

Reasserting Control: Could China Conquer Taiwan?

Erik Fogg

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Introduction

A Short History of the Taiwan Strait

The Taiwan Strait is perhaps the most volatile area in the East Asian region, and has commanded the attention of US policymakers and security thinkers ever since the end of the Chinese civil war in 1949. US policy for the Taiwan Strait area in the past 58 years has appeared inconsistent at times, and indeed, US goals in the region have changed. In 1971, President Nixon and national security advisor Henry Kissinger reversed US Policy on China, and formally recognized The People's Republic of China (PRC, or China) as the legitimate government of China. For the Republic of China (ROC, or Taiwan), the United States has remained as ambiguous as possible. It does not formally recognize the government as the legitimate ruler of either the Chinese mainland or the island of Taiwan, but has sold billions of dollars in high-tech weapons systems to the island for its defence, and twice in the 1990's sent aircraft carrier task forces of its Pacific Fleet to intervene when China launched flurries of short-range ballistic missiles (SRBMs) into the waters near Taiwan. This strategic ambiguity has allowed the US to keep strong economic ties and relatively warm diplomatic relations with both entities, but means that Washington's actions are relatively unpredictable.

Strains between the two governments are obvious, but both have made efforts to try and prevent a war of reunification. China has offered Taiwan a "one country, two systems" political deal that would allow Taiwan to maintain some of its autonomy, while declaring itself a part of China. Taiwan has made some moves towards peaceful reunification, including establishing reunification committees. But Taiwanese politics have gone through great

changes since the establishment of multi-party democracy. The Pan-Blue coalition, headed by the Kuomintang (KMT), puts reunification at the top of its foreign policy agenda. But the Pan-Green coalition, headed by the Democratic People's Party (DPP), currently holds a majority in parliament, and strongly favors Taiwanese independence. Taiwan's president, Chen Shui-bian, as well as its vice president and premier, are all DPP members, and have done a great deal to aggravate the reunification efforts of the PRC and the Pan-Blues. Chen suspended operation of the National Unification Council and repealed the National Unification Guidelines in early 2005¹, bringing many US analysts to fear that war might follow. China responded only with verbal condemnation, but the past few years have been marked with very intense saber-rattling by both the ROC and PRC, with Chen implying that Taiwan should be an independent state, and Chinese president Hu Jintao promising war if Taiwan attempted to become an independent state. The Chinese have even tried to dissuade US intervention in a cross-Strait war, sometimes with threats of missile attack. On March 15, 1999, US Senator Inhofe testified that a high-ranking Chinese official said in 1997 that he felt confident the US would not intervene in a cross-Strait conflict because the US "would rather defend Los Angeles than Taipei²." Beijing is dedicated enough to reunification that it would be unlikely to balk at the use of force in a Taiwanese independence crisis, should it be necessary.

¹Department of Defense. *Chinese Military Power Report*, 2006, pg 11.

²Senator James Inhofe. *Testimony Before the US Senate Armed Services Committee*, 1999.

US Policy Goals

China remains adamant that it will reunify with Taiwan at some time in the future, and has made very clear that it would be willing to use military force to do so, even against the United States³.

The United States may be ambiguous on its stance on the ROC government, but it is clear that Washington has two primary goals in the Taiwan Strait area:

- Prevent war between China and Taiwan.
- Put off the reunification decision as long as possible.

By putting off the reunification decision, the US hopes that China's path of reform and liberalization that began in 1978 will continue, and that Taiwan may some day have the option of reuniting with a democratic government, or that a more liberal PRC will consider allowing Taiwanese national independence (though this may be wishful thinking). To accomplish both of these goals, the United States has given Taiwan considerable defensive technology and weaponry, including advanced interceptor fighters, early warning radar systems, anti-air missile batteries, command, control, communications, and intelligence (C3I) systems, anti-submarine warfare (ASW) aircraft, Aegis destroyers, tanks, and extensive operational and tactical advice. In addition, the US has quietly maintained the threat that it would intervene on behalf of Taiwan in a cross-Strait conflict—in fact, Washington is bound

³In July 2005, Major General Zhu Chengdu mentioned using nuclear weapons against the Americans if they intervened with precision weaponry in the Taiwan area. This is available at Department of Defense. *Military Power of the People's Republic of China*, 2006, pg 9.

by the 1979 Taiwan Relations Act to intervene in an “unprovoked” attack on Taiwan. Washington and Beijing are likely to have different opinions of what “unprovoked” means, but the presence of the US 5th Air Force, 3rd Fleet, and 7th Fleet is a powerful tool of persuasion towards peace.

Throughout the 1980’s and 1990’s, it was obvious to analysts and policy-makers that Taiwan had a defensive military edge, and that it could repel a Chinese attempt to conquer the island, even without US intervention. But in time, the gap has closed. Chinese military spending has increased dramatically. Starting in the 1990’s, China began downsizing and highly modernizing all branches of its military, with the hopes of eventually being able to wield highly-trained and well-armed soldiers capable of fighting high-tech, multi-force operations off the Chinese coast⁴. This modernization is far from complete, but has been dramatic, and some have begun to question whether Taiwan could indeed win a war against China. Some Department of Defense papers written as early as 1999 contend that a Chinese invasion campaign could succeed⁵, but elements within the Department of Defense itself disagree, and many experienced security studies analysts maintain that such an invasion would be next to impossible. Michael O’Hanlon’s “Why China Cannot Conquer Taiwan” (*International Security*, Vol. 25, No. 2, 2000), Wood and Ferguson’s “How China Might Invade Taiwan” (*Naval War College Review*, 2001), and the Council on Foreign Relations’ 2006 report *Chinese Military Power* all confidently assert that Taiwan is capable of defending itself.

⁴*The Chinese Army Today*, pgs 146-150.

⁵O’Hanlon, “Why China Cannot Conquer Taiwan,” pg 2. O’Hanlon mentions studies by the Department of Defense that conclude that China could conquer the island of Taiwan.

Purpose

The purpose of this article is to explore this scenario again because of its importance to US policy-making. Could China successfully reassert political control over Taiwan by invasion? This article asserts that there is a high likeliness that China could successfully take control of and occupy Taiwan's capital, Taipei, despite a bulk of literature to the contrary. I believe this article disagrees with others largely because of the speed of Chinese modernization—conclusions about the Taiwan Strait drawn in 2000 are now dated. It is thus extremely important to maintain an up-to-date understanding of the Taiwan Strait military balance. Incorrectly over-estimating Taiwan's defensive abilities could lead to a reduction in US military aid to Taiwan, and an appearance of a military gap in China's favor. Such a gap could embolden the Chinese to invade Taiwan should it find a reason to do so—even if the PRC could not successfully reassert political control over Taiwan, the US would have failed in its goal of maintaining peace in the region.

The remainder of this paper evaluates the political and military scenarios across the Taiwan strait, considers and analyzes a hypothetical Chinese military campaign designed to reassert political control over Taiwan, gauges China's ability to achieve victory, and concludes by using the campaign analysis to make recommendations for US policy in the Taiwan Strait area.

Scenario

Political Scenario

War between China and Taiwan could spark at any point. Taiwan's talk of independence could well escalate into bold moves towards independence, and Beijing could well interpret such moves as sufficient to require military force. A hypothetical war would come suddenly, following a short political crisis across the strait. China's dedication to Taiwanese reunification is apparent in both its foreign policy declarations and its military behavior throughout the last 58 years⁶. As China has modernized, it has concentrated more training and technology to its southeast regions, and specifically towards airborne and amphibious assaults. There is little doubt that China would hold nothing back in a war against Taiwan. Taiwan would call up its reservists and fight fiercely if its political environment had brought about independence movements, and would not capitulate unless it had lost its ability to fight.

The United States, on the other hand, is more of a wildcard. Its grand strategy changes from administration to administration, and dedication to Taiwan may well wax or wane with elections. There is no guarantee that the US would send military help. To incorporate this, the campaign will be analyzed both with limited US intervention and without. A reasonable estimate for limited US intervention would include the US 5th and 11th Carrier Strike Groups (2 aircraft carrier units that were involved in the Taiwan Strait interventions in

⁶Politically, Chinese maps have not failed to include Taiwan as a province, the National People's Congress includes a Taiwanese delegation (of mainlanders with Taiwanese connections), and in 2008, China will make Taipei a stop in the running of the Olympic torch. Militarily, China's clear regional buildup bias shows that the bulk of its military effort is in the Taiwan region.

the 1990's) and the 5th Air Force (stationed in southern Japan and within operational range of Taiwan). Further intervention is unlikely, in large part due to two wars in the Middle East that are militarily and financially taxing the nation. Further, China is the United States' largest trading partner, and a protracted or damaging conflict with China is clearly not in US interests.

China's Campaign Structure

If China invaded Taiwan, it would attempt to achieve victory as quickly as possible. A protracted war would bring incredible political pressure, as well as ever-widening opportunities for outside forces (particularly the Americans) to intervene. To that end, China has stationed its best troops in the Fujian and Guangdong regions⁷⁸, and has approximately 800 SRBMs in its southeast in range of Taiwan⁹. A consideration of Chinese airfields shows not only 46 bases within 500 miles of Taiwan¹⁰, but an extremely high concentration of China's best fighters (the Su-27 and Su-30), and almost none of its obsolete MiG-19's or QC-5's¹¹. By these observations, we will assume that any troops that China sends into Taiwan will be its best-trained and best-equipped.

China will almost certainly launch a preemptive missile and air strike against Taiwan to try to catch its military on its heels. It will use its extensive SRBM stock to strike Taiwanese

⁷ *Taiwan's Defense Reform*, pp 31-44.

⁸ *The Chinese Army Today*, pp 146-155

⁹ Department of Defense. *China Military Power Report*, 2006, pg 11.

¹⁰ Wood and Ferguson, "How China Might Invade Taiwan," pg 50.

¹¹ The Dutch Aviation Society, available at <http://www.scramble.nl/cn.htm>. Follow links to PLAAF (People's Liberation Army Air Force) and PLANAF (People's Liberation Army Navy Air Force). [scramble.nl](http://www.scramble.nl) has estimates on what kinds of planes are housed in each air base.

airfields, seaports, C3I headquarters, transportation hubs and arteries, and cripple Taiwan's will to fight quickly. An early edge will be paramount to gaining air superiority. This pre-emptive strike will not include nuclear, chemical, biological, or otherwise non-conventional weaponry; China has no interest in terrorizing the Taiwanese population. Quite to the contrary, Beijing would like to avoid as much civilian collateral damage as possible—after a victory, China would hope that the Taiwanese learn to cooperate with Beijing's rule.

China has many options to pursue after its pre-emptive strike, from blockade to full occupation of the island. A blockade is unlikely to work well—it gives foreign powers far too much time to intervene. On the other hand, a full occupation of Taiwan would be incredibly costly; China is sending its best men and equipment, and huge portions of both would be lost. Ultimately, China's political goals may well be met by dismantling the Taiwanese government, not suppressing the population of the entire island. In 1914, Austria proposed a "Halt at Belgrade," in which it would take Serbia's capitol and remain there until Serbia gave in to its political demands. It is very likely that a similar halt in Taipei would suit China's goals of shutting down operation of the Taiwanese government such that it would be incapable of any governing as an independent state. It is this more conservative approach that this article will analyze.

What, then, must China do to capture Taipei? To get troops into Taipei will almost certainly require an amphibious landing, which on its own has a great number of necessary prerequisite operations. The invasion as a whole can be broken into the following elements, each of which must be separately successful, in the following order, for the invasion of Taipei

to be successful:

- Pre-emptive strike against air, sea, C3I, and logistical targets
- Establishment of air dominance
- Establishment of sea dominance
- Establishment of a secure beachhead
- Reinforcement of beachhead and breakthrough
- Encirclement and occupation of Taipei
- Defense of Taipei against Taiwanese army

Historically, amphibious assaults have required four elements to secure a beachhead: air superiority, sea control or denial, sufficient and coordinated sea lift, and beach fire superiority¹². Each of these are necessary to both successfully establish a beachhead and then expand and reinforce that beachhead. History shows that without meeting such requirements, amphibious landings almost certainly fail¹³.

We must analyze the PLA's ability to fulfill each of these requirements. To aid our discussion, we will make some educated military assumptions based on historical conflicts.

Military Assumptions

Taiwan will mobilize reservists in three to four days. Although there is little data on Taiwan's actual mobilization capabilities, its defensive strategy depends largely on its reserve force being called to battle quickly. Israel's mobilization requirements are similar,

¹²Wood and Ferguson, "How China Might Invade Taiwan," pg 58.

¹³O'Hanlon, "Why China Cannot Conquer Taiwan," pg 55.

and its reservists are combat-ready in 72 hours¹⁴. Although the Taiwanese army is not as battle-hardened as the Israeli army, we will assume it is capable of bringing reserves almost as quickly.

Breakthrough will require at least a 3:1 force advantage. Barry Posen and John J. Mearsheimer use this as a rule of thumb in their analytical models. This 3:1 rule incorporates force multipliers like terrain, equipment, etc. This rule of thumb will only be used in relatively open terrain in the following analysis to avoid potentially dubious quantitative assessments of terrain advantages¹⁵.

Forces with at least a 2:1 numerical advantage are capable of establishing a beachhead. An analysis of historical amphibious assaults shows that there are only a few in history where two comparable forces met, in which the defender vigorously tried to defend the island. The best examples are Gallipoli, Normandy, the Japanese invasion of the Phillipines, Iwo Jima, Tarawa, and Saipan. In Gallipoli the assault failed, and in the last four, all were won with vastly superior numbers. But in Normandy, the Americans and British often achieved victories with 2:1 numerical advantages. On Omaha beach, two US infantry divisions assaulted one German infantry division¹⁶. On Gold Beach, 5 British brigades (and four attached regiments) assaulted one German division (in 3 brigades)¹⁷. On Juno beach, one 15,000-strong Canadian division attacked a 7,500-strong German division¹⁸. Each of

¹⁴*The Military Balance*, 2007. This datum is noted in the Israeli army section of the book, under data for reservist force size.

¹⁵See Mearsheimer's "Assessing the Conventional Balance" for a thorough analysis of this rule's accuracy in historical examples.

¹⁶D-Day: etat des lieux. http://www.6juin1944.com/assaut/omaha/en_index.php

¹⁷D-Day: etat des lieux. http://www.6juin1944.com/assaut/gold/en_index.php

¹⁸D-Day: etat des lieux. http://www.6juin1944.com/assaut/juno/en_index.php

these assault teams achieved victory in D-Day, although some with very high casualties, despite only possessing a 2:1 numerical advantage. Further, they faced heavily entrenched enemies with concrete bunker networks, tank traps, barbed wire, machine gun nests, and steep beaches. Although some mud flats and cliffs in Taiwan are difficult terrain, the Chinese will have their choice of favorable avenues, and so they are unlikely to fare worse than the Allied forces in Normandy.

Military Analysis

Force-to-force Quantitative Comparison

China significantly outnumbers Taiwan in military personnel, weapons, and supplies, although only some of these are in the Taiwan Strait area, and only so many can be moved across the Strait at a time. We will consider Chinese forces in the Fujian, Guangdong, Jiangxi, and Zhejiang regions to be “near Taiwan,” as these are all within 500 miles of the island and could possibly be geared for war without immediately alerting the Taiwanese. In these regions, the Department of Defense counts 16 Chinese armor brigades, 39 infantry brigades, 2 marine brigades, 9 airborne brigades, 4+ Airborne Early Warning planes (AEW), 40+ submarines, 20 destroyers, 35 frigates, and 140 patrol boats¹⁹. Most forces in the Taiwan are active, non-conscript troops. Within 370 miles of Taiwan (a reasonable operating radius) are 1100 combat aircraft, over 850 of which are fighters and 150 of which are bombers.

¹⁹Department of Defense. “Military Power of the People’s Republic of China,” 2006. Consistent with *The Military Balance*, 2007, pgs 347-350

Within 500 miles, the number of airfields more than doubles (from 22 to 46); using these, China could potentially replace every downed aircraft²⁰. Not all Chinese divisions are fully manned or equipped at all times, but many are, and based on assumptions about Chinese dedication to reunification, we will assume that the forces it dedicates to the campaign are at full manpower.

Taiwan, on the other hand, will make all its forces available for the fight, and will not be shy about blatantly mobilizing them. Taiwan maintains 25 active infantry brigades, 5 armor brigades, 2 marine brigades, 24 reserve infantry brigades, 430 fighters, 200 Surface-to-Air Missile batteries (SAM), 400 Anti-Aircraft Artillery (AAA), 8 AEW, 4 submarines, 11 destroyers, 22 frigates, 71 patrol boats²¹.

If the United States brought forth the 5th and 11th Carrier Strike Groups (CSG) and the 5th air force, it would wield 142 fighters, 2 missile cruisers, 8 destroyers, and 4 submarines²². The 5th CSG tours the Pacific from its homeport in San Diego, and the 11th CSG is stationed in Yokosuka, Japan.

Force-to-force ratios favor the Chinese in both scenarios, and are enumerated in Table 1.

²⁰Wood and Ferguson, "How China Might Invade Taiwan," pg 50.

²¹*The Military Balance*, 2007, pgs 373-4

²²Official US Navy websites for both groups; <http://www.news.navy.mil/local/cg5/> and <http://www.news.navy.mil/local/cg11/>

| Military Asset | PRC Force | ROC Force | US Force | Ratio, no US | Ratio, US |
|-----------------------|------------------|------------------|-----------------|---------------------|------------------|
| Manpower | 50 brigades | 51 brigades | 0 | .98:1 | .98:1 |
| Armor | 16 brigades | 9 brigades | 0 | 1.78:1 | 1.77:1 |
| Fighters | 850 | 430 | 142 | 1.98:1 | 1.48:1 |
| Submarines | 40+ | 4 | 4 | 10+:1 | 5+:1 |
| Destroyers/Cruisers | 20 | 11 | 8 | 1.82:1 | 1.05:1 |
| Frigates | 35 | 22 | 2 | 1.59:1 | 1.46:1 |
| Patrol Boats | 140 | 71 | 0 | 1.97:1 | 1.97:1 |

Table 1: Force-to-force ratios without and with limited American intervention

Qualitative Comparison: Training and Technology

What quality of force will each army bring to the battle? High morale, effective command, comprehensive training, integrated force operations capabilities, high weapon range and lethality, armor and battlefield medicine, reconnaissance, radar, and targeting, and a great deal other factors can multiply the effectiveness of a force. In operations like the Gulf War and Operation Iraqi Freedom, the US showed that small forces can rout large forces by creating training, technology, morale, information, and command asymmetries²³. How does each force size up?

Chinese Quality of Training, Equipment, and Morale

The PLA will enter the conflict with high morale and spirit. The Chinese People's Liberation Army (PLA) started out as a guerrilla force, designed to combat the bloated, bureaucratic KMT army. Despite being greatly outnumbered and out-gunned for well over a decade, it managed to achieve victory. Against the Japanese, it fought alongside the KMT nationals as a large, low-skill army that practiced deep defense to exhaust Japanese supply lines. During

²³Press, "Lessons from Ground Combat in the Gulf," pg 138.

the Cold War, it maintained a large, highly politicized standing army that managed to push a smaller American force back from the Yalu river to the 38th parallel in Korea. The PLA has a history of fighting and winning tough wars against better armies; it has been highly motivated in each of these three conflicts, each time fighting desperately for control of its homeland. The PLA has been taught furiously that Taiwan is part of its Chinese homeland, and a foreign government occupies it²⁴. The grit and tenacity that the PLA has shown in past struggles to maintain sovereignty will presumably be repeated here.

Modernization became the PLA's main problem and concern in the end of the 20th century. As of the early 1990's, the PLA had fallen far behind modern militaries in technology and training. It still maintained a large, poorly-armed military that was meant to practice deep defense. The Gulf War served as a wake-up call, as China realized it would have to contend with modern militaries like the US and Taiwan in the future, should it have any hope of using its military as a bargaining chip in the reunification process. It began an extensive modernization process that ratchets higher every year. With each yearly report, the PLA reduces its size and increases spending, focusing on training, advanced Russian weapons procurement, and command, control, communications, computers, and intelligence (C4I)²⁵.

Despite being "obsolete in many ways," and about "2 decades behind the US in military technology and ability²⁶," the PLA possesses "pockets of excellence", and has paid special

²⁴Edmonds and Tsai, *Taiwan's Defense Reform*, pg 37.

²⁵Ibid, pg 42.

²⁶Ibid, pg 44

attention towards a command structure that can integrate its forces deployed near Taiwan²⁷. “Military training has been intensified, elite rapid reaction units have been organized, and inter-service coordination is being emphasized²⁸.” In particular, the PLA’s airborne and amphibious forces are extremely well-trained and armed. The PLA has stressed joint operations, combined arms fighting, commando capabilities, airborne operations, and amphibious assaults in its training since 2000²⁹. The PLA’s amphibious assault divisions and marine brigades have seen 7 years of large amphibious assault exercises at least once per year, including a highly-publicized training session in 2004, with the landing of over 18,000 combat troops and equipment against live opposition³⁰. Chinese units are seeing increased numbers of experienced non-commissioned officers (NCOs), as well as a higher number of college-graduate commissioned officers³¹. Training for some has become effective enough that Chinese troops have begun to receive praise from outside observers, especially for individual and unit-level drilling and tactics³². It should be noted that Chinese special operations forces teams received the first and second place awards in the 2002 ERNA international military competitions³³. PLAAF fighter pilots receive 180 hours/year in training on their advanced Su-27 and Su-30 aircraft, only 20 hours/year fewer than American fighter pilots³⁴. Where the Chinese concentrate their training, their training is excellent. Chinese troops have been prepared for airborne, amphibious, and open-ground battles, and will fight as units with the

²⁷Ibid, pg 43.

²⁸Ibid, pg 43.

²⁹Blasko, *The Chinese Army Today*, pgs 142-162

³⁰Blasko, *The Chinese Army Today*, pgs 151-156.

³¹Ibid, pgs 52-62.

³²Blasko, *The Chinese Army Today*, pgs 162, 168-170.

³³Ibid, pg 159

³⁴*The Military Balance*, 2007, pg 350.

skill of a near-modern army.

Chinese command and control, on the other hand, continues to struggle. Although the PLA has seen “significant advances in C4I since 1991³⁵,” its ability to command integrated force operations remains questionable. Air operations, in particular, are difficult. Although pilots “now engage in more realistic combat training exercises³⁶,” the PLAAF has “limited ability to conduct... air-to-air interception and ground attack,” and “sortie generation is a problem³⁷.”

Chinese equipment has improved over time, and become quite modern in its excellent pockets. PLA soldiers have been trained well to make do with what they have³⁸, but often no longer need to do so. The PLA has an impressive and improving Information Operations/Information Warfare (IO/IW) capability³⁹, and now wields impressive armor, ships, and fighters. The 1200 Type 96 and Type 98 tanks in its arsenal⁴⁰ are impressive 4th-generation tanks with advanced fire control, anti-tank rounds, composite armor, and high mobility⁴¹. China’s Kilo-class submarines are quiet-diesel, and can operate in the Taiwan strait purely on battery power. In addition, China fields the latest Russian Sovremenny-class missile destroyer, although only two are currently in operation⁴². The PLAAF’s Su-27 and Su-30 fighters are comparable to the American F-15C⁴³. Both the PLAAF and Second Artillery

³⁵Edmonds and Tsai, *Taiwan’s Defense Reform*, pg 42

³⁶Council on Foreign Relations, *Chinese Military Power*, pg 27.

³⁷Ibid, pg 27

³⁸Edmonds and Tsai, *Taiwan’s Defense Reform*, pg 36.

³⁹Ibid, pg 42

⁴⁰*The Military Balance*, 2007, pg 347.

⁴¹Chinese Defense Today. <http://www.sinodefence.com/army/tank/type96.asp>

⁴²Chinese Defense Today. <http://www.sinodefence.com/navy/surface/sovremenny.asp>

⁴³Council on Foreign Relations. *Chinese Military Power*, pg 27.

possess GPS and laser-guided weaponry⁴⁴, as well as anti-radiation weaponry⁴⁵ and anti-runway cluster munitions whose cluster radius is greater than the circular error probable (CEP) of many of the SRBMs wielding them⁴⁶.

Considering command and control issues, China's military force otherwise seems capable of bringing highly-trained, well-equipped, high-morale troops to the battle in Taiwan, as well as sufficient technology for its critical pre-emptive strike. Taiwan's defense spending has concentrated mostly upon countermeasures to China's growing capabilities, and debate has grown over whether Taiwan's spending strategy has been correct in giving the island the capability necessary to repel a Chinese attack.

Taiwanese Quality of Training, Equipment, and Morale

The Taiwan Relations Act has meant a constant US military presence in and military aid to Taiwan, even though the US recognizes the PRC as the legitimate government of China. The US has provided Taiwan with high technology at low cost, as well as years of military advice that have strengthened the small island's defenses. US experts in Taiwan focus primarily on command, control, communications, computers, intelligence, and reconnaissance (C4ISR) advising⁴⁷, and US defense contractors have provided Taiwan with systems like Aegis missile cruisers, 150 F-16 fighters (with modern upgrades)⁴⁸, and Lockheed Martin Tactical C4ISR systems⁴⁹. Taiwanese pilots receive 200 hours of training per year on the advanced Mirage

⁴⁴Ibid, pg 53

⁴⁵Vick, "Aerospace Operations Against Elusive Ground Targets," pg 62.

⁴⁶Global Security. <http://www.globalsecurity.org/wmd/world/china/df-11.html>

⁴⁷Edmonds and Tsai, *Taiwan's Defense Reform*, pg 48.

⁴⁸Ibid, pg 47.

⁴⁹Ibid, pg. 55

2000 and F-16 fighters⁵⁰. Taiwanese units train, as a whole, much like a near-modern army does.

Taiwan has also been downsizing and upgrading its military in the past decade. It has trained its smaller force to act as an integrated team of combined service brigades, specializing in amphibious defense⁵¹. This mobilization largely mirrors that of the PRC⁵², but has left Taiwan with some key weaknesses and shortcomings.

Many of Taiwan's greatest defense problems come from its military-bureaucracy integration issues. Institutional inertia has kept the majority of defense funding in the hands of Taiwan's Army, and it has underspent on air-superiority and sea-denial capabilities in the last decade⁵³. Similarly, Taiwan has spent a great deal of money on big-ticket items, like destroyers, that largely do not address many of its defense needs⁵⁴, like anti-submarine capabilities. Taiwan's American military advisors have commented that Taiwan still has "major shortcomings as a fighting force," particularly in joint operations and C4ISR⁵⁵. Taiwan further lacks the offensive capabilities necessary to significantly disrupt Chinese sortie generation and C4ISR capabilities; China will be able to fight an almost purely offensive war⁵⁶, and has limited radar and early warning capabilities that cannot yet effectively track air-breathing targets and missiles (though Raytheon will provide a radar system in 2009 that will bring effective tracking capabilities to Taiwan's hands)⁵⁷. Data on Taiwanese radar

⁵⁰ *The Military Balance, 2007, pg 374.*

⁵¹ Ibid, pg 47.

⁵² Ibid, pg 48

⁵³ Ibid, pg 51.

⁵⁴ Ibid, pg 50.

⁵⁵ Ibid, pg 51.

⁵⁶ Ibid, pg 52.

⁵⁷ "Raytheon's Surveillance Radar Program for Taiwan Completes System Design Review." [http:](http://)

capabilities are limited, but they are likely capable of spotting incoming missiles, and would be able to alert Taiwanese forces of an attack.

Ultimately, Taiwan's biggest shortcoming as an army might be morale. Taiwan's army is plagued with low active-duty retainment rates and soldier morale⁵⁸. Taiwanese soldiers are not indoctrinated with high political fervor for the campaign as a part of their training (as their Chinese adversaries are), and have not received the foreign praise or awards for unit tactics that the PLA has. Although Taiwanese troop morale may increase in an independence crisis, they are unlikely to possess the grit and small-unit fighting skills of Chinese soldiers.

Ultimately, neither army measures up to the United States (particularly in pilot training, airborne command and C4ISR, and air force military technology), but the elite elements of the Chinese military look like they have operational capabilities very similar to the bulk of Taiwanese forces. The PLA probably has advantages in morale, small-unit tactics, and attacker's initiative and tactical surprise, where Taiwan has advantages in airborne command and control, an integrated anti-air defense network, and a defender's natural home-field advantage. China's chances for success hinge largely on being able to quickly decrease or neutralize Taiwan's advantage in air command and firepower, such that it might be able to establish air superiority for its amphibious assault.

[//www.spacewar.com/reports/Raytheon's_Surveillance_Radar_Program_For_Taiwan_Completes_System_Design_Review.html](http://www.spacewar.com/reports/Raytheon's_Surveillance_Radar_Program_For_Taiwan_Completes_System_Design_Review.html)

⁵⁸Edmonds and Tsai, *Taiwan's Defense Reform*, pg 48.

Preemptive Strike

The Chinese would begin their assault by launching a surprise pre-emptive strike, utilizing both the Second Artillery's SRBMs in the region and the PLA's IO/IW forces. The Chinese would prioritize against C4ISR targets, anti-air batteries, and airfields, hoping "to complicate generation of sorties. The objective would be to shock and paralyze air defense systems to allow a window of opportunity for follow-on PLAAF strikes and rapid achievement of air superiority⁵⁹." In addition, China could sortie as many fighters as possible immediately after missile launch to overwhelm Taiwanese defenses and try to catch Taiwanese air defense on its heels and achieve a suppression of enemy air defenses (SEAD).

If China launched 3/4 of its near-Taiwan SRBM force, as well as one cruise missile (whose behavior in flight would be much like that of the SRBMs⁶⁰) from each of its 150 local bombers, 750 missiles would head towards Taiwanese targets. Many would be tipped with anti-runway cluster munitions, to limit or end operations of Taiwan's 18 military airfields. O'Hanlon argues that Taiwanese airfields have sophisticated repair crews⁶¹, but these repairs would take time. He also suggests repairmen could bring runways back to operating capacity overnight, but this is under the dated assumption that Chinese planes do not have night-flight capabilities, and thus Taiwanese airfields would be peaceful for eight straight hours. The PLAAF would be unlikely to give the Taiwanese this opportunity now. Taiwan has plans to move planes out to dispersed launch sites on highways if such an attack happened, but this

⁵⁹Council on Foreign Relations, *Chinese Military Power*, pg 53.

⁶⁰Vick, "Aerospace Operations Against Elusive Ground Targets," pg 61.

⁶¹O'Hanlon, "Why China Cannot Conquer Taiwan," pg 59.

would highly complicated logistics and greatly limit sortie generation—“even brief closures” of Taiwanese airfields would “be difficult to tolerate in a pitched battle for air control.”⁶² Such a dispersal would also take a great deal of time, and give China a window of large air advantage. If Taiwan did not disperse, its deployed fighters would be in serious danger of crashing on damaged runways, as Egypt’s did when Israeli fighter-bombers attacked in 1967⁶³.

O’Hanlon also argues that Taiwan’s ground SAM batteries could cause 10% attrition rates⁶⁴. For the sake of conservatism, we will assume Taiwan is capable of shooting down 10% of these shots (Chinese bombers would not be hit due to their ability to fire from hundreds of miles away), reducing the force to 675 missiles. With typical CEP’s of 200-250 meters⁶⁵ or better (due to GPS upgrades on some of the 2nd artillery’s forces) means that about 1 in 6 missiles will hit their desired targets, leaving 112 missiles. If Chinese airborne command fumbles the operation, and even 25% of these missiles are fired at the wrong targets or duplicate targets, 78 missiles would hit right on target. Good anti-runway munitions can render a runway near-unusable with just one or two hits. To be safe, China could dedicate three missile hits to each airfield, using 54 of its 78 good hits, or about 2/3 of its fired missiles. The other 1/3 of these missiles could be launched against known SAM missile sites or radar systems, to try and create corridors of entry for Chinese fighters.

⁶²RAND, *Dire Strait?*, pg 33.

⁶³Dupuy, *Elusive Victory*, pg 246.

⁶⁴*Ibid.*

⁶⁵Global Security. <http://www.globalsecurity.org/wmd/world/china/df-xx.html>, where ‘xx’ can be replaced with 11, 15, and 21. The DongFeng missile series makes up the bulk of China’s Second Artillery forces.

Some of the Taiwanese air force would surely have made it off the ground before the anti-runway munitions struck, but not many. Chinese SRBM's have terminal velocities of Mach 6, and would take well fewer than 10 minutes to reach Taiwan once launched⁶⁶. Scramble times of fewer than ten minutes are extremely difficult for any air force to maintain, even on high alert. Taiwan would be able to rush a few planes into the air, but the surprise of a well-coordinated mass missile launch would mean many largely damaged runways, and a highly delayed and disrupted fighter launch. Many fighters would be forced to sit the first day of the conflict out, and would be vulnerable to follow-up strikes until the runways are repaired.

The immediate follow-up to the missile strike would be a simultaneous PLAAF fighter strike and PLA IO/IW operation. The latter is difficult to evaluate, as both Taiwan and China express confidence in their IO/IW specialists to successfully fight an information war, and little real data is available on either country's IO/IW capabilities. But China would do everything it could to launch all 850 of its local fighters to take advantage of Taiwanese air defense paralysis, including 200 Su-27s and about 100 Su-30s⁶⁷. The alerted SAM systems, as well as AAA, would still take a toll on Chinese fighters—up to 10% could be lost in the first sortie, leaving 765 fighters. Of these, 180 remaining Su-27's could fly effective close-air support, and 90 remaining Su-30's could be equipped with up to four laser-guided bombs each⁶⁸. China's newer J-series aircraft (J-7C, J-8II, J-8F, and J-10) would number about 100

⁶⁶Sinodefence. <http://www.sinodefence.com/strategic/missile/df15.asp>

⁶⁷Jane's Defense Weekly, 25 April 2007, pg 28.

⁶⁸fighter count from "Jane's Defence Weekly," 25 April 2007, pg 28. Fighter capabilities from *Jane's All the World's Aircraft*, 2007, searching individually for information on each fighter.

after attrition⁶⁹, and are each capable of carrying some guided weaponry, as well as some anti-radiation weaponry⁷⁰. Other J-7 and J-8 fighters will carry unguided weaponry, fly low, and take higher casualties than other Chinese aircraft.

If each of China's 90 remaining Su-30's fired all four of their precision weapons at grounded Taiwanese planes, these planes would be unlikely to fare well, even in hangars (in the Gulf War, hangars proved almost useless against stopping American precision missiles from destroying grounded planes⁷¹. Of the 360 missiles fired, we will assume that a mere 50% will hit their mark (over 90% of US precision weapons hit their mark in the Gulf War), scoring 180 hits, in hangars where it is likely that multiple planes are held. China's 400 J-7 and J-8 series planes could fly low towards these airbases and drop thousands of unguided munitions (and expect high casualties for flying low), exacting a heavy toll on Taiwan's 160 or so fighters that sit on open ground⁷². A very conservative estimate would allow such a strike to eliminate up to 50% of Taiwan's 430 fighters on the ground.

China's 100 J-7C, J-8D, J-8II, and J-10 fighters could each be equipped with two anti-radiation missiles⁷³, and, assuming they have a low accuracy of 50%, would be able to eliminate up to 100 of Taiwan's 200 or so SAM sites. If they concentrated their efforts around the Taipei region, they could reduce SAM coverage significantly, and largely open the air for later sorties.

⁶⁹*The Military Balance, 2007, pg 350*

⁷⁰*Jane's All the World's Aircraft, 2006.*

⁷¹Professor Barry Posen in a lecture to his MIT class, "US Military Power," April 10, 2006. He illustrates this point with a picture of four Iraqi hangars with small holes in the top where US precision munitions entered.

⁷²O'Hanlon, "Why China Cannot Conquer Taiwan," pg 60.

⁷³*Jane's All the World's Aircraft*

This kind of attack would push China's airborne command to the limit. The Chinese could plan for months about division of targets and choice of munitions, but the plan would clearly need to be dynamically altered to be effective, and it is possible China could fumble such an opportunity. But China has shown that it can sustain a few hundred sorties per day, and with proper planning, could probably increase that number significantly for one day. This kind of crippling pre-emptive strike is not beyond China's capabilities, and until Taiwan improves its early warning and radar systems, it can only do so much to defend itself from such an attack.

Ultimately, Taiwan could lose up to 50% of its aircraft and about 50% of its SAM batteries from this strike. Its airfields would be reduced to about one sortie/day generation for the next few days, as large swaths of its runways would be unusable. China could lose 10% of its high-flying forces, and probably a higher percentage of its low-tech, low-flying forces. But with some coordination, many of these planes could be replaced with J-7 and J-8 aircraft from the 24 bases between 370 and 500 miles from Taiwan. China could potentially sustain close to a full force in the skies during the subsequent struggle for air superiority.

Air Superiority

Based on the results of China's pre-emptive strike, Taiwan would be reduced to 215 fighters, and China would likely be able to sustain about 800. China's Su-27 and Su-30 are highly advanced fighters (resembling the American F-15C), and pilots of these planes receive 180 hours of training/year. China could bring forth its regiment of F-10 fighters in Anhui, a

total of 15 multirole aircraft that resemble upgraded F-16's⁷⁴. In addition, China's J-7C, J-8D, J-8II, and J-10 are second-tier planes, capable of night flight and some beyond-visual-range (BVR) fire, but do not quite measure up to top of the line fighters. The PLAAF's remaining J-7 and J-8 forces are not quite cannon fodder like its MiG-19 or Q-C5 forces would be, but lack night-flight capabilities, beyond-visual-range fire, or advanced avionics and countermeasures, and will be most useful in overwhelming and confusing Taiwanese radar systems, drawing fire away from China's more advanced fighters, and attacking stationary ground targets.

Taiwan's Mirage 2000 and F-16 are advanced multirole fighters that will match the Su-27 and Su-30 pound-for-pound—they sport advanced avionics, beyond-visual-range fire control, radar- and heat-guided missiles, long-range radar, and excellent countermeasures⁷⁵; sadly for the Taiwanese, half of them would have been lost on the ground. In addition, China's F-5E, Ching Kuo, and Tzu Chuang are older, but upgraded, fighters that are capable of modern air operations, but are a step away from the F-16 and Mirage 2000⁷⁶.

The United States' F-18s outperform even the F-15 and F-16 in speed, maneuverability, and fire range. They are a few days away from the fight, but would be unmatched in the skies over the Taiwan Strait.

⁷⁴JDW, 25 April 2007, pg 28

⁷⁵*Jane's All the World's Aircraft*, 2006.

⁷⁶Analysis based on capabilities as enumerated by *Jane's All the World's Aircraft*.

| Tech Tier | PRC Planes | ROC Planes | PRC # | ROC # | Ratio |
|-----------|-------------|------------------|-------|-------|--------|
| Tier 1 | Su-27/Su-30 | F-16/Mirage 2000 | 285 | 96 | 2.97:1 |
| Tier 2 | J-8II/J-10 | F-5E/Ching-kuo | 100 | 120 | 0.83:1 |
| Tier 3 | J-7/J-8 | N/A | 400 | 0 | – |
| Obsolete | MiG-19/QC-5 | N/A | N/A | 0 | – |

Table 2: Force-to-force air battle ratios, no US intervention

The Air Battle: No US Intervention

If we break down Chinese and Taiwanese forces into tier 1, tier 2, and tier 3 fighters based on their technological capabilities, force-to-force ratios favor the Chinese rather heavily. Assuming both forces will be able to maintain one sortie/day for the few days after the pre-emptive strike, the relative strengths of the air forces would size up as in Table 2⁷⁷.

China has a significant advantage in tier 1 fighter craft, and will likely use that to counter its small disadvantage in tier 2 craft. In addition, its 400 tier 3 craft will widen its advantage, complicating Taiwanese air command and confusing pilots, if not scoring many kills. Chinese bombers could launch a second volley of cruise missile attacks if China's stockpile is large enough; if not, they could fly closer to drop short-range munitions, but would be open to enemy fire. The remaining 200 Chinese SRBMs in the area could be launched at airfields, C4I centers, or SAMs to reduce the effect of ground-based anti-air defenses.

Modern air forces have very rarely met each other in the air. In Vietnam, American pilots had favorable kill ratios against Russian MiGs, but the Americans had significant advantages in both technology and training. In the Gulf War, many American fighter-bombers had the

⁷⁷Force-to-force numbers found from *The Military Balance*, 2007 and then properly adjusting for results of the pre-emptive attack, as well as updates to the Chinese forces from Jane's Defence Weekly, 25 April 2007, pg 28.

advantage of stealth over Iraq's large but rudimentary anti-air forces. In the Arab-Israeli wars, Israeli pilots enjoyed far superior training, C4ISR, and fighter quality over all of their adversaries.

Despite a lack of historical precedent, it seems this air battle could well fall to the Chinese. Because the Taiwanese have no offensive capabilities, they cannot hinder Chinese sorties, radar, or C3I capabilities. The Chinese, on the other hand, will be able to whittle down Taiwan's ground-based air command, surveillance, and anti-air infrastructure. Based on the fact that Chinese and Taiwanese pilots receive equal training in their tier 1 aircraft, exchange rates could be close to 1:1. Taiwanese SAMs would also take a toll on Chinese aircraft, but these SAMs will continue to take fire from anti-radiation missiles, and the deterioration of Taiwanese C4I, radar, and airfield facilities would cause a swing in exchange rates to China's advantage over time. Taiwan would, in fact, need to sustain a near 3:1 exchange ratio against Chinese pilots for Taiwan to hope that it can stop the Chinese air force. Based on the relative equality of training and technology in the tier 1 category, this seems highly unlikely. The Chinese have a significant numerical advantage in the air battle, and China's continuing bombing campaign would grind down Taiwan's air force in time. With such an advantage, China might be able to manage partial air superiority in a few days' time.

The Air Battle: US Intervention

If the US intervened, the air battle would begin to look much different. American pilots are the best-trained in the world, and fly planes that are in excellent repair, have high firing

ranges, and are capable of multiple sorties per day. Although US air forces have occasionally shown the ability to fly three or more missions in a day, we will assume that they can fly two. We will approximate this by reducing the scope of the force-to-force analysis to half a day, such that half the Taiwanese and Chinese fighters will be in the air.

Presumably, US intervention would also limit the damage caused by the Chinese pre-emptive strike. The US could utilize its vast early warning and radar systems to alert the Taiwanese earlier, and help track incoming targets. Further, the 42 tier 1 planes stationed in Japan could manage a sortie against Chinese planes largely armed with air-to-ground weapons, with highly favorable kill ratios. But for the sake of argument, we will introduce the Americans on day 2 of the operation, after the pre-emptive strike has done its damage.

American air command would have a number of options available: namely, flying air superiority missions over Taiwan, or interdiction missions in China. American pilots could fly high enough to mostly avoid Chinese SAM coverage, and use precision weaponry to target Chinese airfields or C3I centers. To simplify, we will keep them over Taiwan.

In the first few days of the fight, only the 42 American fighters in Japan (18 F-16's and 24 F-15's) would be available for the defense of Taiwan. With a two-sortie-per-day adjustment of force-to-force ratios, we see a significant change in advantage in Table 3.

The force advantages now look better for the defender. In addition, Chinese pilots may begin to find themselves outclassed by American pilots, and overwhelmed by the coordination of American airpower and integration of early warning and radar information into the American defense. Excellent air forces have shown exchange rates of 40:1 or even 80:1

| Tech Tier | PRC # | ROC # | US # | Ratio (PRC vs ROC + US) |
|------------------|--------------|--------------|-------------|--------------------------------|
| Tier 1 | 142 | 48 | 42 | 1.58:1 |
| Tier 2 | 50 | 60 | N/A | 0.83:1 |
| Tier 3 | 200 | 0 | N/A | – |
| Obsolete | N/A | 0 | N/A | – |

Table 3: Force-to-force air battle ratios, US intervention from Japan, adjusted for half-day evaluation

| Tech Tier | PRC # | ROC # | US # | Ratio (PRC vs ROC + US) |
|------------------|--------------|--------------|-------------|--------------------------------|
| Tier 1 | 142 | 48 | 142 | 0.75:1 |
| Tier 2 | 50 | 60 | N/A | 0.83:1 |
| Tier 3 | 250 | 0 | N/A | – |
| Obsolete | N/A | 0 | N/A | – |

Table 4: Force-to-force air battle ratios, US intervention from Japan and Pacific Fleet, adjusted for half-day evaluation

against rudimentary air forces⁷⁸ If the defenders were only able to manage 2:1 exchange rates against the PLAAF, China would be unable to manage an air advantage in the next few days. But then, American Carrier Strike Groups five and eleven arrive, and things get much worse for the Chinese. Table 4 describes the force-to-force situation after both carriers have arrived on-scene.

The Chinese do not stand a chance of keeping fighters in the air for long in this scenario. The Chinese could not keep up with American kills—they would fall well below 1:1 exchange rates. The Americans have enough coordinated firepower to not only repel the Chinese planes, but attack Chinese ground targets, as well, quickly ending the air battle. The US

⁷⁸Some of the most striking examples are Israeli air dominance operations against Arab targets in wars throughout the latter half of the 20th century. See Mearscheimer’s “Assessing the Conventional Balance,” pg 89.

| Naval Asset | PRC # | ROC # | Ratio |
|-------------|-------|-------|--------|
| Destroyer | 20 | 11 | 1.82:1 |
| Frigate | 35 | 22 | 1.59:1 |
| Submarine | 40+ | 4 | 10+:1 |
| Patrol Boat | 140 | 71 | 1.97:1 |

Table 5: Naval force-to-force ratios

carriers would stay in the region for as long as they needed to, dealing with any suicidal Chinese naval operations. Their presence could end the war and cause the Chinese air force significantly more damage than the Taiwanese air force would likely take. If China is to conquer Taiwan, it must hope that the Americans will choose not to intervene—or if they do make up their minds, they do it slowly. But if the US does not intervene, the Chinese could well be capable of establishing partial air superiority in a few days, enough to send naval and amphibious forces into the region with relative safety. Before they can reach the beaches, though, the Chinese must deny sea access to the Taiwanese navy, or its amphibious units run a high risk of being sunk.

Sea Dominance

If China is able to establish air dominance, the PLA can wipe their brows with some relief, for establishing sea dominance will be much easier. China could choose to establish a no-go corridor for safe troop transport with its submarines⁷⁹ or try to pin Taiwanese forces close to port. First, a look at local Chinese naval forces vs. Taiwanese naval forces, in Table 5⁸⁰.

⁷⁹As Wood and Ferguson suggest in “How China Might Invade Taiwan,” pg 60.

⁸⁰Numbers from *The Military Balance*, 2007, and Department of Defense, “Military Power of the People’s Republic of China,” 2006.

Naval power numerically favors the Chinese. Many of Taiwan's frigates, and some of its destroyers, technologically outclass Chinese equivalents⁸¹. But the Chinese will use their significant submarine asymmetry to their advantage. Their Song- and Kilo-class submarines are capable of quiet battery-powered movement for days, and will move across the Taiwanese strait early in the war. The presence of over a dozen Chinese submarines in each of Taiwan's 3 largest naval ports will be extremely effective in pinning Taiwanese fleets down. Taiwan's extensive anti-submarine warfare (ASW) planes will be mostly grounded or destroyed a few days into the operation, and will not be able to assist the Taiwanese navy in trying to break out of China's submarine wall.

Should it choose to do so, China could attempt to divide and conquer the Taiwanese navy by sending the bulk of its fleet to each port, one at a time. Half of China's surface-mounted missile mounts are obsolescent, and vulnerable to countermeasures⁸², but its modern anti-ship missile mounts (including two Sovremenny-class destroyers equipped with advanced Sunburn anti-ship missiles⁸³), in combination with torpedoes from attack submarines, are likely to make the battle for sea dominance fall into Chinese hands.

After establishing sea dominance, China must choose a point of attack, bring troops to bear, and reinforce the area as quickly as possible if it is going to take Taipei. We next consider China's best route of attack, as well as analyze its airlift and sealift capabilities.

⁸¹Cole, *The Great Wall at Sea*, 98-104, and RAND, "Dire Strait?" pg 20.

⁸²RAND, "Dire Strait?" pg 22

⁸³Ibid, pg 21

Invasion Points of Attack, Airlift and Sealift Capabilities

Possession of Taipei is the ultimate goal of this operation, due both to the fact that Taipei is where the ROC government operates, and because it is the center-of-gravity for the island. It makes sense, then, that the Chinese would choose a point of attack near Taipei. This will significantly shorten the battle, giving China an opportunity to take Taipei before Taiwan can bring its full force to bear in the north, and before political or military pressure force China to abandon the campaign.



Figure 1: Northern Taiwanese Landscape

A consideration of the shores near Taipei shows that the shores to the west are flat and featureless, those to the north are somewhat hilly, and those to the east are cliff-like. The

best shores were near Tao-yuan, and an airport in the area sits a mere 2.5 miles from the beach. On the other hand, to the north lies Chi-lung, a port town. Such a port would allow for a rate of supply landing much higher than the airport, if it could be captured. Further, Tao-yuan lies at the north end of Taiwan's two largest highways, that run up the west side of the entire island, where Chi-lung is much more isolated from high-density transportation routes from the south, making it harder for Taiwan to reinforce it. The only highway connected to Chi-lung goes straight to Taipei, a serious advantage for a force that hopes to move quickly towards its target. A mere 17 miles of highway separates Chi-lung from the heart of Taipei. These operational advantages make Chi-lung an excellent point of attack, even if the beaches are not as friendly as near Tao-yuan. The Taiwanese will have little time to prepare the beaches with the kinds of fortifications and fire bases that the Germans or Japanese were able to use in WWII, as these fortifications require weeks or months to create, and Taiwan's civilian politics have not allowed for such fortifications to be built near their homes in peacetime.



Figure 2: Highway Between Chi-lung to Taipei

The amphibious assault will likely take place on the beaches just west of Chi-lung, as these are a good bit more forgiving than those to the east. The beach only needs to be a few miles wide—Omaha beach was 3.5 miles wide and landed over 45,000 American troops in the first wave. This beach will be under the jurisdiction of the Northern Taiwan military region command, which keeps 11 active brigades garrisoned, in the form of 7 infantry, 1 motorized infantry, 1 armored infantry, and 2 armor brigades. The Chinese will attempt to send as many well-trained units to the point of attack as possible, to try and establish a beachhead.



Figure 3: Point of Attack

How many troops can China bring to bear via sealift and airlift? China has a considerable civilian shipping and merchant fishing fleet that it can utilize both for cargo at the Chi-lung port and for troop transport directly to the shore. Such an operation would literally require troops to swim to shore, and would resemble the organization of a very wet airborne operation, with troops highly vulnerable during approach, and becoming separated from their units upon landing. Such an operation would be suicidal in a first-wave assault, but has potential for reinforcement purposes.

China would likely send its highly skilled amphibious assault divisions and airborne brigades to try and establish a beachhead. Its military amphibious assault vehicles could

| Type | Ships | Troops | Tanks | Helicopters |
|-----------|-------|--------|-------|-------------|
| Yudao | 1 | 180 | 0 | 0 |
| Yudeng | 1 | 180 | 6 | 0 |
| Yuhai | 13 | 250 | 2 | 0 |
| Yulian | 22 | 250 | 5 | 0 |
| Yunshu | 10 | 0 | 6 | 0 |
| Yukan | 7 | 200 | 10 | 0 |
| Yuting | 10 | 250 | 10 | 1 |
| Yuting II | 9 | 250 | 10 | 0 |
| Total | 73 | 15,260 | 462 | 10 |

Table 6: Chinese Amphibious Lift Capabilities

| Type | Planes | Passengers |
|---------|--------|------------|
| B-737 | 15 | 200 |
| Y-7 | 41 | 40 |
| IL-76 | 30 | 300 |
| AN-12 | 4 | 50 |
| IL-76MD | 13 | 300 |
| IL-18 | 2 | 50 |
| Th-154 | 12 | 200 |
| Total | 117 | 20,240 |

Table 7: Chinese Airborne Lift Capabilities

cary the troops and armor for one amphibious assault division, and its airborne wings could carry one division, as well. Table 6 shows amphibious lift capabilities ship-by-ship⁸⁴, and Table 7 shows airlift capabilities plane-by-plane⁸⁵.

⁸⁴ *The Military Balance*, 2007, pg 349.

⁸⁵ *The Military Balance*, 2007, pg 350, with additional information on personnel capacity from *Jane's All the World's Aircraft*, 2006, as well as seat-counting in image searches for planes that lacked public capacity listings. It should be noted that some planes are not listed in Table 6, due to the fact that they are small enough that they would not be useful enough to airborne commanders to make up for being a highly numerous command nuisance.

The amphibious vehicles will likely operate out of the Fujian area, as this is the closest naval command to Taiwan. Even loading from Fujian will require a two-day round trip to reach Chi-lung. Airborne transport, on the other hand, can likely manage a sortie per day, and can operate out of any of the 22 bases within an operational radius of Taiwan.

Establishment of Beachhead

In the three or so days before the air and sea battles have settled, Taiwan will have an opportunity to make some beach preparations. We will likely see laying of barbed wire, some tank traps, digging in, setting up artillery, etc., but there is only so much that can be done over a three day period. Of Taiwan's 11 brigades in its 6th Army Corps defending the north, regional command will likely keep its four mobile brigades (motorized, mechanized, and armored) in reserve for a point counter-attack. The remaining 7 brigades will be spread in some manner over the 150 miles of beach in the north, although they can greatly reduce troop concentration in the eastern 1/3 of the beaches, and will likely only station one brigade on the eastern cliffs, if that. Therefore, 3 brigades each could be stationed in the northern and western thirds of beach (which are about 50 miles long each), but commanders may choose to increase troop concentrations on the western beaches that are closer to Chinese shores and welcomingly flat.

The PLA will have the advantage of tactical surprise⁸⁶, so Taiwan can only do so much to concentrate its forces into logical routes of attack. With such a dispersment, China is likely

⁸⁶Wood and Ferguson, "How China Might Invade Taiwan," pg 63.

to be facing three or fewer brigades on the first day, and that is only if Taiwan is able to rush its local brigades to the scene once the Chinese land. The PLA's elite amphibious assault division and 3 airborne brigades will total 6 brigades in the area. With a 2:1 advantage, China may well be able to establish a secure beachhead in one day, like the Gold and Juno beaches of Normandy, for unlike troops in Normandy, they are much better-trained, and face far fewer shore fortifications.

But once the PLA establishes a secure beachhead, they will need to rush in reinforcements, because the Taiwanese will begin throwing as many of their 200,000 active troops and 1.5 million reserve troops at the Chinese as possible⁸⁷.

Reinforcements, Expansion of Beachhead, and Breakthrough

Taiwan has two large highways in the west and one in the east via which it will attempt to bring in reinforcements. In addition, its 4 mobile brigades in the 6th Corps will attempt an immediate counter-attack. O'Hanlon asserts that Taiwan can bring forth 50,000 troops/day (or 10 brigades) through its coastal highway system⁸⁸. But China will have air superiority by the time Taiwan begins moving its troops northwards. Taiwan's movement will almost exclusively be constrained to the three large north-south highways on the area, as the center of Taiwan is a largely roadless, mountainous region. This concentration of moving troops will give the PLAAF's fighters and bombers the opportunity to interdict troop movement, create high-intensity chokepoints, and kill some percentage of Taiwanese troops and armor

⁸⁷*The Military Balance*, 2007.

⁸⁸O'Hanlon, "Why China Cannot Conquer Taiwan," pg 68.

before they reach the north. In the Gulf War, American air superiority meant that it could often limit Iraqi troop movement; it was able to catch a large Iraqi column retreating from Kuwait, and destroyed almost every vehicle in the group, in what came to be known as the “Highway of Death.” Facing limited Taiwanese transportation options, the Chinese would have the opportunity to focus their airpower to make transportation as difficult as possible for the Taiwanese. Ultimately, the Taiwanese would find creative ways of moving troops—light infantry could trickle in through the central mountains, and some columns of transports and armor could manage to slip by Chinese bombing; being generous, interdicted Taiwanese transportation systems might be able to carry half their maximum capacity, or 5 brigades. Along with the 4 mobile brigades in the 6th Corps, the Taiwanese could bring forth 9 brigades in the day after the landing, and 5 in each subsequent day.

The Chinese would bring their second airborne division on the second day, but their amphibious vehicles would be in the middle of a two-day round-trip. Further, the Chinese would need to capture the Chi-lung ports quickly, lest its troops run out of supplies, so these 3 airborne units would make its capture a priority, and would be unlikely to be helpful in holding the beachhead.

But the Chinese have another option. Known as the “million man swim,” the Chinese could employ an operation involving their civilian shipping fleet. Wood and Ferguson attest that millions of troops could be transported by civilian vessels—if it was a carefully planned and coordinated operation⁸⁹. But the Chinese would have only spent a few days gathering ships, for gathering them before the pre-emptive attack would likely tip off the Taiwanese.

⁸⁹Wood and Ferguson, “How China Might Invade Taiwan,” pg 64.

Further, Chinese control abilities are limited, and they would rather send a conservative number of troops than risk massive control failures in the operation. Therefore, if China's million man swim operated at only 20% of maximum capacity, it could bring about 200,000 men to bear, or 40 brigades, per round trip. Because of the distance of the Taiwan strait, half that could be brought to bear per day, until China exhausted its local stock of 50 infantry brigades. China, then, could easily bring 20 brigades per day through civilian sealift, and 3 heavier brigades every other day through its amphibious assault ships. Once it reached 50 brigades ashore, its ability to transport would quickly decrease, as it would need to carry its armored brigades' tanks across the strait. But China could attempt to bring some armored brigades into its captured port at Chi-lung with its 30 heavy transport ships.⁹⁰ The port can support less than 8,000 tons of cargo per day⁹¹, so China would only be able to land one or two armored brigades per day, and then only in the first few days of the operation (before Chinese troops become so numerous that the port would have to be completely devoted to supply efforts).

In the second through fourth days of the land operation, China would attempt to achieve a breakthrough to push troops towards Taipei. We will assume they could break through with at least a 3:1 force advantage. Table 8 describes force-to-force ratios at the point of attack in days two through four of the landing operation, as reinforcements enter the area.

By the fourth day of the invasion, China would run its Fujian-region infantry stock dry, and would have to tap into reserves deeper into the mainland that are not trained and

⁹⁰*The Military Balance*, 2007, pg 349.

⁹¹O'Hanlon, "Why China Cannot Conquer Taiwan," pg 71.

| Day of Landing | PRC # (Brigades) | ROC # (Brigades) | Ratio |
|----------------|------------------|------------------|--------|
| Two | 26 | 12 | 2.17:1 |
| Three | 49 | 17 | 2.88:1 |
| Four | 55 | 21 | 2.62:1 |

Table 8: Force-to-force ratios at Point of Attack

equipped to the level that Fujian troops are. Furthermore, China's ability to keep all these troops fully supplied with just one port would be severely taxed. But by the third day of the operation, China has nearly achieved an overall 3:1 advantage, and could surely create local breakthrough points by concentrating its troops. Although Chinese planes will be unlikely to provide much close-air support, the best-trained Chinese troops will manage to manage a push towards Taiwan by the third day, and may arrive at Taipei by the fourth day.

Capture of Taipei

If in fact the Chinese are able to reach Taipei after four days on land, the Taiwanese would have had less than a week to prepare Taiwan for urban combat. How willing would the Taiwanese be to turn their entire city into a fortress? If 75% of Taiwanese would indeed be willing to resist the PLA⁹², they might well be willing to hand over their buildings for army garrison. Taiwanese brigades not in combat with the Chinese could prepare buildings by setting up sandbags against walls, using jacks to support floors, and generally digging in. History has shown that urban warfare is brutal and brings high casualties, but tells us decidedly little about what kind of force one needs to actually capture a city, especially in

⁹²Edmonds and Tsai, *Taiwan's Defense Reform*, pg 56.

a case where both armies are modern and both have received urban warfare training. If a modern army is fighting against a more rudimentary army, the modern army tends to have an advantage—at least in exchange rates. Guerilla warfare can be utilized to make an attacker's campaign extremely difficult. On the other hand, modern armies tend to be more casualty-sensitive, and are less willing to disown uniforms and break the Geneva conventions to gain an advantage. Ultimately, the Chinese will almost certainly have higher numbers on the scene. Strategic air strikes could eliminate electricity grids to take away some building advantages, and helicopters could fly close air support. But the Chinese advantage in unit fighting, morale, and true grit will be magnified in urban warfare, where small-unit tactics become increasingly important. The Chinese are probably less casualty-sensitive, as well, and would be willing to pay the price necessary to quickly root the city of Taiwanese soldiers. Little can be said about how long it would take Chinese soldiers to take Taipei, but they would be extremely lucky to take it in less than a few days. In WWII, Paris fell in two days of fighting, and Stalingrad stood sovereign after three years. Thus, only so much can be said about such an urban battle, but Chinese numerical superiority, air power superiority, and small-unit training, combined with Taiwan's short preparation times and crippled infrastructure make it more likely that China could take the city than Taiwan could hold it.

If China took Taipei, it would likely be able to hold it from counter-attack. Surely, the PLA would try to hold off Taiwanese reservists for as long as possible as they made their own urban preparations and took advantage of Taiwanese ones. Taiwanese citizens

may resist, and attempt to make an occupation difficult, but could only do so much in a country where civilian weapons ownership is tightly regulated. Nonetheless, Taiwan's 1.5 million reservists would pose a problem for Chinese troops that will continue to need supplies. Taiwan is connected to sea by a river, but only small ships could enter the city to drop off cargo. Troops not directly in the city could take the Tao-yuan airport, but this would only marginally increase cargo. Chinese troops would have to live off the land for some time, hoping to raid shops for food and salvage from ammo dumps. But the longer they could hold out, the more likely their victory—Chinese fighters could continue dropping bombs on Taiwanese strongpoints and whittling down their armed forces. Additional Chinese troops could be landed, both by amphibious vehicle and civilian ship transport. The exiled Taiwanese government would largely lose control of its country, and would have to consider the merits of surrendering to the Chinese versus allowing its citizens to suffer under war. But ultimately, one can only fit so many troops into the northern Taiwan area—it is quite small. If the Chinese troops are able to resist attrition, the Taiwanese would be hard-pressed to stuff all 1.7 million of their soldiers into the region; Mearsheimer's force-to-space ratio concept comes to mind. Taiwan would find it difficult to establish the local 3:1 force-to-force advantages that China did, as China's defensive front is much denser than Taiwan's was. With no way to quickly break through such a dense front, Taiwan could only hope to grind the Chinese forces down over a long period of time. Not only would this become extremely costly, but it seems unlikely to happen. China could match and exceed Taiwanese ground force numbers should it need to do so, and could use its sea and air dominance to cripple the

large Taiwanese army's ability to fight. Given such considerations, China appears capable of holding Taipei once it has captured it.

Policy Implications

Conclusion

China's successful capture of Taipei would be by no means easy. Although some steps of the operation, like establishing sea dominance, would be easier than others, a few steps in particular are bottlenecks that would test China's command and control. The invasion hinges most on a successful pre-emptive strike by the PLA's Air Force and Second Artillery—an operation that is extremely difficult, but by no means dubious. If the United States intervened, China would certainly find impossible to establish air superiority, as it would find its airforce grossly out-classed in both technology and training. Without air superiority, China's subsequent sea superiority, amphibious landings, and reinforcement operations would indeed be suicidal. American pilots would sink large numbers of incoming Chinese ships, and China would suffer an embarrassing defeat. But such an intervention, even limited in military scope, would be an incredibly bold political move for the Americans, and would weaken ties with China for years to come. Both economies would suffer terribly, and the US would run the risk of starting an escalated war, or at least extremely tense cold war, with China. With such pressure, the US would find intervention a costly and difficult operation, and might begrudgingly let the Taiwanese and Chinese settle the score themselves.

If the US did not intervene, China certainly possesses capabilities such that it might be able to take Taipei in a bit more than a week. It is possible China could take the whole island, but such an operation would be extremely costly, exacting perhaps millions of casualties on each side. China's desire to hurt the civilian population as little as possible, as well as its crucial need for a high-speed operation, makes such a halt at Taipei a much more feasible operation. If the campaign needed to become protracted, China would have two options: bring up additional troops to excruciatingly conquer the whole island, or simply initiate a blockade of Taipei along with strategic air attacks against fuel and ammo depots, and other strategic targets, to try and run the Taiwanese military dry of supplies. Such operations would require their own analysis, but could be kept in China's back pocket should the Taiwanese government be stubborn enough to not surrender.

What does this mean for US foreign policy? Unless the US wants to commit to sending military aid to Taiwan during such a conflict, the US will need to encourage Taiwan to increase its defensive capabilities, particularly in airpower. Taiwan will have integrated Raytheon's new early warning system by 2009, which gives Taiwan a significant air defense boost, but in addition, it should consider the acquisition of new fighters, submarines, and anti-air missile batteries. Furthermore, the US should encourage Taiwan to shift spending away from its ground forces and towards air force and navy spending; the key to Taiwan's victory will be preventing the Chinese from ever securing a beachhead, and the best way to do this would be to suppress China's advanced fighters, and gain the capability to attack China's air bases and C4ISR centers.

Military Gap Growth

But if trends continue, Taiwan will not be able to afford such upgrades as quickly as China buys or produces newer fighters, destroyers, submarines, and amphibious assault vehicles. Taiwan does not have domestic submarine production capabilities, and China has levied enough pressure on foreign producers that none will sell to Taiwan. In addition, Chinese military spending has increased significantly each year (although it has only slowly consumed larger percentages of central government spending), and Taiwanese military spending is actually decreasing. This is a peculiar decision by a government dominated by the pro-independence Pan-Green coalition, but it is a trend that seems difficult to reverse. With shrinking funds, the Taiwanese navy and air force will have trouble buying important upgrades from the US, even if the US is willing to sell them. In addition, it would be absurd for the US to sell such items to Taiwan for close to zero or zero cost. Not only would this endanger America's relationship with China, but the US should not be committed to protecting Taiwan's right to choose reunification if the Taiwanese people are not. Taiwan itself should be increasing and shifting funding, procuring important airpower upgrades on their own, for US interests and policy may change between administrations and votes. It seems that Taiwan is depending on the United States too heavily for its defense.

On the other hand, indefinite defensive advantage is impossible for Taiwan. China's size, quickly growing economy and quickly modernizing army will eventually overpower Taiwan, without question. How long will it take? This depends on the dedication of both Taiwanese and American military thinkers and spenders. The Taiwanese can only hope to keep their

defensive advantage as long as possible, in hopes that they might some day be given the choice to reunite with a more liberal, more democratic China. Pro-independence movements may have missed their window of opportunity, and should hope that a future Chinese government would be more amiable to an independent Taiwanese ally. But such hope requires a sustained ability to defend the island, and this is an ability that Taiwan is starting to lose.

For China, increased spending on additional SRMBs and amphibious assault vehicles, advanced destroyers, and advanced fighters will be most effective at giving the PLA a military advantage in the invasion steps that may currently be in the air, particularly an effective pre-emptive strike. China is currently expanding production of its high-end F-10 and Super-10 force to try and phase out its weak, older aircraft. In addition, it is researching the J-X and FC-1 aircraft to serve as elite spearheads of the PLAAF⁹³ China can use its emerging military advantage in such an invasion scenario as a strong coercive tool against the Taiwanese—serious risk of an amphibious invasion with a high probability of success will make the ROC think twice about serious pro-independence action. The appearance of such an emerging advantage will embolden the Chinese, and the PRC's political fervor and dedication to the Taiwan issue may cause them to act with smaller provocation than in the past.

Closing Notes

Invasion seems to soon be China's prerogative, although the PRC's need for international approval and respect would indeed encourage them to wait until they had sufficient provo-

⁹³Jane's Defense Weekly, 25 April 2007, pg 24.

cation. Washington and Taipei should be cautious with their political actions or words, and try not to give Beijing sufficient reason to use military force. An extension of the current shaky peace across the strait is the best long-term solution for Taipei; as China's military advantage grows, it will continue to reform, and perhaps back off from its hard-line policies. Pending that, Taiwan's reunification may become less dreadful than many believe, as a more reformed China would respect Taiwan's personal autonomy and its citizens' civil rights. Both Taiwan and the US should seek to extend Taiwan's defensive advantage into the future, but must realize that it cannot function without careful and calculated political action, and cannot be Taiwan's long-term political solution.

Works Cited

1. Bartlett, Merrill L. *Assault from the Sea. Essays on the History of Amphibious Warfare*. Annapolis: Naval Institute Press, 1983.
2. Blasko, Dennis J. *The Chinese Army Today*. New York: Routledge, 2006.
3. Brown, Harold, Joseph Prueher, Adam Segal. *Chinese Military Power*. New York: Council on Foreign Relations, 2003.
4. Chinese Defence Today: The Military Power of China. <http://www.sinodefence.com>. Accessed April, 2007.
5. Cole, Bernard D. *The Great Wall at Sea*. Annapolis: Naval Institute Press, 2001.
6. Department of Defense. "Military Power of the People's Republic of China." *Annual Report to Congress*. 2006.
7. Dupuy, Trevor N. *Elusive Victory: The Arab-Israeli Wars, 1947-1974*. New York: Harper & Roy, 1978.
8. Edmonds, Martin, Michael M. Tsai. *Taiwan's Defense Reform*. New York: Routledge, 2006.
9. GlobalSecurity.org. <http://www.globalsecurity.org>. Accessed April, 2007.
10. Google Earth. Google, 2007. <http://earth.google.com>. Accessed March, 2007.

11. International Institute for Strategic Studies. *The Military Balance, 2007*. London, UK.
12. *Jane's All the World's Aircraft, 2007*. Alexandria, VA: Jane's Information Group, 2007.
13. *Jane's Defense Weekly*. Vol. 44, No. 17. 25 April, 2007.
14. Mearsheimer, John J. "Assessing the Conventional Balance." *International Security*, Vol. 13, No. 4 (Spring 1989) pp. 54-89.
15. Posen, Barry. *US Military Power*. Lecture Series at MIT, 2007.
16. Press, Daryl. "Lessons Learned from Ground Combat in the Gulf." *International Security*, Vol. 22, No. 2 (Fall 1997). pp. 137-146.
17. Scramble. The Dutch Aviation Society. <http://www.scramble.nl>. Accessed March, 2007.
18. Select Committee of the United States House of Representatives. *Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China*. Overview. Issued January 3, 1999. Accessed from <http://www.house.gov/coxreport/pdf/overv.pdf>. Accessed on 03/12/2007.
19. Shlapak, David, David Orletsky, Barry Wilson. *Dire Strait? Military Aspects of the China-Taiwan Confrontation and Options for US Policy*. Santa Monica: RAND, 2000.
20. Space War. <http://www.spacewar.com>. Accessed April, 2007.

21. Vick, Alan J, Richard M. Moore, Bruce R. Pirnie, John Stillon. "Aerospace Operations Against Elusive Ground Targets." RAND Project Air Force, 2003. Accessed from http://www.rand.org/pubs/monograph_reports/MR1398/, on 04/06/07.
22. Wood, Piers M., Charles D. Ferguson. "How China might invade Taiwan." *Naval War College Review*. Washington: Autumn 2001. Vol 54, No 4; p.55-69.