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A Matter of Time: Taiwan's Eroding Military Advantage

Taiwan will continue to hold a number of significant qualitative military advantages against its potential adversary in mainland China for most of the next decade. During this period, the island's security will be insured not so much by Taiwan's adequate defenses as by China's shortfalls in offensive capabilities. The People's Liberation Army (PLA) has one big trump card, its growing ballistic missile force, but its other conventional capabilities remain far from adequate to pursue a decisive range of offensive operations against Taiwan.

This article describes Taiwan's defensive strengths and China's offensive weaknesses. It argues that China is closing the gap in several key areas and Taiwan's "window of invulnerability" is gradually closing. If current trends continue, sometime in the second half of this decade the conventional force balance between the two will tip in China's favor—unless the United States transfers massive amounts of high-tech weaponry to the island's armed forces. Even if Washington did so, Taiwan's military would likely suffer even greater problems absorbing and utilizing the equipment than it suffers today. Finally, the article describes likely conflict scenarios if push came to shove between China and Taiwan.

Despite Beijing's steadfast refusal to renounce the use of force, its occasional saber rattling in recent years, and regular reports in the Hong Kong media that the PLA is anxious to be unleashed to "teach Taiwan a lesson" or force it back into the fold of the People's Republic of China (PRC), it is very

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doubtful that Beijing has much realistic incentive to use force against the island. The costs of failure would be enormous—quite likely enough to bring down an already fragile regime. While the costs of "success" would be equally devastating to China's international image, trade and investment, and diplomatic ties. The use of force by Beijing is a lose-lose option. Yet, China has warned that it would have "no choice" if Taiwan formally asserted its independence, came under the military protection of another nation, or if "chaos" erupted on the island. Outgoing President Lee Teng-hui's July 1999 call for "special state-to-state" relations with Beijing came dangerously close to such a declaration of independence, and some analysts believe that enshrining this terminology in Taiwan's constitution would be seen by Beijing as tantamount to a formal break from the sacred sovereign principle of "One China." Semantic and substantive moves by Lee and Taiwanese authorities in recent years, such as dismantling the island's provincial administration, while leaving only its "national" bureaucracy, have set Beijing on a hair trigger. China is also hypersensitive about its second precondition—as it watches the Pentagon not only load Taipei with materiel, but also upgrade its training, logistical support, and other contacts with Taiwan's armed forces. Many experts believe—and China has warned—that the extension of theater missile defense (TMD) to Taiwan would necessarily bring with it a "denseness" of bilateral military and intelligence ties (as well as U.S. forces on the ground) that would *de facto* reconstitute the defense treaty terminated in 1979.

Precisely because the military balance between China and Taiwan is gradually shifting in China's favor (combined with the growing weapons absorption problem and the nascent arms race) more than ever the "Taiwan problem" cries out for a political solution. Taiwan's negotiating leverage with Beijing is not all that great now, but it will continue to deteriorate as its defenses and deterrent do. By the end of this decade, Taipei may well find itself trying to negotiate its future at a distinct disadvantage.

The Order of Battle

Most military experts do not consider the total balance of forces and order-of-battle (OB) between the PLA and Taiwan's armed forces to be a very useful measure. Terrain, as will be discussed below, is a key factor that obscures symmetrical comparisons of complete force balances. Moreover, the *quality* of weaponry, training, and manpower are far more important in combat than quantity. In any event, only select elements of any military are ever deployed in a given campaign. "Jointness" and interoperability of forces cannot be judged from a force-on-force OB. Command, control, communication,

reconnaissance, and intelligence are all important invisible "software" advantages that are not evident from the "hardware" inventory in an OB. Ultimately, the employment of military forces is contingency-specific: how will certain weapons and forces be deployed under certain tasks, conditions, and standards?

For example, some experts argue that the thousands of fighters in the PLA Air Force (PLAAF) inventory are largely irrelevant to air combat scenarios given that the "air space accommodation" over the Taiwan Strait only permits sufficient space for a total of 300 interceptors to maneuver and engage in combat at one time. Taiwan Air Force personnel calculate that with the full deployment of nearly 600 fighters currently in their inventory (150 F-16s, 60 Mirage, 130 IDF fighters, and 200 F-5s), its fighter force could last approximately one month given an estimated 15 percent loss rate per day.[1] Of course, Taiwan would be unlikely to put all of its fighters in the air at once—indeed many of them would remain hidden in hardened mountain bunkers near Hualian and Jiayi. Once aloft, Taiwan's interceptors enjoy substantial qualitative superiority over their adversary. Even the PLAAF's 48 Su-27s based within strike range of Taiwan are no match for either the F-16s or Mirage 2000s, as they lack agility and thrust necessary for close combat. Despite several crashes of F-16s during training exercises last year, Taiwan's best pilots are much better trained and enjoy a 2:1 advantage in average hours in the air per year (approximately 120 hours versus 60 hours) over their counterparts. Moreover, the PLAAF's Su-27 pilots receive very little over-water training—for fear that they might defect! That aircraft is in any case more of a fighter-bomber than a nimble, high-altitude interceptor and would be subjected to heavy anti-aircraft fire if ever deployed against Taiwan.

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Similar caveats are in order when considering PLA Navy (PLAN) superior numbers. Only a small percentage of the PLAN's surface combatants are ocean-going, blue-water capable ships—at most twenty destroyers. These are not sufficient to enforce a blockade of even one of Taiwan's two main ports, much less to carry out a successful quarantine of the island. To be sure, this modest surface capability combined with some submarines may be sufficient to interdict and deter commercial shipping from sailing to port—and this in itself would have a profound impact on Taiwan's insurance rates, stock market, and popular confidence. But it is not enough to enforce a wide variety of blockades. Nor does the PLAN have anywhere near

enough landing craft to mount a sufficient cross-strait amphibious landing. It would take approximately 600 landing craft nearly two weeks to transport twenty infantry divisions to Taiwan.[2] Presently, the PLAN's amphibious transport capability is only capable of moving one, perhaps two divisions.

Taiwan's Natural Defenses

Then there are the critical factors of weather and geography. Taiwan's best defenses may be nature's elements. There are four main deterrents to assaulting the island: the coastline, monsoons, tides, and mud. The 1996 "exercises" proved that the PLAAF and PLAN have a long way to go before they can operate in stormy conditions with limited visibility—the moment a modest typhoon stirred up, all aircraft were grounded and ships returned to the mainland coastline. The western coastline of Taiwan is comprised of mud flats extending two to five miles out to sea, which could be a death trap for any landing force. The tides fluctuate considerably, but they average 15 feet variance per day (leading to a rise/drop of approximately one foot per hour). Low tide exposes the coastline fully in several miles of mud—a situation making the landing of tanks and armored vehicles impossible. Even infantry would be very hard pressed to traverse the mud—likely becoming "sitting ducks" for Taiwan aerial bombardment and artillery fire.

Yet more daunting than tides and mud is the size of the Taiwan Strait and the effect of the winds on the sea. At most points, the strait is 90-100 miles wide, but it is relatively shallow due to the continental shelf—thus making it difficult for submarines to operate and hide. At the shortest distance, it takes 10 hours to transit. More importantly, though, the seas are frequently very rough. Taiwan's two monsoon seasons (August-September and November-April) generate very high winds (often exceeding 45 knots) which cause 20- to 30-foot waves; even during calmer summer months they average six- to eight-foot swells. The strong winds almost always blow from north to south, meaning that any landing craft attempting to traverse the strait would be hit broadside (a "beam sea"). The "funnel effect" in the strait also causes irregular and unpredictable currents near the coastline. Finally, during monsoon season, the rainfall in the area is torrential—260 inches annually in the north and 208 inches in the south (compared with Seattle's annual rainfall of 33 inches or the Amazon rainforest of 108 inches per year)—making visibility virtually nil.

While wind and heavy rainfall would make the actual landing force movement difficult once on shore (presuming they get that far), approaching the mud flats and beach in an organized manner would be next to impossible. Any troops that made it ashore under such conditions would no doubt suffer from extreme seasickness and fatigue. Nor is the eastern shore

of Taiwan an amphibious option, given the transport distances involved and the fact that, in most areas, mountains abut the seacoast. In brief, the lack of transport craft may be the least of the PLA's worries if it opted for an invasion of Taiwan.

Some important qualifying factors are necessary when considering the current force balance between China and Taiwan (Table 1). The numbers reveal a lot, but they also exaggerate and obscure some critical considerations. It is also important to note that the principal unclassified sources available are not in agreement on the respective OB. Only in 1998 did the PRC begin to provide a very modest sampling of its military weapons inventory, in its second defense White Paper. Taiwan has been publishing a defense White Paper since 1993. While remarkably more thorough than China's, it too lacks complete transparency and the totals provided are often thought to be on the high side. The International Institute for Strategic Studies continues to be the most authoritative source.

China's armed forces would likely fail to subdue and occupy the island successfully.

Table 1 (see next pages) indicates a substantial numerical advantage for PRC forces, but, unless the PLA threw everything it had at the island at once, Taiwan's conventional defenses at present appear qualitatively superior and adequate to repel an invasion. The qualitative edges that Taiwan currently holds, particularly in air and naval platforms, accrue to its substantial advantage for the time being, but with the mainland's weapons systems coming on stream in the early twenty-first century, Taiwan's "window of invulnerability" will quickly narrow. While continued and expanded provision of advanced U.S. weapons to Taiwan can serve to maintain its advantages, this policy is fraught with three key problems:

- adamant opposition by Beijing and the inherent risks for a deterioration in U.S.-China relations as Chinese leaders are now making Taiwan arms sales the litmus test of the relationship;
- foreign exchange available to Taiwan's armed forces; and
- difficulties the Taiwanese military is already having in absorbing the sophisticated weaponry that it has purchased.

The Taiwan Arms Sales Process

Washington will doubtless continue to honor its obligations under the 1979 Taiwan Relations Act (TRA) to provide Taiwan's armed forces with "care-

Table 1: Balance of Forces, China and Taiwan (2000)

	China	Taiwan
Total Armed Forces (Active Duty)	2,480,000[a]; 2,000,000[b]; 2,500,000[c]	376,000[a]; 320,000[b]
Total Reserves	1,200,000+ c.900,000 People's Armed Police[a]; 1,100,000 PAP[b]	1,657,500[a]; 3,870,000[b]
Defense Budget	$12.6 bn.[a]; $30 bn. (FY 97)[b]; $9.8 bn. (FY 97)[c]; IISS est. $37.5 bn. by PPP FY 98)[a]	$10.9 bn.[a]; $8.5 bn.[b]
Nuclear Forces & Ground and Sea-Launched Ballistic Missiles	15-20 ICBMs 66 IRBMs 12 SLBMs 150 SRBM	None
Total Ground Forces	1.83 mn.[a]; 1.87 mn.[b]	240,000[a]; 200,000[b]
Main Battle Tanks	8,300 total,[a] including: 6,000 T-59, 1,000 T-69, 500 T-80, 800 T-85, 1200 T-63 amphibious, 800 T-62, small numbers of T-90; 14,000+ total[b]	720+ total[a]; including: 100 M-48 A5, 450+ M-48H, 169 M-60A3, 230 M-24 675 M-41/T-64; 1300+ total[b]
Armored Personnel Carriers	5,500[a]	950[b]
Towed Artillery	14,500[a]; 13,000+[b]	1,060[a]; 1,400[b]
Total Air Force Personnel	420,000 + 100,000 in strategic missile forces (SMF)[a]; 350,000 + 120,000 in SMF[b]	68,000[a]; 60,000[b]
Total Combat Aircraft	3,520[a]	598[a]
Bombers	320+[a]	None
Helicopters	353,[a] including: 33 naval ASW 78 naval transport 242+ army	293[a], of which: 244 army, 20 air force, 30 naval (9 ASW); 160+[b], incl. 20+ ASW[b]

	China	Taiwan
Fighters	3,000 total,[a] of which: 1500 J-6, 700 J-7 250 J-8, 50 Su-27; 5-10 J-10	622 total,[a] of which: 272 F-5, F-7 150 F-16 A/B 60 Mirage 2000-5 130 IDF, 200 F-5
Transports	415[a]	43[a]; 30+[b]
Airborne Early Warning	1 Phalcon	4 E-2T[a]
Total Naval Personnel	230,000,[a] including: 26,000 Naval AF 5,000 Marines; 360,000[b], including: 40,000 Naval AF 8,000 Marines	73,000[a], including 1700 naval air; 30,000 Marines; 60,000 plus 16,000 Coast Guard[b]
Principal Surface Combatants	53,[a] of which: 18 destroyers 35 frigates; 2,700[b] ("all types of warships")	37 total,[a] of which: 16 destroyers 21 frigates; 80+ total,[b] of which: 30 destroyers 50+ "combat craft"
Submarines	70,[a] of which: 1 SSBN 5 SSN 1 SSG 63 SS	4 SS[a]
Mine Warfare Ships	119[a]	12[a]
Coastal Patrol Craft	676[a]	104[a]; 101[b]
Amphibious Ships	70[a]	18[a]
Supply & Misc.	160[a]	20[a]

Sources: IISS, *The Military Balance 1999/2000*; ROC Ministry of Defense, *1998 National Defense Report*; Information Office of the State Council, *China's National Defense (1998)*

Notes: Numerous discrepancies exist between these three sources in several categories. IISS numbers are designated [a]; Taiwan numbers, [b]; PRC numbers, [c]. When not otherwise noted, figures given are from IISS.

fully selected defensive weapons" for the island's own self-defense, but the measure for determining these levels has changed in recent years. Despite the sale by the outgoing Bush administration of 150 F-16s, until the second Clinton term, the Pentagon had essentially continued to honor the qualitative and quantitative ceilings agreed in the August 8, 1982, joint communiqué with Beijing. But over the last few years, the Pentagon, which negotiates and largely determines the annual arms package,[3] has begun to use a different index to evaluate Taiwan's requests and to decide which arms to sell: the cross-strait military balance. While it makes sense to calculate Taiwan's needs based on the dynamic and evolving capabilities of the PLA, this measure has *not* traditionally been the standard criteria for making such decisions. Rather, the arms sold to Taipei between 1979 and 1982 had been agreed in the 1982 joint communiqué as the de facto ceilings, with the stated U.S. intention to phase out all arms deliveries over time. Instead of roughly $900 million in arms, as during the 1979-1982 period, arms provisions for Taipei in recent years has swollen to $3 billion to $4 billion per annum!

Taiwan's 'window of invulnerability' is gradually closing.

As the value of materiel transferred to Taiwan has increased substantially, so too has its quality. Including systems in the pipeline, since 1996 the United States has sold, leased, or delivered to Taiwan 150 F-16 A/B fighters; 6 PAC-2+ Modified Air Defense system batteries; 12 C-130 transport aircraft; 4 S-70C search-and-rescue helicopters; 2 Newport-class tank landing ships; 32 S-2T reconnaissance vehicles; 300 M-60 A3 main battle tanks; 28 M-109 A5 towed artillery; 74 Avenger surface-to-air missiles (SAMs); 30 TH-67 helicopters; 1,300 Stinger SAMs; 21 AH-1W helicopters; 5 Knox-class frigates; 7 Perry-class frigates with SM-1 anti-aircraft missiles; 13 OH-58D helicopters; 58 Harpoon antiship missiles; 9 47-SD helicopters; 4 E-2T early-warning aircraft; an Improved Mobile Subscriber Equipment tactical communications system; AIM-120 air-to-air missiles for the F-16s; a number of PAC-III air defense batteries; and 4 Arleigh Burke-class Aegis guided missile destroyers.[4]

This panoply adds up to a quantum upgrade in key areas of Taiwan's defenses and is the principal basis for the judgment that Taiwan should be secure for much of this decade.[5] After that, with new generations of fighters, submarines, surface combatants, amphibious assault ships, and ballistic missiles coming into PLA inventories, many of these systems will not provide the desired level of security for Taiwan and new, more high-tech defensive—and possibly offensive—weapons will be required. To date, the United States

has consistently denied Taiwan's requests for certain offensive weapons—notably submarines and short/medium range missiles—on the premise that such offensive systems could consciously or accidentally carry an attack to mainland China, thus touching off a conflict that depicted Taiwan as the aggressor rather than defender.[6] But pressure has been building in Congress to stop denying Taipei these and a variety of other systems. The controversial Taiwan Security Enhancement Act has already passed the House of Representatives and may come up soon in the Senate for debate. The draft Act stipulates a wide range of weapons and associated military assistance that the executive branch would be required to transfer to Taiwan, including some very advanced systems sold only to America's closest allies. There is no doubt that President Bill Clinton will veto the bill if it arrives on his desk before his term ends, but a new Republican president may find it more difficult to do so. If it were passed into law, it is certain to cause a major rupture in Sino-American relations.

Among the defensive systems being considered for Taiwan, none is more controversial than TMD. While still technically unproven, Taiwan has formally expressed its interest in being brought under the TMD umbrella. The question is: which TMD umbrella? More to the point, how much protection would TMD really provide against China's growing ballistic missile force? Since 1998, the PLA's Second Artillery has been building up its deployment of M-9 and M-11 short-range ballistic missiles (SRBMs) opposite Taiwan. At the current pace of deployment, the U.S. Department of Defense estimates that there will be 650 SRBMs deployed in bases in Jiangxi, Fujian, and Zhejiang by 2005.[7]

The TMD options under consideration are a combination of land- and sea-based, so-called "lower-tier," systems. Any variant may provide some psychological security for Taiwan's 23 million citizens, but none would be capable of providing a shield against a heavy salvo of incoming ballistic missiles. Decoys, penetration aids, and the sheer number of missiles (any more than 25 or 30) would likely overwhelm any TMD system. Moreover, the distances and flight times from the mainland to Taiwan (approximately 150 miles for SRBMs and less than eight minutes in the air) make it extremely difficult for satellite-based sensors to trigger ground or naval based "kill platforms" in time. Further, the short distances involved mean that Chinese missiles follow an essentially flat flight trajectory, thus not rising high enough into the subatmosphere for satellite and other sensors to detect them. As if these problems are not enough, there is no TMD system capable of countering cruise missiles. China is working feverishly on a generation of land-attack cruise missiles (LACMs) and already possesses a variety of sea- and air-launched vehicles.

Thus, to this observer, TMD for Taiwan makes no sense on a technical basis. On a diplomatic and strategic basis, there is even less rationale. China has warned that provision of TMD to Taiwan would effectively reconstitute the doctrine of extended deterrence and integrated defense and intelligence ties that were severed when the Mutual Security Treaty was terminated in 1978.[8] Abrogation of this 1954 treaty, as well as the withdrawal of all U.S. military and intelligence personnel from Taiwan, were two key conditions for the establishment of diplomatic relations in 1978. Provision of TMD to Taiwan would de facto revive the severed treaty—and hence produce a major setback in U.S.-China relations.

Arms sales by the United States to Taiwan have always been an extremely sensitive feature of Sino-American relations, but, for these aforementioned factors, they have become more delicate than ever during the second Clinton administration. To China, at a minimum, they represent more evidence that Washington is trying to permanently separate Taiwan from Chinese sovereignty, or that it is deviously acting to thwart resolution of the divided China problem. For Washington's part, its increased arms sales come in response to a dynamic and changing military balance across the Taiwan Strait and increased PLA capabilities. On one level it is appropriate since Taiwan's weapons and defenses were growing increasingly outdated and required modernization in the face a heightened range of threats from China. At another level, it has the potential to catalyze an arms race between the two sides, to say nothing of violating the 1982 joint communiqué. There is little doubt that the PLA is becoming more and more capable across a range of systems and functions,[9] but how far can the United States go to maintain an effective balance? Taiwan's armed forces are already showing multiple signs of not being able to effectively integrate and maintain criticial high-tech systems. Increased sophistication of weapons will only aggravate this growing problem.

If China Uses Force

The use of force is not Beijing's preferred option. As noted above, the negative consequences of such action for China would be multiple, negative, and extreme. At present, China's armed forces would likely fail to subdue and occupy the island successfully—at best they could ravage it, but they could not successfully occupy it. Nevertheless, there exist a range of possible uses of force between these two extremes.

The most likely would be some variant of the "missile blockade" witnessed in 1996, when the PLA's Second Artillery "test" fired several M-9 SRBMs near the entrance of Kaohsiung and Jeelung harbors. Many analysts

believe that missiles are the PLA's most effective weapon to terrorize Taiwan's population and bring effective pressure to bear on the island's economy. The PLA Second Artillery's stocks of M-9 and M-11 SRBMs are growing, and the majority are being deployed within range of Taiwan.

Any strategic strike by PLA missiles against Taiwan proper would no doubt be accompanied, or preceded, by a blitz of electronic warfare (EW) and computer viruses. Development of EW and information warfare (IW) have been among the PLA's highest priorities—and it is highly likely that the PLA would undertake to "blind" Taiwanese antimissile and anti-air defenses, intelligence, and command and control "nodes" in the earliest stages of a conflict. The intelligence and command facilities on Yangming Mountain north of Taipei and the underground base at Jiashan would likely be early priority targets. Others include Taiwan's Combat Air Command and Control Center in downtown Taipei (this center coordinates the island's multilayered air defenses), the Combined Operations Center at Yuanshan near Taipei, and the Communications Center at Longtan near Xinzhu.[10] With such critical sites neutralized or destroyed, Taiwan's retaliatory capabilities would be severely weakened, opening a path for follow-on air and naval action. Taiwanese defense minister Tang Fei has already publicly warned of the island's vulnerability to IW and EW.

> The use of force by Beijing is a lose-lose option.

If the PLA repeated the pattern of 1996 and fired SRBMs into the waters off of Taiwan's principal ports, it could have a serious impact on Taiwan's lifeblood of international trade and popular confidence. It could rattle the Taipei stock market, shake business confidence, and raise insurance rates for companies and shippers to prohibitive levels. During the 1996 crisis the stock market plummeted 1,000 points in three days and $15 billion in investment reportedly fled the island.[11] Taiwan's energy needs would be equally affected, insofar as it is completely dependent on crude oil imports. Every day Taiwan consumes 250,000 barrels of crude, while a supertanker docks in Kaohsiung harbor every three days. More dangerous is the fact that Taiwan is low on oil: the 120-day strategic reserve built up after the 1995-1996 crises had dipped to a mere 18 days by 1999 (as a result of environmentalists forcing the government to scrap an armada of oil tankers anchored offshore).[12] The dependence on shipping for trade and energy imports also points up the extreme vulnerability of the port of Kaohsiung—through which the majority of both pass. Just a couple of well-targeted surface-to-surface missiles could render Kaohsiung inoperative.

A naval blockade of these ports is within the capacity of the PLAN's destroyers, frigates, and submarines, although it remains beyond the PLAN's capacity to blockade the entire island. There are three principal types of blockade scenarios: low, medium, and high. In the first instance, the PRC would simply announce a blockade of Taiwan, the offshore islands, and possibly Taiping Island in the South China Sea (controlled by Taiwan). In this scenario the PRC would board and turn back any ships seeking to breech the blockade zone. Certain categories of shipping may be exempted from the blockade (as was the case during the Cuban Missile Crisis quarantine). The second type would involve the same proclamation of an exclusion zone, possibly also with some exemptions, but with the additional deterrent that any ships seeking to break the blockade would be fired upon. A high-intensity blockade would involve a total quarantine with the threat to fire on and sink any transgressors. All three naval blockades could be coupled with limited-to-full air quarantine. Any of the three blockade scenarios would wreak havoc on the Taiwanese economy, given the preponderant dependence on shipping for imports and exports noted above.

How far can the United States go to maintain an effective balance?

Submarines also present a real problem for Taiwan. Some experts argue that the Taiwan Strait is conducive to antisubmarine warfare as it is relatively shallow; U.S. submarines scored several key victories against Japan in the straits during World War II. But Taiwan's navy has only two antiquated World War II-vintage (Guppy class) and two Dutch-built Zvaardis diesel submarines. Its airborne ASW capability is limited, but surface capabilities have improved with the receipt of Perry-, Knox-, and Lafayette-class frigates (the Knox is primarily an ASW vessel). More Hughes and Sikorsky ASW helicopters are also in the pipeline, while Taipei continues to press the United States to purchase or lease a modest number of diesel submarines (Taiwan has also sought diesel-electric subs from France, Holland, and Germany, but thus far to no avail). It was the Hughes MD-500 that apparently successfully detected and tracked a PLAN submarine during the Hankuang 10 exercises near the Penghu Islands in May 1994.

Many experts (including in the Taiwan military) believe that some form of blockade is the PRC's best and most likely option to exert military pressure on Taiwan. It is argued that the PRC could rather easily accomplish its political purposes without significant military engagement. In the event of a blockade, Taiwan already has in place plans to route its shipping and tankers through the Palawan Passage next to Luzon and Borneo and to the east of

Taiwan—well beyond the reach of the PLAN. As two-thirds of Taiwan's shipping goes via the South China Sea and Malacca Straits, and given the fact that the PRC would be quite hesitant to extend a blockade into the contested South China Sea, these contingency plans should suffice to skirt a blockade of any sort by the PRC.

Just as in the Cuban Missile Crisis, the outcome of naval blockades can never be predicted. They are an act of war under international law. Moreover, they are not a low-level deterrent and can unintentionally escalate into full-scale conflict. One can only hope that Beijing will think twice before trying to undertake one. Certainly, Taiwan's navy will not simply sit idly by while the PLAN tries to implement a blockade. Taiwan defense planners calculate that 36 sufficiently-armed surface combatants would be adequate to command dominance in the strait and the entry points to Jeelung and Kaohsiung harbors.[13] Should naval engagement extend to the East and South China Sea or the Pacific, Taiwan's destroyers and frigates are truly blue-water capable—which cannot be claimed for the PLAN.

The Taiwan navy's second advantage is its on-board armaments. All destroyers and frigates have modern, integrated weapons suites; fire control systems; radars and sonars; optical tracking systems; and antiship missiles. Most are outfitted with the Xiong Feng I & II surface-to-surface antiship missiles as well as Sea Chaparral, General Dynamics SM1-MR, and Sidewinder SAMs.[14] In general, the hulls of Taiwan's surface combatants are made of stronger reinforced steel, and the entire fleet has either been upgraded or is newly built. The Perry destroyers and Knox and Lafayette guided-missile frigates are all near state-of-the-art. Thus, one must assume that, in any major naval engagement with the PLAN, Taiwan's ocean-going fleet would fare well.

The 'Big If': U.S. Involvement

All scenarios are subject to one significant intervening variable: the potential intervention of the United States on Taiwan's behalf. The dispatch of two aircraft carrier battle groups (CVBGs) during the 1996 crisis signaled to Beijing, Taipei, and the world that U.S. involvement, under certain conditions, is a distinct possibility. The United States has made clear, and the TRA suggests but does not require that an unprovoked attack or other coercive behavior towards the island (including blockades) would likely trigger a U.S. military response, although the policy of "strategic ambiguity" has long dictated that exactly what that military response might consist of would depend on the circumstances. The U.S. government and president regularly say that PRC military action would be judged with "grave concern."

There is little doubt that U.S. intervention would require a major commitment of air and naval assets. U.S. Air Force airborne warning and control systems (AWACs) would need to coordinate an air interdiction campaign against the PLAAF. But it is doubtful that U.S. ground troops would be of much utility in such a conflict. Clearly, the primary instrument of U.S. military involvement would involve CVBGs and forward-based forces in Okinawa and Japan. Consideration of such contingency planning remains, for good reason, hidden from public view.[15] Suffice it to say, however, that CVBGs would encounter operating difficulties in the Taiwan theater that they have not experienced for many years. While the PLA would encounter real difficulties directly engaging or attacking CVBGs, Chinese forces could nonetheless make it very difficult for U.S. forces to operate normally and implement a full sea-denial strategy. Chinese submarines pose a nascent but real threat. PLAN antiship missiles pose an even more serious threat—especially the C-801 Silkworm and the S-N-22 SUNBURN antiship missiles fitted on the two Sovremmney destroyers now deployed in the PLAN arsenal. These new ships may also pose some difficulties for U.S. Navy Aegis systems. Chinese SRBMs and medium-range ballistic missiles (MRBMs) may even be used against carriers (for which there is little precedent). Finally, rapidly improving PLA capabilities in electronic countermeasures and information warfare could seriously disrupt the CBVG's command, control, communications, and intelligence (C^4I). In short, while PLA forces could not, at present, succeed in preventing U.S. naval and air forces from operating and carrying out their defensive missions ("area denial"), they could nonetheless make life quite complicated and dangerous for U.S. forces.

Notes

1. Interview with Taiwanese Air Force personnel and military specialists, Taipei, July 9-10, 1995.
2. The standard estimate is that China would require a 3:1 numerical advantage against Taiwan ground forces to subdue the island, i.e. 750,000 forces or roughly 20 group armies.
3. The State Department and National Security Council also play a role, but the negotiations and decision-making process is centered in the Department of Defense.
4. Data principally derived from International Institute for Strategic Studies. See Bernice Lee, *The Security Implications of the New Taiwan*, Adelphi Paper 331 (London: IISS, 1999), 38. Also see speech by American Institute in Taiwan Director Raymond F. Burghardt, "The U.S. Role in Asia-Pacific Security," December 17, 1999, Taipei.
5. For an excellent assessment of Taiwan's defense policy and procurement process, see Michael D. Swaine, *Taiwan's National Security, Defense Policy, and Weapons Pro-*

curement Process (Santa Monica: Rand Corporation, 1999). Also see David Shambaugh, "Taiwan's Security: Maintaining Deterrence Amid Political Accountability," *China Quarterly*, no. 148 (December 1996): 1284-1318.

6. In a speech in December 1999, Vice President Lien Chan announced that Taiwan needs its own "long-range surface-to-surface missiles" to deter China. Lien's aides clarified that "long-range" meant having a range of over 300 kilometers. There have been persistent reports in recent years that Taiwan's Chung-shan Institute is developing a range of short- and medium-range ballistic missiles, but thus far none have been flight-tested. See Mure Dickie, "Taiwan 'Needs Long-Range Missile System'," *Financial Times*, December 9, 1999; Reuters, "Facing Missiles, Taiwan VP Wants Deterrent," December 8, 1999.
7. Department of Defense, *The Security Situation in the Taiwan Strait* (Report to Congress pursuant to FY99 Defense appropriations bill, February 1, 1999).
8. The United States terminated the treaty under the terms that either party could withdraw with one-year notice.
9. See James R. Lilley and David Shambaugh, eds., *China's Military Faces the Future* (Washington, D.C. and Armonk, N.Y.: AEI Press and M. E. Sharpe, 1999).
10. See the discussion in John Zeng, "PLA Thinking About an Invasion of Taiwan in the Year 2000," in Peter Yu, ed., *The Chinese PLA's Perception of an Invasion of Taiwan* (Kaohsiung: National Sun Yat-sen University, 1997), 145-147.
11. John Pomfret, "Taiwan's War Readiness and Military in Doubt," *International Herald Tribune*, July 28, 1999.
12. Ibid.
13. Interview with Taiwan military expert, Taipei, July 9, 1995.
14. See "Joris Janssen Lok, "Taiwan's Force Updates Revealed," *Jane's Defense Weekly* (January 16, 1993): 24; *Jane's Fighting Ships 1995-96* (Surrey, UK: Jane's Information Group, 1995): 690-700.
15. One publicly released study by the Rand Corporation begins to discuss the necessary forces that would be required. See Zalmay Kalilizad et al., *The United States and a Rising China* (Santa Monica, Calif.: RAND, 1999).