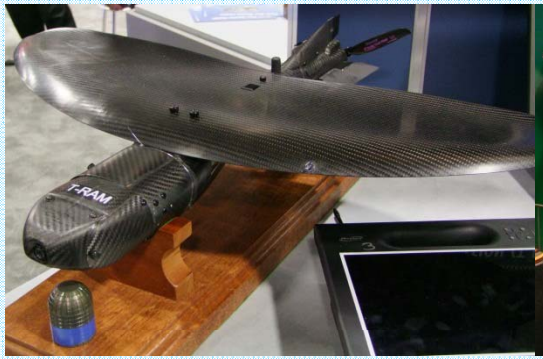
Asymmetric Options for the Defense of Taiwan: U.S. Missile Technology

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Summary of Argument

Assumption: Over the medium to long run the democratic government in Taiwan will not be able to purchase or afford the weapons necessary to deter military attack or coercion by the People's Liberation Army (PLA), forcing political concessions that could lead to an end to Taiwan's democratic era.

Assumption: The United States will find itself increasingly constrained in ability to deter Chinese attack or coercion, both by its reductions in military growth compared to that of the PLA, and its unwillingness to risk conflict with the PRC over the sale of larger and more weapons to Taiwan. Refusal to sell new F-16C/D fighters an example of U.S. reluctance?

Problem: How to increase Taiwan's ability to enforce deterrence on the Taiwan Strait affordably when the PLA is rapidly gaining the advantage in both military technology and military mass? Diminishing the PLA's military coercive potential will strengthen Taipei's political hand in relations with Beijing.

Problem: How to increase Taiwan's ability to deter PLA invasion as a new "center of gravity" for its deterrent challenge?

Problem: How to increase Taiwan's ability to enforce deterrence on the Taiwan Strait in a manner consistent with the imperfect "framework" for U.S.-Taiwan relations:

- **1979 Taiwan Relations Act that stipulates U.S. sale of "defensive" weapons to Taiwan.**
- **Policy preference to adhere to Missile Technology Control Regime (MTCR) limitations (300km range).**

Opportunity: Following Taiwan's decision over a decade ago to seek new "asymmetric" deterrent means, like new precision attack missiles, the U.S. appears to be warming to the idea of assisting Taiwan in pursuing "asymmetric" capabilities. Though this "reappraisal" has not been fully explained, there may be an opportunity to shape its content.

Challenge: PLA Exceeding Taiwan's Military With "Quality" and "Quantity"

From the 1950s onward it had been U.S. policy to at a minimum maintain Taiwan's military technological edge to sustain deterrence in the face of PLA numbers. This task was eased by the fact that the PRC was not focused on Taiwan until the 1990s. Now after two decades of "focused" PLA modernization and buildup, the PLA now is challenging Washington's ability to sustain Taiwan's technology edge.

Taiwan 1990s




PLA 1990s



Taiwan 2018




PLA 2018




Challenge: Growing Threat of Real Invasion

While it is often argued that logic would dictate that the PRC never invade Taiwan, its constant preparations belie such logic. The PLA has paid attention to U.S. experience: bombardment does not always yield victory — you need boots on the ground too.

By 2020 the PLA could have about 1,000 4th, 4+ and 5th gen fighters compared to about 350 for Taiwan, and the PLA could also have 2,000 to 3,000 ballistic and cruise missiles for use against Taiwan.

300,000 to 500,000 troops in the Nanjing, Guangzhou and Jinan Military Regions have some degree of amphibious training. PLA Marine and Army Amphibious Units are accepting a 3rd generation of amphibious armor systems and new specialized amphibious assault systems. PLA Army helicopter assault units are forming to compliment 3 Divisions of Army Airborne forces. New transport and attack helicopters are in advanced development. Amphibious and Airborne training has become more intense over the decade.

Formal PLA amphibious and airborne transport assets are growing slowly. A 4th 20,000 ton LPD is under construction and there could be an eventual 12 LHDs and LPDs. A C-17 size military air transport could enter production by mid-decade. But what is less noticed is the PLA's efforts to mobilize informal transport and logistic support services, mainly by enlisting "civil" assets. Thousands of fast ferries, small ships and large cargo ships could compliment formal PLA Navy transports, and 80 Boeing and McDonnell cargo transports could complement formal PLA Air Force transports.

However, exploitation of informal forces requires the intact capture of ports and airfields.

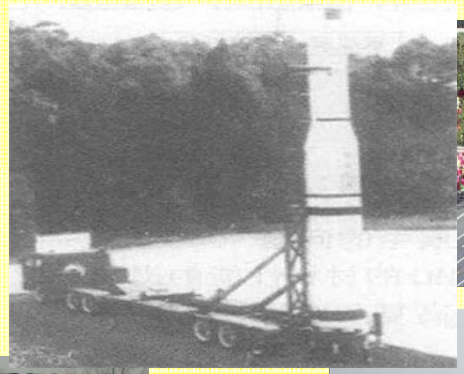
Whither The United States ?

The 1979 Taiwan Relations Act stipulates "It is the policy of the United States" to "maintain the capacity of the United States to resist any resort to force or other forms of coercion that would jeopardize the security, or the social or economic system, of the people on Taiwan." Will possible drastic defense budget reductions reduce the credibility of this policy commitment?

Will the U.S. be able to keep pace with or ahead of the PLA's growing "anti-access" strategies? By the 2020s, larger numbers of PLA anti-ship ballistic missiles and 4th and 5th gen strike aircraft could be joined by multiple aircraft carriers and cruise missile-equipped bombers and submarines, plus an array of counter-space systems. Will larger PLA nuclear forces have a national BMD system?

If the U.S. lacks the resolve to sell new F-16C/D fighters to Taiwan in 2011, will it have the much greater resolve necessary to sell the 5th generation fighters that Taiwan will require in the 2020s? What else can the U.S. sell that could offer decisive effects?

All of this points U.S. policy in the direction of consideration of new "asymmetric" defense options for Taiwan. By focusing new capabilities that target the PLA's invasion potential, both Taipei and Washington can undermine PLA strategy and sustain deterrence. If it cannot be sure of success of invasion, will the PLA try to start a war? Can the assurance of resisting invasion serve to strengthen Taiwan's will to resist?



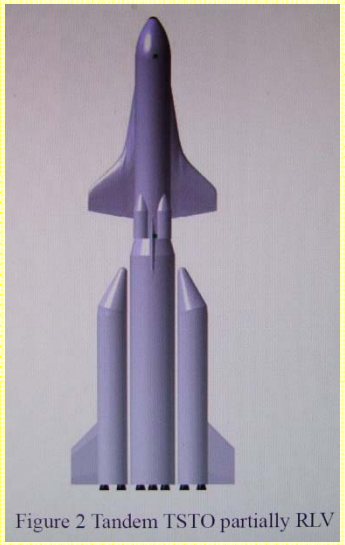


Figure 2 Tandem TSTO partially RLV

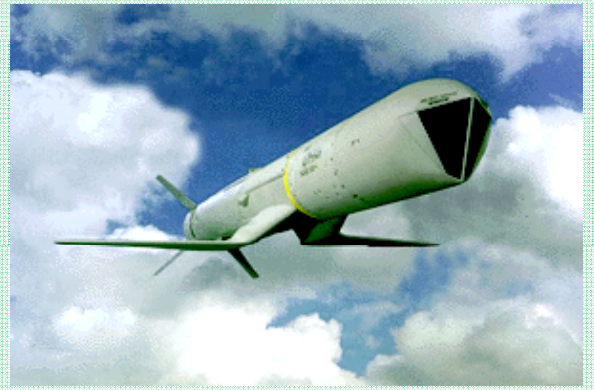
The Advantages of Missiles

Taipei does not need to be sold on the advantages of having its own attack missile force. Since the late 1990s Taiwan has been developing the HF-2E land attack cruise missile and the HF-3 supersonic anti-ship missile.

The US has aided the development of Taiwan's Ray Ting RT2000 artillery rocket system, which can fire a 240 mm rocket to 45km. This is similar to the early M26A1 version of the Lockheed-Martin M270 Multiple Launch Rocket System (MLRS). The U.S. has also sold over 300 of the ship-launched124km range RGM-84 and the185km range air-launched AGM-84 Harpoon anti-ship missile. However, until recently the U.S. considered that longer-range missiles did not fall under the TRA definition of "defensive" weapons. But this is a semantic luxury as the PLA's overall military advantages increase.

MTCR-compatible missiles (300km range) offer numerous asymmetric advantages: 1) cost much less than combat aircraft; 2) are difficult to detect and shoot down; 3) attacking missiles can overwhelm missile defenses at less expense; 4) can produce strategic results with tactical means—short range attack missiles can degrade the PLA's SAM belt near Taiwan, allowing the Taiwan Air Force to fly more missions; and can be configured to carry scores of warheads to start to regain the advantages of "mass" versus the PLA; plus 5) they can also force the PLA to stage its invasion forces further from Taiwan, which will have the effect of greatly increasing the operational risks to these invasion force.

The U.S. could opt to sell the 90km range version of the M270 artillery rocket, that would give the Taiwan Army far greater depth from which to counter PLA invasion forces. From Penghu this missile could cover many PLA SAM bases opposite Taiwan. In addition, the US could also sell the 300km range Lockheed-Martin MGM-140 ATACMS short-range ballistic missile (@ $1 million each). This missile could also be configured with many accurate submunitions that could be used to attack more SAM sites in Fujian Province or to counter invasion forces gathering in Fujian Province, and is survivable by virtue of its being land-based and highly maneuverable for a missile. The U.S. could also opt to sell a version of the Boeing AGM-84K SLAM-ER, which has an optical terminal guidance system, a range greater than 150 nautical miles and can receive target updates in flight.



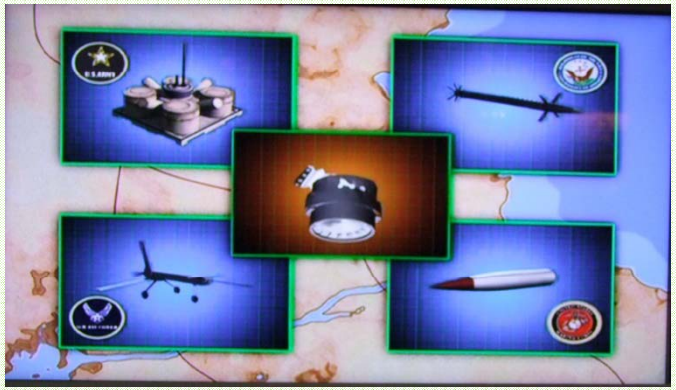
Selling Missile Technology: Sensor Fused Munitions

If the U.S. opts not to sell Taiwan 300km range missiles, or if Taiwan opts to develop its own class of long range interdiction missiles, the U.S. can also consider selling Taiwan a new class of submunition that would greatly enhance the lethality and asymmetric advantage of its missiles: Sensor Fused Munitions (SFMs).

SFMs offer the potential to give Taiwan the kind of "mass" that the PLA cannot defeat. In 2010 the U.S. decided to sell India over 20,000 Textron SFMs (500+ CBU-105 bombs with 40x SFMs each) for a cost of about $300 million, or less than the cost of 4x F-16C/D fighters. SFMs can be delivered by air-dropped bombs, artillery rockets, artillery shells, SRBMs, cruise missiles and unmanned aircraft.

Developed by the U.S. in the 1980s and 1990s (and by Russia at the same time, and then by the PRC in this last decade), SFMs are small air-delivered projectiles that combine a "smart" sensor (laser, infrared, millimeter wave radar) able to find a target and its heat source, and then fire an explosively formed metal disc, copper or tantalum, at a high supersonic speed so that it can slice through a tank engine. If accurately placed a SFM could also disable a ship. The only defense against this weapon is to attack its carrying platform in the air or on the ground. Defeating launched SFM munitions would require a laser-based system that may not emerge for many years. The PLA's SFM program was led by Yang Shaoqing, a 1984 engineering graduate of Texas A&M University (picture on bottom right).

20,000 SFMs would have the potential to destroy most of a 1,000+ ship PLA invasion fleet and most of the heavy armored vehicles that would succeed in landing on Taiwan. Would such a capability then deter a PLA attack for many years into the future?



Counter-Airborne Precision Weapons

PLA Airborne and Special Forces units pose a growing threat to Taiwan. In the last decade both Airborne and Special Forces units have become "mechanized," meaning they both employ new light-weight armor and transport vehicles that gives the PLA greater flexibility as to where to place its attacking forces. By the 2020s, the PLA will also have Airmobile Mechanized units with 20-30ton medium weight armor vehicles.

The greatest challenge in countering Airborne and Special Forces is in finding the attack and responding with sufficient speed and accuracy. Time is the decisive factor: it determines whether the Airborne forces can successfully land, organize and begin their assault. Taiwan requires time to find the attack, mobilize nearby forces, and begin its counter-attack—which must also withstand a withering assault by PLA air and missile forces.

But there is a developing option that could give Taiwan an asymmetric advantage by significantly reducing its reaction time. New soldier-launched precision micro attack UAVs could give local infantry units, reserve units and even police forces a near immediate capability to accurately target Airborne and Heliborne forces.

Two U.S. companies make these systems. AeroVironment's "Switchblade" is now being purchased by U.S. forces for use in Afghanistan against snipers. Textron is developing a similar Tactical Remote Aerial Munition (T-RAM). Both are soldier launched and can be guided against an array of targets, to include groups of soldiers, helicopters, and light vehicles.