed U.S. readiness to sell defense equipment and technology to China including the LM-2500 gas turbine naval engines that are now installed in China's newest *Luhu*-class destroyer.⁶ The U.S. also agreed to help modernize China's follow-on F-8 fighter.⁷ Taiwan, on the other hand, was refused permission to buy the F-16 and other modern defense equipment. On 17 August 1982, the U.S. government stated that "it intend[ed] to gradually reduce its sales of arms to Taiwan, leading over a period of time to a final resolution."⁸

Taiwan's fortunes changed dramatically in the late 1980s, primarily because of Tiananmen and the demise of the Soviet Union. Taiwan acquired some major new weapons systems from the West. Its international prestige and influence rose in parallel with the success of its political reforms and the size of its foreign exchange reserves.

Taiwan also re-validated its security links with the U.S., the strongest opponent of mainland China and the world's leading military power. The new relationship that emerged between the U.S. - or at least the U.S. Congress - and Taiwan led to President Lee Teng-hui's unofficial visit to New York in June 1995. There were also other indications that Lee Teng-hui was thinking more and more about a "one China, one Taiwan" solution to Taipei's "one China" dispute with Beijing.

CHINA'S CAPABILITIES

Bearing in mind the difficulties of estimating trends in China-U.S. relations or the future of China over the next five years, not to speak of 10 to 20 years and beyond, what can China do about Taiwan?⁹

In military terms, the short answer is, not very much. It can posture and threaten and it can try to intimidate. It can conduct military exercises designed to demonstrate that it has the capability and resolve to threaten or attack Taiwan, if necessary, by:

- a. A blockade;
- b. An attack on one or more of the offshore islands;
- c. An invasion;
- d. The "something else" option.

Rational decision makers, however, would conclude that China is unable to invade Taiwan. An invasion would run headlong into Taiwan's strong suit of layered shore based coastal defenses, an effective airforce and the Asian region's third most powerful navy. China lacks the air power and the modern warships and submarines needed to support a successful assault against Taiwan. It could not be sure of establishing air supremacy over the Taiwan Straits. China's amphibious lift capability, meanwhile, is not more than about 10,000. Of course, as the Falklands war demonstrated, cargo and

container ships can be commandeered and China could draw on a large fleet of fishing boats.¹⁰ It also has large numbers of civil airliners--if it could secure a place to land them on Taiwan.

By the year 2000, China will still not have the amphibious capability that it needs to lift the several hundred thousand troops required for an orthodox invasion of Taiwan. Strategic planners in the PLA, therefore, have discounted a massive seaborne invasion of Taiwan's west coast for the foreseeable future as impractical, too costly, too predictable and potentially suicidal.¹¹ As General John Shalikashvili, then Chairman of the U.S. Joint Chiefs of Staff observed, China has "no capacity to invade Taiwan."¹²

Nor is an attack against one of more of the off-shore islands a viable option for the PLA. Quemoy is defended by 40-50,000 troops while there are perhaps 25,000 on Matsu. They have enough supplies and ammunition to hold out for a year or more and they are well entrenched with concrete-reinforced tunnels, underground shelters and interconnected strong points that have been strengthened continuously for the last fifty years. The effort required to root out these forces would absorb too much of China's energy and would prove to be a long and costly diversion from the main priority, that is, the concentration of force against the Kuomintang's seat of government in Taipei.

Beijing, however, cannot admit that it does not have the capacity to use force against Taiwan. Rather, it has to convince audiences, at home and abroad, that it really does have a capability to threaten Taiwan. It tried to demonstrate this capability in the military exercises conducted in the Taiwan Strait in 1995, culminating the big exercise of March 1996. The exercises pleased the PLA high command.¹³ The fact remains, however, that China is still a long way away from being able to mount a successful assault against Taiwan or one of the offshore islands.

Indeed, Taiwan's security analysts were reassured by what they observed during the recent PLA exercise in the Taiwan Straits.¹⁴ Apart from uncertainty about when and from where China would fire its missiles, the March 1996 exercise was conducted according to predictable script--the equipment, maneuvers and capabilities displayed held no surprises for defense analysts in Taipei.¹⁵ The *Luhu* and *Jiangwei*, China's most modern warships "looked good" but both remain very vulnerable to attack by air launched weapons, such as the *Hsiung Feng* (Male Bee) II carried by the IDF and the AT3 Tzu-Chung, or the sea-launched version of the *Hsiung Feng* I and II that are on board of most of Taiwan's surface fleet.

The PLA's weaknesses include an absence of training in large scale joint service operations, especially in scenarios where there is a rapidly changing battlefield environment; a lack of early warning and airborne command and control systems aircraft and shortcomings in pilot training. Of particular importance is the gap between China's military electronics and that of the West, and by extension, Taiwan. At present, China is at least fifteen years behind the West and will still be at least 5-10 years behind in the year 2010.¹⁶

After the March 1996 exercises in the Taiwan Straits, the PLA's *Jiefangjun Bao* called for an urgent upgrading of China's airforce. It said China faced "serious challenges" because Taiwan was "unceasingly developing its air strength and making the strategic air situation around China more complicated."¹⁷ China, therefore, needed airborne early warning systems and "high-tech electronic combat systems."¹⁸ The PLA is also plagued by logistic and maintenance problems.

In 1993, the first of the Su-27s were delivered to China's Wuhu airforce base in Anhui Province, Nanjing Military Region, adjacent to Taiwan. However, these fighters and their Chinese pilots only became operational in 1995. Even then, according to a Taiwanese airforce officer, many of the Su-27s remain non-operational because of poor maintenance and logistic support.¹⁹

In a U.S. government assessment of the PLA, Joseph Nye, then Assistant Secretary of Defense, and then Assistant Secretary of State, Winston Lord, stated at U.S. Congressional hearings that it was premature to talk about China as a superpower now or in the future. They said that China's military expenditure had gone up - it had trebled since 1989, but with inflation taking into account, real defense expenditure had probably gone up about 40% over the last seven years. Most of this however, has been absorbed by improvements to salary and working conditions.²⁰ Moreover, China's military modernization had started from "a low base" so "it had an awful long way to go" in terms of the kind of precision firepower and battlefield dominance that had been displayed by the U.S. in Desert Storm, or that was entering into service in Taiwan. Re-emphasizing this point, Nye said Desert Storm showed that the PLA's military technology was not just obsolete - it was hopelessly obsolete.²¹

Such technology-based judgments may be too dismissive of the non-military elements in PLA planning such as retaining the initiative, the use of surprise and deception, the element of uncertainty, the mainland's advantages in terms of geography and proximity and its variety of weapon systems, and the knowledge that in the long term, the economic and strategic circumstances favor China. Nonetheless, uncertainty about how the PLA would cope with a modern technological war and the heavy economic, military and diplomatic costs of an attack on Taiwan must and, indeed, does deter the PLA.

With exception of 50 or so Su-27s acquired since 1992, China's airforce consists almost entirely of 1950s Soviet-designed aircraft that were modified and produced in China in the 1960s and 1970s. China's airforce, according to a 1995 RAND study, does not constitute a credible offensive threat against the U.S. or its Asian allies, and this situation will not change dramatically over the next decade.²² If anything, concluded the RAND report, China's airforce capabilities relative to most of its potential rivals, will diminish over the next ten years.²³

But as China develops its fighter force modernization with more Su-27s, the FB-7 and the F-10 fighter (comparable to the F-16)²⁴, the proportion of relatively modern fighter aircraft is likely to grow to around 25 percent by 2000-2005.²⁵ However, China is still not likely to emerge as a "formidable player in the global balance of power over the next decade" or even "a number of decades", according to Nye.²⁶ He said China's airforce modernization had to be put into context, endorsing the conclusions in the RAND study on the PLA airforce. Looking ahead five to ten years, the number of relatively modern Chinese fighter aircraft (Su-27s and possibly the F-10) will still lag well behind the 20 *Mirage* 2000-5s and 130 IDFs available to Taiwan by 1996-1998. And China's air-to-air missile capabilities are also likely to remain inferior to Taiwan's.

Despite the purchase of the Su-27 aircraft and several *Kilo*-class submarines from Russia, the acquisition of a few new weapons systems does not automatically translate into a "power projection capability."²⁷ As in the past, China's defense industries will

likely continue to require time, even decades to digest and adapt new defense equipment and technology, and then not always successfully.²⁸

Blueprints for the Rolls Royce Spey jet engine, for example, were acquired in the mid-1970s but it has taken two decades for the engine to be built into the FB-7 (also known as the B-7, a fighter bomber similar to the Su-24 *Fencer*).²⁹ Similarly, the indigenously designed Chinese F-10 fighter aircraft (actually derived from Israel's *Lavi*, which in turn was modeled on the F-16) is not expected to be operational until the year 2000 at the earliest.³⁰ The air-to-air refueling technology that China has sought since the early 1980s has yet to become operational. And most of the weapons systems on China's most modern warships--the *Luhu* and *Jiangwei*--are derived from copies of Soviet technology from 1960s or used in the West in the 1970s. The Chinese C-801 ASM, for example, is modeled on the Soviet SS-N-2 *Styx* and the French *Exocet* while the short range HQ-61 SAM (with a range of 18km) is copied from an early model *Sparrow* AAM. Furthermore, production of China's best warships is proceeding at a snail's pace, probably because of the problems integrating so many different systems and in the case of the *Luhu*, because stocks of the LM-2500 gas turbine engine acquired prior to Tiananmen have been exhausted.³¹ Even with licensed production of the Su-27, it will still take China at least a 7-10 years to produce its own aircraft.

In his testimony, Nye said that "the current pace of PLA modernization of its 1950s and 1960s vintage equipment with more modern equipment would take years." The U.S. view, he said was that "China will not significantly increase its power projection capability in the near term," i.e., for at least 10 years.³² One might safely conclude therefore, that for the foreseeable future, China will not be in a position to use force successfully against Taiwan. Nonetheless there are other possible options.

NEAR TERM: THE BLOCKADE OPTION

China's near term aim is to develop the capability to enforce a blockade of Taiwan. It is an option that has been referred to by several mainland leaders and it is the mainland strategy that Taipei's military planners profess to fear the most.³³ Taiwan's former Chief of Staff, Hau Pei-tsun, said that of the various war options open to China, the most likely was a blockade of the Straits.³⁴ It would be a relatively low risk, low cost deniable operation that would exert maximum pressure without damaging the island's infrastructure.³⁵ It is the option that figures highest in shaping Taiwan's present maritime force structure because of the mere manifestation of a threat of mines and/or submarines would undermine Taiwan's trading links with the rest of the world. Even though Taiwan has reduced its dependence on imported energy by developing nuclear power stations, it still imports 90 percent of its primary energy and depends on imported grain, soybeans and other foodstuffs. As then Chief of Staff, Admiral Liu Hsichien observed, the sea lanes and their connections the rest of the world through Kaohsiung and Keelung are Taiwan's critical life lines.³⁶

A large percentage of Taiwan's export and import trade is handled by Kaohsiung and Keelung. Almost 75% of Taiwan's fuel requirements are imported through Kaohsiung, which is also the location for most of Taiwan's oil refineries. Kaohsiung is the second busiest container shipping outlet in Asia with Taiwan's Keelung Harbour in third place.³⁷ If Kaohsiung and Keelung were closed, Taiwan could be crippled within a few months, a possibility symbolized the M-9 missiles that were fired into the sea 36 km northeast of Keelung and 54 km southwest of Kaohsiung in March 1996. However, while Chinese ballistic missiles can be used to attack port facilities or threaten ships tied

up in port, they are unable to target moving ships and are not suitable for blockading a port, *per se*. China, however, has plentiful stocks of cheap and effective mines that could be used to blockade ports and disrupt shipping. They would minimize the risk of warfighting for the PLA and would cause minimal disruption to Taiwan's industrial assets. Mines could be laid by a variety of means including the old technology *Romeo* and *Ming*-class submarines, each of which carry up to 32 mines. *Kilos* can carry 36. Mines could be air-dropped by B-5 and B-6 bombers and because the waters near Keelung and Kaohsiung are fairly shallow, they could also be laid on the bottom by motorized junks and fishing boats. Kaohsiung, in particular, is vulnerable to mine warfare because of its limited access to the open sea. Taiwan has been building or buying additional minesweepers counter this threat. In March 1995, it commissioned four *Aggressive*-class minesweepers that had been used by the U.S. Navy in the Persian Gulf before being upgraded and sold to Taiwan.

A mine blockade of key ports like Kaohsiung, Keelung and Taichung could be supplemented by the threat of submarines. The 15-20 conventional submarines that are operational would be sufficient, since China could announce that it was going to deploy just one of its SSNs (as the United Kingdom did with dramatic effect during the Falklands war). However, if it were to use its submarines, China would need to take account of Taiwan's increasingly impressive ASW capabilities including up to 12 *Knox*-class ASW frigates, 2 *Zwaardvis*-class SSKs, up to 20 refurbished Grumman S-2T *Tracker* ASW and maritime reconnaissance aircraft and various shipborne and shore-based ASW helicopters, including the potent S-70G *Seahawk*.³⁸ Chinese subs, even the SSNs, are slow and noisy and of the 20 or so Chinese submarines that are operational, only the *Kilos* are regarded as being any good. Taiwan, moreover, is taking delivery of 6 advanced *Lafayette* frigates (3,500 tons), widely regarded as one of the most potent small ASW ships in the world. China's submarines might be able to lay a few mines and might be able to disrupt some of Taiwan's shipping. They might also be able to sink some of Taiwan's surface fleet but the cost could be the loss of most of the PLA's fleet of operational submarines.

To mount a blockade with a chance of being successful, China needs increased numbers of more modern submarines and better at-sea support. So far, it has received two of four modern *Kilos* it has ordered from Russia.³⁹ In the near term, i.e., out to five years, it is unlikely to have the numbers or the quality of submarines or the air umbrella it needs to be able to maintain and enforce an effective submarine blockade.

By the year 2005-2010 however, China may have developed a submerged launch version of the C-801 anti-ship cruise missile (range 20-30 nm, speed Mach 0.9).⁴⁰ It could have perhaps ten to sixteen *Kilos* and the indigenously built *Song*-class submarine, and by 2010, possibly one or two of the new Type 093 SSNs.⁴¹ In addition, China might have a handful (perhaps three or four) operational SSBNs of the new Type 094. These new submarines will benefit enormously from Russian quieting technologies and weapons systems such as the 53-65KE anti-ship wake homing torpedo (range 20 km, speed 45kts); the TEST-71ME ASW acoustic homing torpedo (range 20 km, speed 20 kts) and propelled warhead mines.⁴²

THE MEDIUM TERM: THE "SOMETHING ELSE" OPTION

China's medium term strategy is to coerce Taiwan to the negotiating table and for that the most effective and economical option is the one foreshadowed during the 1995 and 1996 missile tests in the Taiwan Straits. This is the "something else" option - i.e., not

a blockade and not an invasion but the threat of disabling strikes by short range ballistic missiles like the M-9 (range 400-600 km) and M-11 (range 300 km). The aim of the missile option is to prepare the way for China to gain air supremacy over the Taiwan Strait.

China's airforce (assuming that all its aircraft are operational) has a numerical superiority over Taiwan. But its lack of modern aircraft vis-à-vis Taiwan will persist for the near to medium term. By the year 2000, Taiwan will probably have two or perhaps three times as many modern fighter aircraft as the mainland. Incoming enemy aircraft would also encounter an integrated network of early warning phased array surveillance radar and layered missile defenses, including the *Tien Kung* (Sky Bow) II that can target hostile aircraft as they take off from airfields on the mainland coast.

Also, China's ability to concentrate large numbers of fighter and bomber aircraft against Taiwan is still constrained by the limited capacity of airfields in Fujian and Guangdong. China is building more airfields in Nanjing Military Region in areas adjacent to Taiwan such as Shantou, Zhengzhou and Fuzhou, but they can still only accommodate about 1200 aircraft. Some estimates suggest PLA could only dispatch waves of 200 or so aircraft against Taiwan at any one time. In fact, the numbers are likely to be even less because the PLA does not have the airborne assets or the landbased facilities to coordinate complicated offensive operations using large concentrations of fighter aircraft in a small air space.⁴³ Limited numbers of aircraft from the mainland would thus be a risk of piecemeal destruction by Taiwan's better trained pilots and their more modern fighters.

Assuming a loss ration of 10:1 (as during the Korean War), or 16:1 (as during the 1958 Taiwan Straits crisis), then China would lost most of its airforce either to Taiwan's airforce or to its layered SAM defenses. Many analysts believe China might eventually prevail through sheer weight of numbers, but the rate of attrition would destroy a large percentage of China's airforce.⁴⁴ While Taiwan would use and lose many of aircraft and missiles, it could be resupplied from the U.S. - provided there was a safe air-sea corridor into Taiwan.

More important, however, Taiwan's battlefield information technology--i.e., its command, control, communications, computers and intelligence (C⁴I)--is one of the most sophisticated in the world and certainly superior to anything likely to be possessed by China in the near or medium term.⁴⁵ Taiwan thus has a very good chance of gaining the critical advantage of what has been called dominant battlefield awareness. That is, Taiwan is better able than China to collect, correlate, coordinate and process battlefield information over a wide area and send it back to the shooters. In this regard, it can also count on the support of the U.S. intelligence community, including access to the all-revealing intelligence derived from satellite imagery. In other words, as Israel has demonstrated, small states can best much larger neighbors - especially if supported by a superpower like the United States. And as the Iran-Iraq war demonstrated, simple force-ratio comparisons are an uncertain measure of military strength. Sheer mass, whether in terms of weapons of manpower, is no substitute for military professionalism, clever battle management, superior technology, effective organization and good C⁴I.⁴⁶

Meanwhile, any mainland attempt at establishing a beachhead would still have to deal with Taiwan's navy, including its fleet of fifty fast, lethal and hard-to-hit *Hsiung Feng* I-equipped Hai Ou FABs (Fast Attack Boats). If Taiwan's seaborne defenses are breached, there is still a formidable shore-based missile defense network that is being

constantly upgraded with some of the best American technology. Raytheon Corporation, for example, is helping modernize Taiwan's land-based air defenses, including the updating of the *Hawk*, the supply of *Patriot* missile systems and the procurement of the AIM-120 advanced medium range air-to-air missile that Taiwan's airforce badly needs.⁴⁷ Taiwan also has its own well-developed defense industries that can produce an array of very good anti-aircraft, anti-ship and air-to air missile systems.⁴⁸ Any gaps that remain are being filled by imported systems, such as the *Stinger* and *Mistral* man-portable air defense systems (MANPADS).

The PLA's priority, therefore, is to develop cost-efficient and effective ways to neutralize the Taiwanese airforce, its anti-aircraft missile defenses and its chain of radar stations in Taiwan, the Pescadores, Pratas, Quemoy, Matsu and Tug-Yin islands. Because Taiwan lacks an effective anti-missile defense, the PLA might be able to achieve this objective by pounding Taiwan with missiles armed with high explosive warheads - provided it has sufficient stocks available.⁴⁹

China has mobile M-9 (CCS-6) and will soon have M-11 (CCS-7) short range ballistic missiles; the *Dongfeng-3* and 4 (DF-3 and DF-4 or CSS-2 and CSS-3) intermediate range ballistic missiles; and the mobile *Dongfeng-21* (range 1,800 km, payload 600kg) and the *Dongfeng-25* (range 1,700 km, payload 2000 kg).⁵⁰ The M-9 for example, with a payload of 500 kg of high explosive and a terminal speed in excess of Mach 6, would cause enormous damage. And, if the accuracy of these missiles can be improved with GPS (global positioning system) and possibly a terminal guidance radar - a very long term prospect for ballistic missiles - then they could also pose a serious threat to aircraft carriers or other large ships that come within range.⁵¹

Another advantage to the PLA in using missiles is that they can be concentrated and launched with little prior warning. Provided it had enough missiles, the PLA could disable Taiwan's defenses, especially its airforce by destroying runways, radar sites and other key facilities. Missiles could also be used against targets of strategic significance, such as the road and rail links connecting north, south and central Taiwan and microwave and coaxial communications links between Taipei and its subordinate military facilities.

A priority target for the PLA would be the strategically important air base at Chia-shan.⁵² With underground power generators, a microwave landing system to facilitate multiple landing and takeoffs and several months supply of food, fuel and military stores, the base can protect and support the operations of up to 200 fighter aircraft, or about on third of the Taiwanese airforce.⁵³ This sanctuary for Taiwan's fighter aircraft, built into mountainous terrain over a seven year period, has underground sanctuaries protected by hardened bomb-proof doors that can withstand the shock of all but a direct hit. The base is located in the valleys on the eastern side of the Chung Yang Shan Mo (Central Mountains), which rise to 3000 meters.

However, because of the distance from the mainland and the trajectories involved, the base would be very difficult to hit with missiles fired from the mainland. As well as missiles, therefore, China would have to develop the capability to fire air, sea, or submarine-launched cruise missiles from Taiwan's northeast.⁵⁴ China could acquire such capabilities in five to ten years. By 2010, for example, it is expected to have accurate, 1500 km range, land attack cruise missiles (similar to the *Tomahawk*). Still, cruise missiles are no guarantee that Taiwanese bases could be disabled or knocked out, as the U.S. experience with Iraq has shown. But if China acquired Tu-22Ms armed with

long-range ALCMs, or a carrier or two, then that might suffice to make the point to Taipei.⁵⁵

Another priority target for China is Taiwan's Combat Air Command and Control Center at Kung Kuan, near the National Taiwan University, Taipei. Its destruction would eliminate the high-speed digital computers that coordinate the multiple interception of hostile aircraft and ships and control and direct Taiwan's layered missile defenses. Other targets would include the Combined Operations Center at Yuanshan, near Taipei and the Communications Centre at Lungtan near Hsinchu connecting Taiwan's Army Headquarters with its subordinate commands.

If China successfully destroyed Taiwan's central command and control nodes and radar and missile defenses, even for a brief period, it could launch attacks against other facilities using air-launched C-601 and C-801 cruise missiles fired by old but still lethal B-6D bombers, the new FB-7 and air-refueled A-5 ground attack fighter bombers. While vulnerable, these aircraft could be protected from any remaining Taiwanese fighters by Su-27s, F-10s and F-8IIIs armed with long range *Alamo* air-to-air missiles.⁵⁶

China would have to follow-up almost immediately in order to prevent the repair of the Chia-shan runways and the unleashing of Taiwanese fighter aircraft that the Nationalists will have tried to preserve in underground shelters.⁵⁷ The PLA would not aim for a massive seaborne assault in the first instance. Instead, it would try to establish a beachhead on the Hualien-Suao-Ilan plain with the objective of seizing, repairing and using the airfield at Chia-shan or a stretch of highway that could be used for the same purpose.

Assuming that Taiwan's airforce had been substantially neutralized, China's 15th Airborne Army, the third largest in the world, could be air-dropped onto Hualien. Modeled on the U.S. 82nd Airborne Division, it is equipped with its own armored fighting vehicles, an anti-tank regiment, MRLs and light artillery. The aim of a parachute assault would be to capture Chia-shan and secure the airfield.⁵⁸

The PLA has been practicing airborne commando-type operations since the late 1980s, including during the March 1996 exercises. Mainland publications have shown airborne forces landing in mountain and urban areas and onto beaches.⁵⁹ China has been acquiring long range troop transports from Russia such as the Il-76 *Candid* which can carry 125 fully equipped paratroops. As well as a growing number of Il-76s - prospectively 50 or 60 by year 2000 - China has numerous other troop transports such as the Tu-154 *Careless* (carries 120), An-24 *Cubs*, An-26 *Curls* and over 500 helicopters. Once an airfield on Taiwan is secured, the PLA could establish a base for airlifting reinforcements from Nanjing and Guangdong Military Regions. It could use China United Airlines - the PLA's own airline - as well as China's huge fleet of Boeing and other passenger aircraft.⁶⁰ Airfields in Nanjing Military Region, after all, are no more than ten minutes flying time from Taiwan's east coast airfields.

The attraction of an airborne assault is that it could be launched with little prior indication of a build up of forces in the coastal regions of China's southern provinces of Fujian and Guangdong. Meanwhile, Taiwanese defense planners expect to get plenty of warning for a PLA buildup for a Normandy-style assault against Taiwan's heavily defended west coast. Such an attack would take several months of preparation and there would be huge, easily observed disruptions to transport facilities in Nanjing Military Region. These characteristics make it an unlikely option.

The next step would be a move against Taipei to the north with a continuing barrage of missiles at remaining Taiwanese defense facilities. This is not a likely scenario, but it is a possibility if China builds up the accuracy and the stocks of its short range missiles. The accuracy problem will require a huge leap in China's technology while the numbers required to maintain an ongoing barrage over some weeks would be very expensive.

The problem for China is what can it do next (assuming that it wants to do more). It would still have to establish a beachhead to land more troops near Hualien, which means it would still have to get across the Taiwan Straits and run the gauntlet of Taiwan's FABs and any F-16s that have been re-supplied to Taiwan by the U.S. And of course, there would be the risk of intervention by U.S. warships.

OUTLOOK

Clearly, the trend in the PLA will be for smaller, more mobile forces; fewer but better fighter aircraft and submarines; more long range transport aircraft; air-to-air refueling; improved command and control and communications and, in the longer term, use of computerized battlefield information systems. China's air defenses will improve and it will develop a range of more accurate and more capable missiles. There will be improvements to China's logistics support, especially at-sea replenishment. The overall proficiency of the PLA will improve with more realistic joint service training. But in the near to medium term, China will still not have the capability to be sure that it can, without undue cost and risk, blockade or invade Taiwan, or even safely consider the something else option.

VARIABLES

China's defense modernization over the next decade or so, and its impact on the security to Taiwan, is likely to be significantly influenced by a range of variables as discussed below.

Russian military technology

The significance of Russian technology for China's defense modernization, and hence for the security of Taiwan, will depend on what Russia is prepared to sell to China. In many respects, China and Russia are natural partners in military technology cooperation. A generation of Chinese specialists in the military industrial sector have been brought up on Russian technology with most of the PLA's equipment, especially in the airforce, Russian-designed.

Russia and China signed a five year military cooperation pact in 1993 that could give China access to advanced Russian military technologies relating to nuclear submarine propulsion; underwater missile launchers; muffling technology for diesel submarines; technology for improving the range and accuracy of ICBMs; triggering devices for nuclear weapons; and solid rocket fuel and mobile ICBMs.⁶¹

The new strategic relationship between Russia and China was formalized with Russian President Boris Yeltsin's visit to Beijing in April 1996. Yeltsin and Chinese President Jiang Zemin signed a Treaty on Confidence Building Measures in the Military

Field, the first accord on common security and non-aggression to be signed in the Asia-Pacific region since World War II.

The Yeltsin visit confirmed Russia's position as China's largest supplier of modern military technology. As former Russian Defense Minister Pavel Grachev observed, China was one of Russia's leading partners in the military-technical area and military cooperation between Moscow and Beijing "served to promote trust and understanding between the two countries."⁶²

A few months earlier, Russia had agreed to sell to China the right to licensed production of the Su-27 fighter aircraft. China had previously wanted to obtain a license to produce its own Su-27 aircraft but until 1995, the Russians preferred to sell aircraft rather than the blueprints on how to make them.⁶³ By December 1995, China and Russia reached a package agreement: China would buy a second batch of 24 Su-27 aircraft plus the license and the technology to start producing its own Su-27s at the Shenyang Aircraft Factory in northeast China. This deal, worth \$US2 billion, together with the \$US1.5 billion that China spent on its first 26 Su-27s, means China has spent a total of about \$US3.5 billion for its Su-27 technology. This compares nicely with Taiwan's much more expensive \$US6 billion contract signed with General Dynamics in 1992 for 150 F-16 fighter aircraft.

As far as Russia is concerned, the Su-27 is already dated technology and Russia has moved on to the next generation of fighter aircraft (the Su-25). From the Russian viewpoint, even with licensed production, the balance of power in the Asia-Pacific region will not be destabilized because China will still require several years, if not a decade to start producing the Su-27 in any quantity. Moreover, it will still depend on Russia's readiness to supply the Su-27's AL-31FM engine and for spare parts and technical assistance in critical technologies, especially electronics, design and engineering, as well as the machine tools and production facilities to assemble the aircraft.

China, in other words, is likely to narrow the gap with Taiwan over the next decade, but it will still have a relatively weak airforce by comparison. Taiwan's indigenously produced *Ching-Kuo* fighters are armed with the Taiwanese-designed *Tien Chien* II (Sky Sword) active medium to long range (80 km) air-to-air missile; the *Mirage* is equipped with the *MICA* active medium to long range (80 km) AAM. By comparison, the Su-27's AA-10 *Alamo* medium range semi-active air-to-air missile has a shorter range (60km) and an inferior seeker.⁶⁴ Furthermore, Taiwan has larger stocks of AAMs with, for example, 1440 *MICA* AAMs and as many *Tien Chien* (Sky Sword) IIs as it wants to produce whereas China has only about 300 or so *Alamos* for its 50 or so Su-27s, i.e., one set of six missiles for each aircraft.⁶⁵

China has also sought to buy a dozen long range Tu-22 *Backfire* bombers. This proposal was blocked by Russia's Foreign Ministry on the grounds that it would introduce a new and potentially destabilizing offensive weapons capability into the Asia-Pacific region. Russia has been prepared to sell China *Kilo*-class submarines, Su-27s and S-300 (SA-10 *Grumble*) anti-missile systems and Il-76 *Candid* long range transport aircraft because, in the Russian view, these are essentially defensive systems. Such equipment, however, can be easily used in offensive operations. Each Il-76 transport can carry up to 125 fully equipped paratroops; the *Kilos* can be used to blockade ports and interdict shipping; the SA-10 can be used to protect China's airfields and the Su-27s give

China a platform for covering most of the East and South China Seas, including Taiwan and the Spratly Islands.

China may purchase a few larger cruiser-size Russian warships like the general purpose *Sovremenny*-class DDG (7,300 tons) and the impressive ASW capable *Udaloy*-class DDG destroyer (8,900 tons).⁶⁶ But the trend seems to be away from surface vessels towards the construction of a modern fleet of nuclear powered submarines--"the chief objective of the remainder of this century," according to Admiral Zhang Lianzhong, then Commander of the PLA Navy.⁶⁷

As far as Taiwan is concerned, the test will be if Russia sells China equipment like the SA-N-6 (range 160 km, the maritime version of the very potent SA-10), and missile guidance systems (such as Aerofon) for the M-9 and M-11 or *Tomahawk*-type cruise missiles; the A-50 *Mainstay* AWAC and AA-X-12 *Adder* AAMs (an active homing air-to-air missile close to being the best in the world). It is difficult, however, to conceive of Russia arming its largest neighbor with its latest technology, or technology which could be turned against the seller.

Developments in Taiwan

With or without Russian inputs, China's defense modernization is not taking place in a complete vacuum. Taiwan is also modernizing its armed forces and in terms of financial resources and skills in defense technology and the applied sciences, Taiwan is better equipped for the task than China. For every leap forward in Chinese capabilities, the Taiwanese can probably match the PLA step for step. It could configure its long range *Mirage* 2000-5s for attacks against mainland targets. If necessary, it could resurrect the *Tien Ma* (Sky Horse) SRBM (range 1000 km) to strike pre-emptively at ports, airfields or missile bases on the mainland in an arc covering China's East Sea Fleet HQ in Shanghai down to the SSF HQ in Zhanjiang. And Taiwan could, if it chose, develop nuclear weapons.

U.S. Arms Sales to Taiwan

The military balance in the Taiwan Strait will also be determined by continued U.S. willingness to supply Taiwan with modern weapons systems and defense technology that match or counter improvements made by the PLA. In early 1992, for example, the U.S. Defense Department commenced a major review of the military balance in East Asia and its obligations to meet Taiwan's defense needs under the Taiwan Relations Act.⁶⁸ In August 1992, the U.S. agreed to sell 150 F-16 fighter aircraft to Taiwan, a deal that the Taiwanese had been denied for over a decade.

The Taiwan Relations Act, passed by the U.S. Congress in April 1979 states *inter alia* that it is U.S. policy "to make clear that the U.S. decisions to establish diplomatic relations with the PRC rests upon the expectation that the future of Taiwan will be determined by peaceful means; ...to consider any effort to determine the future of Taiwan by other than peaceful means...a threat to the peace and security of the Western Pacific area and of grave concern to the U.S...{and that the U.S.} will make available to Taiwan such defense articles and defense serves as may be necessary to enable Taiwan to maintain a sufficient self-defense capability."⁶⁹

The rejuvenated Taiwan Relations Act gives Taiwan access to some of the best military technology in the world. As well as the F-16, Taiwan has been able to buy

AWACs aircraft, modern minesweepers and frigates, and advanced missiles such as the long range surface-to-air SM2, the AMRAAM (Advanced Medium Range Air-to-Air Missile) and the ESSM (Evolved Sea Sparrow Missile, a medium range anti-aircraft and anti-missile).⁷⁰

In the near-term, Taiwan will deploy the American *Patriot* PAC 2 air defense system which has a 10-30 percent success rate against incoming SCUD-type missiles.⁷¹ Within two or three years, Taiwan expects to have the upgraded *Patriot* (PAC 3) anti-missile system that, when combined with Israel's ARROW technology, could provide Taiwan with the semblance of a TMD (Theatre Missile Defense) against a mainland ballistic missile attack.

U.S. Intervention

As well being in a position to overwhelm or bypass Taiwan's defenses, China needs to be confident that its nuclear weapons are sufficiently survivable and accurate enough to deter the U.S. from thinking about intervention. China's existing ICBM capability will continue to improve and by 2010, it may have up to 20 silo-based and mobile solid fuel MIRVed ICBMS that can target most of the world, including the United States.⁷² By then, China may also have improved the accuracy of its short range ballistic missiles with smart active radar. Although this will be very difficult to achieve, China may be in a better position to deter a repeat of U.S. carrier diplomacy that occurred east of Taiwan in March 1996.

Change in China and Taiwan on the 'one China' issue

An additional variable in any assessment about China's defense modernization and its impact on Taiwan is the time frame envisaged in some estimates. By 2010 or 2020, enormous political and social change, especially in China, seems inevitable. The commercial relationship between the mainland and Taiwan is likely to have become even more closely knit than it is today. Direct economic links between the two Chinas are very likely to become a fact of life with the return of Hong Kong to China in 1997. Yet while China may edge towards greater flexibility its "one China" solution to the Taiwan issue, it may still be forced to respond vigorously, i.e., resort to the use of military force if Taiwan moves too precipitously towards independence.

¹ Michael T. Klare, "The Next Great Arms Race," *Foreign Affairs*, vol. 72, no. 3, Summer 1993, pp. 136,141.

² John Garver, "China's Push Through the South China Sea: The Interaction of Bureaucratic and National Interests," *The China Quarterly* 132, December 1992, p. 999.

³ *Defending Australia*, Defense White Paper 1994, AGPS, Canberra 1994, p. 90.

⁴ *Ibid.*, p. 9.

⁵ *South China Morning Post*, 9 October 1991.

⁶ Gary Klintworth, *China's Modernization and the Strategic Implications for the Asia-Pacific Region*, AGPS, Canberra, 1989, p. 40.

⁷ Jaw-ling Joanne Chang, "Negotiation of the 17 August 1992 US-PRC Communique: Beijing's Negotiating Tactics," in Steven W. Mosher, (ed.), *The United States and the Republic of China* (New Brunswick: Transaction Publishers, 1992), pp. 129,137.

⁸ *Ibid.*, p.129.

⁹ For an analysis similar to this paper, see Richard A. Bitzinger and Bates Gill, *Gearing up for High-Tech Warfare? Chinese and Taiwanese Defense Modernization and Implications for Military Confrontation Across the Taiwan Strait 1995-2005* (Washington: Center for Strategic and Budgetary Assessments, 1996).

¹⁰ *Kuang Chiao Ching*, no.283, Hong Kong, 16 April 1996; *Xinhua*, Beijing, 25 March 1996.

¹¹ *Asahi Shimbun*, 2 April 1996, p.4.

¹² Quoted in *ibid.*

¹³ Vice Chairman of the Central Military Commission Zhang Wannian and other senior PLA officers observed the war games in the "Nanjing War Zone" between 18-25 March 1996. See *Xinhua*, Beijing, 25 March 1996.

¹⁴ Personal communication, Taiwanese academic, 20 April 1996.

¹⁵ The March 1996 exercise was the largest and most complex ever held by the PLA. China showed off its M-9 (CSS-6) short range ballistic missiles, an SA-10 air-defense missile, a Han SSN, the newly launched Song submarine, a Kilo, the new Luhua destroyer (launching a Whitehead A244 ASW torpedo), the Jiangwei frigate, the new F-8-II fighter, a few Su-27s armed with AA-10 Alamo AAMs and a B-6D firing the C-601 ASM. There were beach assaults supported by Q-5 II ground attack fighters and parachute drops from an IL-76.

¹⁶ Some Chinese analysts claim China is 40 or more years behind the West (i.e., Taiwan) and will still be 15-20 years behind by 2010. See *Ming Pao*, Hong Kong, 27 June 1996, p. A10.

¹⁷ *Jiefangjun Bao*, 7 April 1996.

¹⁸ *Ibid.*

¹⁹ Quoted in *Chung-kuo shih-pao*, Taipei, 4 February 1996.

²⁰ See remarks by Joseph Nye, Assistant Secretary of Defense for International Security Affairs, and Winston Lord, Assistant Secretary of State for East Asian and Pacific Affairs, Washington, 11 October 1995, quoted in USIA Wireless File, 12 October 1995.

²¹ *Ibid.*

²² Kenneth W. Allen, Glenn Krumel, and Jonathan D. Pollack, *China's Air Force Enters the 21st Century*, (Santa Monica, CA: RAND, 1995).

²³ *Ibid.*

²⁴ US Office of Naval Intelligence, *Worldwide Challenges to Naval Strike Warfare*, Washington, January 1996, p. 34.

²⁵ *Ibid.*, p.29.

²⁶ Joseph Nye, Senate Foreign Relations Subcommittee hearing, 12 October 1995.

²⁷ *Ibid.*

²⁸ See Bitzinger and Gill, *Gearing up for High-Tech Warfare?*, *op cit*, p. 17,21.

²⁹ *Jane's All the World's Aircraft 1995-96*, p.64.

³⁰ David Shambaugh, "China's Military: Real or Paper Tiger?" *The Washington Quarterly*, vol.19, no.2, pp.19,26.

³¹ Gary Klintworth and Desmond Ball, "China's Arms Buildup and Regional Security," in Stuart Harris and Gary Klintworth (eds.), *China as a Great Power: Myths, Realities and Challenges for the Asia-Pacific Region* (New York: St. Martin's Press, 1995), p. 266.

³² Joseph Nye, Senate Foreign Relations Subcommittee hearing, 12 October 1995.

³³ The blockade option was mentioned by Deng Xiaoping and by Yao Yilin. See "A Study of Possible Communist Attacks on Taiwan," p. 58. Former Chinese Party Secretary-General Hu Yaobang said that while China did not have the strength to use military force against Taiwan, it might develop sufficient force in the 1990s and that "if we have the strength to enforce a blockade and if Taiwan vehemently opposes reunification, we shall have to consider enforcing a blockade." See *Pai Hsing* magazine, Hong Kong, 25 December 1985.

³⁴ Chief of Staff of the ROC Armed Forces, General Hau Pei-tsun, interview, *United Evening News*, Taipei, 17 May 1988.

³⁵ See also Tai Ming Cheung, *Growth of Chinese Naval Power*, Institute of Southeast Asian Studies [ISEAS], Pacific Strategic Papers, no. 1, Singapore, 1990, p. 14.

³⁶ *Free China Journal*, 20 October 1992.

³⁷ Peter Rimmers, "The Taiwanese Maritime Industry," in Gary Klintworth, (ed.), *Modern Taiwan in the 1990s*, Canberra Papers on Strategy and Defense, SDSC, Australian National University, Canberra, 1991, p. 138.

³⁸ *Defense News*, 23 March 1992.

³⁹ US Office of Naval Intelligence, *Worldwide Submarine Challenges*, Washington, February 1996, p. 27.

⁴⁰ *Ibid.*, p. 17.

⁴¹ *Ibid.*, p. 27. The Song, or Wuhan C, was launched on 25 May 1994. See *Kuang Chiao Ching*, no.283, Hong Kong, 16 April 1996.

⁴² *Worldwide Submarine Challenges*, pp. 11, 15, 27.

⁴³ Personal interview with a Russian Air Force instructor, Beijing, 2 December 1995.

⁴⁴ Paul H.B. Godwin, "The Use of Military Force Against Taiwan: Potential PRC Scenarios," in Parris H. Chang and Martin L. Lasater (eds.), *If China Crosses the Taiwan Strait: The International Response* (Lanham, Maryland: University Press of America, 1993), pp. 18-19.

⁴⁵ See Andrew Yang, "Taiwan's Defense Build-up in the 1990s: Remodeling the Fortress," in Gary Klintworth, ed., *Taiwan in the Asia-Pacific in the 1990s* (Canberra: Allen & Unwin, 1994), pp.72,82.

⁴⁶ Anthony H. Cordesman and Abraham R. Wagner, *The Lessons of Modern War Volume II: The Iran-Iraq War* (Boulder: Westview Press, 1990), pp.591-593.

⁴⁷ *Jane's Defense Weekly*, 25 January 1992; *Central News Agency*, Taipei, 13 August 1996.

⁴⁸ *Free China Journal*, 17 January 1992; *Free China Journal*, 22 April 1994.

⁴⁹ Godwin, op cit, p. 20.

⁵⁰ *Kuang Chiao Ching*, no. 282, Hong Kong, 16 March 1996, pp. 32-37.

⁵¹ *Kuang Chiao Ching*, no. 283, Hong Kong, 6 April 1996, pp. 22-25.

⁵² Taiwan's Chien An No. 3 airbase at Chia-shan, near Hualien, on the northeast coast is one of the biggest and most modern underground air bases in the Western Pacific. See Gary Klintworth, *New Taiwan, New China: Taiwan's Changing Role in the Asia-Pacific Region* (New York: St. Martins Press, 1995), p. 214.

⁵³ Anthony Leung, "Fortress Formosa - In Defense of Taiwan," *Military Technology*, August 1990, pp. 19, 23; and Peter Kien-hong Yu, "Taipei's Perception of its Deterrence Situation from April to July 1989," in Richard Yang (ed.), *China's Military: The PLA in 1990/91*, Sun Yat-sen Center for Policy Studies, Kaohsiung, Taiwan, 1991, pp. 63, 66.

⁵⁴ Eight other underground military bases are reported to be under construction around Taiwan. See Chong-Pin Lin, "Beijing and Taipei: Dialectics in Post-Tiananmen Interactions," *The China Quarterly*, no.136, p.771ff.

⁵⁵ By 2010, China could possibly have one or two aircraft carriers (carrying the Su-27 or the F-10) either built in China, or obtained from Spain or Russia. See *Worldwide Challenges to Naval Strike Warfare*, p. 29. However, Chinese defense specialists say that China does not need and cannot afford the luxury of large expensive platforms. Aircraft carriers are too expensive and are not a priority for China. It does not want to tie up resources developing and protecting a carrier force to compete in a field so clearly dominated by the United States. In the meantime, air-to-air refueling technology and airborne early warning aircraft offer a cheaper option for power projection in the adjacent East China Sea. An aircraft carrier, however, has prestige status and despite the cost, the PLA might find one or two hard to resist.

⁵⁶ China is likely to have about 75 Su-27s by the year 2000 but, fortunately for Taiwan, it does not appear to have the long range version of the AA-10 Alamo.

⁵⁷ Taiwan's airforce re-located a considerable number of fighter aircraft to caves in the Chiashan area as a contingency measure during the PLA military exercises of February-March 1996. See *Chung-kuo shih-pao*, 16 March 1996.

⁵⁸ Former Defense Minister and Premier Hau Pei-tsun said China would not launch a massive attack against Taiwan but would use paratroopers and aerial bombardment. Quoted in *China News Agency*, Kaohsiung, 9 February 1996.

⁵⁹ See for example, "Zhongguo kongjiangbing" (China's airborne force), *Jiefangjun Huabao*, November 1995, pp. 6-17.

⁶⁰ Currently, China has over 240 Boeing and 35 Airbus aircraft.

⁶¹ *Washington Times*, 12 November 1993, p. 16.

⁶² Defense Minister Pavel Grachev, in discussion with China's Central Military Commission Vice Chairman Liu Huaqing, quoted by Tass, Moscow, 6 December 1995. Such cooperation also fulfills Russia's basic need to earn hard currency. Despite the current arrangements, Sino-Russian distrust will never be far below the surface.

⁶³ *Kommersant Daily*, Moscow, 7 February 1996.

⁶⁴ Details on ranges of AAMs taken from *Jane's Air-Launched Weapons*, February 1996.

⁶⁵ Voice of Free China, FBIS Transcript, 28 October 1995; and *Free China Journal*, 31 May 1996, p. 1.

⁶⁶ Russia is having trouble paying for the fuel to run its navy while construction on new hulls has ceased because dockworkers are not being paid.

⁶⁷ April 1993, quoted in *Worldwide Challenges to Naval Strike Warfare*, p. 26.

⁶⁸ *Defense News*, Washington, 20-26 July 1992, p. 3.

⁶⁹ *Taiwan Relations Act*, Congressional Record - House 125, No. 38, 16 March 1979: H1668-070.

⁷⁰ *Agence France Presse*, Hong Kong, 26 March 1996; *Kyodo Press*, Tokyo, 18 May 1996; CNA, Taipei 1 March 1996.

⁷¹ President Bill Clinton, speech to PBEC, Washington, transcript, USIS, 20 May 1996; and *Free China Journal*, 31 May 1996, p. 1.

⁷² Paul Dibb, *Towards a New Balance of Power in Asia*, Adelphi Paper 295, Clarendon Press, London 1995, p. 87.