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THESIS

IMPLICATIONS OF THE CHINESE ANTI-SATELLITE TEST FOR THE UNITED STATES NAVY SURFACE FORCES

by

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September 2008

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On January 11, 2007, China successfully tested an anti-satellite (ASAT) weapon. This thesis seeks to view the test's implications with regards to the prospect of China holding a false impression of offense dominance by using its ASAT weapon to temporarily create a shift in the strategic balance between it and the United States. Although China announced to the world that its test was not directed at any one country, its military strategic observers have assumed to identify the strategic weakness of the United States military as its reliance on space assets. The United States Navy surface force is the largest customer of space-based assets, and U.S. naval surface forces could be expected to deploy to the Taiwan Straits if tensions between Taipei and Beijing elevate. China may be tempted to use to use its newly tested capabilities in a potential contest concerning the future of Taiwan, and this could potentially expose U.S. naval forces to an environment of degraded space assets. This thesis seeks to examine China's perception of these weapons in offense-defense terms and shows that China's leadership may over estimate the expected advantage of an ASAT weapon attack.

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IMPLICATIONS OF THE CHINESE ANTI-SATELLITE TEST FOR THE UNITED STATES NAVY SURFACE FORCES

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On January 11, 2007, China successfully tested an anti-satellite (ASAT) weapon. This thesis seeks to view the test's implications with regards to the prospect of China holding a false impression of offense dominance by using its ASAT weapon to temporarily create a shift in the strategic balance between it and the United States. Although China announced to the world that its test was not directed at any one country, its military strategic observers have assumed to identify the strategic weakness of the United States military as its reliance on space assets. The United States Navy surface force is the largest customer of space-based assets, and U.S. naval surface forces could be expected to deploy to the Taiwan Straits if tensions between Taipei and Beijing elevate. China may be tempted to use to use its newly tested capabilities in a potential contest concerning the future of Taiwan, and this could potentially expose U.S. naval forces to an environment of degraded space assets. This thesis seeks to examine China's perception of these weapons in offense-defense terms and shows that China's leadership may over estimate the expected advantage of an ASAT weapon attack.

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I. INTRODUCTION

A. BACKGROUND

For nearly fifty years, space based assets have provided the United States with a substantial set of tools for maintaining a strategic balance. During the Cold War, space based reconnaissance provided American intelligence professionals with detailed information concerning disposition of opposing forces, military industrial capacity and targeting information. Over the course of the last two decades, space based assets have become increasingly incorporated into a wide range of U.S. military applications. The first Gulf War, Kosovo War and the continued War on Terror all provide examples of the United States reliance on these assets to deliver a considerable amount of hard power with timely and efficient results. Any threat to U.S. space assets could potentially limit the ability of the U.S. to effectively project military power in a time of crisis.

China's military modernization intended to fight "local wars under conditions of informatization," has recently reached a new plateau: a successful demonstration of an anti-satellite (ASAT) weapon (*fanweixing*).[1] On January 11, 2007, China destroyed a low earth orbit satellite. Although the weapon may not be the sole determinant in a military struggle, it does represent a milestone worthy of consideration. China's military modernization is intended to be able to fight a short duration conflict with highly technical weapons that incorporate surprise to gain the upper hand early in the conflict.[2] A likely scenario that could lead to the use of an ASAT against U.S. space assets is a Taiwan contingency. If used as a first strike weapon in a Taiwan Strait conflict, the U.S. Navy could potentially be forced to operate in an environment in which space assets become the first targets.

Since the outbreak of the Korean War in June 1950, the U.S. Navy, Seventh Fleet, has maintained a continued presence in the Taiwan Strait in times of elevated tensions

[1] David Shambaugh, *Modernizing China's Military: Progress, Problems, and Prospects* (California, University of California Press, 2002), 83. For a discussion of China's evolving doctrine and training, see Chapter III. The term informatization is used by the Chinese to describe their military modernization.

[2] Richard A. Bitzinger, "China's Revolution in Military Affairs: Good Enough for Government Work," *RSIS Commentaries*, 2, www.rsis.edu.sg (accessed June 6, 2008).

between the governments of Taiwan and China.[3] Additionally, the United States is the largest customer of space assets, and any disruption to these assets could prove challenging for U.S. naval surface forces.[4] Currently, the U.S. naval surface forces use space for several mission related areas supporting Sea Power 21.[5] Reconnaissance satellites provide the Sea Power 21 concept with several assets such as ocean and littoral observation, locating opposition forces, assistance in the determination of counter force measures and targeting. Communication satellites provide vast amounts of data used to exchange vital information, and Global Positioning Satellites (GPS) assist in maneuvering and targeting data for complex weapon systems. Space systems have become an embedded element of U.S. naval surface warfare.

During the 1996 Taiwan Crisis, the Chinese learned that the U.S. Navy could be expected to maintain a presence if Beijing were to use force against the island of Taiwan.[6] Joan Johnson-Freese states that China's military modernization is directed against U.S. interference in a Taiwan conflict.[7] For whatever reason, national prestige, strategic relevance, internal unrest and the need for governing legitimacy, or secure its increasing demand for energy, if China' leaders feel that Taiwan's separation from the

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[3] See Chen Juan, *Mao's China and the Cold War*, Chapter Seven for brief history of China's Taiwan policy in the 1950's: Chen Juan, *Mao's China and the Cold War* (Chapel Hill: The University of North Carolina Press, 2001), 163-204.

[4] Norman Friedman, *Seapower and Space: From the Dawn of the Missile Age to Net-Centric Warfare* (Annapolis, MD: Naval Institute Press, 2000), 11. Friedman raises the question of how long the U.S. Navy will enjoy the freedom of movement in blue water as other navies gain advantages by exploiting space.

[5] *The Navy's Needs in Space for Providing Future Capabilities* (Washington, D.C.: National Academy Press, 2005), 58, https://www.nap.edu (accessed June 3, 2008).

[6] Shambaugh, *Modernizing China's Military: Progress, Problems, and Prospects*, 3. Also, Secretary of the Navy, Donald C. Winter, on February 7, 2007, between discussing operating near choke points and China's military modernization stated that China is moving towards confronting the U.S. Navy. Donald C. Winter, "Navy Transformation: A Stable, Long-Term View," March 19, 2007, Heritage Lecture 1004, http://www.heritage.org (accessed July 28, 2007).

[7] Joan Johnson-Freese, "China's Space Ambitions," (2007), 18. "Let's be clear: Chinese military strategy, planning and capability development is first and foremost about Taiwan. If China would intervene on behalf of Taiwan, China's best option might be to hold the United States at bay for some minimal amount of time, 48 hours for example, to pressure Taiwan into acquiescence."

mainland is no longer in their best interest, they could move forcefully to reunite it.[8] The situation remains a tinderbox and more than likely the U.S. Navy would be required to maintain regional presence if hostilities were to erupt.

In 2005, the United States Department of Defense (DoD) *Annual Report to Congress on the Military Power of the People's Republic of China* suggested that China's leaders might overestimate its military capabilities, thereby possibly leading it to miscalculation and crisis; this point has been iterated every successive year.[9] In last fifteen years, China has sought to modernize its military while maintaining the position that Taiwan remains part of the Chinese mainland. Three years have passed since China issued the Anti-Succession Law that not only intends to check Taiwan's secession from China but also implies that China is willing to use force to protect its territorial integrity if peaceful reunification does not seem possible.[10] In addition, China's military intentions are for the most part unknown and appear to be moving closer to eventually using force against Taiwan.

What factors shaped the Chinese perception that developing an ASAT weapon would enhance their position with regards to Taiwan? An examination of China's perceptions leading to the development of the ASAT weapon might provide insight on how this weapon might eventually be used and also how it contributes to the likelihood of war. Second, what implications does the possible use of this of this ASAT weapon have upon the United States naval surface forces? Could the United States suffer from a Space Pearl Harbor as a result of a conflict in the Taiwan Strait? A war game conducted at the Naval War College in 1994 concluded that an attack of U.S. space assets over the Taiwan Strait provided China a victory over the U.S. Seventh Fleet.[11]

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[8] See Chapter Seven of Susan L. Shirk, *China: Fragile Superpower* (New York: Oxford University Press, 2007), 181-211.

[9] Dennis J. Blasko, "The Pentagon-PLA Disconnect: China's Self Assessments of Its Military Capabilities," *China Brief*, *Jamestown Foundation* 8, no. 14 (2008): 10, http://www.jamestown.org (accessed July 5, 2008).

[10] "The Anti-Secession Law," *The People's Daily Online*, (March 14, 2005), http://english.people.com (accessed June 19, 2008).

[11] Steven Lambakis, "Space Control in Desert Storm and Beyond," *Orbis* 39, no. 3 (1995): 417-433.

It might be difficult to answer all these questions without taking into consideration information that may not be readily available such as the perceptions of the Chinese elites that eventually might lead to the employment of the ASAT weapon. Kenneth Waltz, on the other hand, suggests that human nature cannot possibility be the sole determinant concerning the use of force.[12] However, by examining the elements leading China to develop the ASAT weapon might provide insight into how they perceive the weapon. Does China feel that possessing the weapon will enable them to create a shift in the balance of power between it and the United States? The factors leading China to develop the weapon collectively suggest that China in under the impression that it could create a temporary shift in the balance of power between it and the United States; additionally, an examination of political and strategic perceptions followed by testing them against operational realities may present an overestimation of U.S. vulnerabilities to an ASAT threat. Could a Chinese misunderstanding about its ASAT capabilities pose a threat to U.S. naval forces and lead to war?

Discussing the phenomena of uncertainly, and the development and use of weapons in war, Thomas Schelling wrote, "It is the weapons, organization, plans, geography, communications, warning systems, intelligence, and even beliefs and doctrines about the conduct of war that together have this influence."[13] Discussing the character of states and the propensity toward peace and war, Thomas C. Schelling states:

> There is, then, something we might call the 'inherent propensity toward peace or war embodied in weaponry, the geography and the military organization of the time. Arms and military organizations can hardly be considered the exclusively determining factors in international conflict, but neither can they be considered neutral. The weaponry does affect the outlook for war and peace. For good or ill the weaponry can determine the calculations, the expectations, the decisions, the character of crisis, the evaluation of danger and the very processes by which war gets underway.[14]

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[12] Kenneth N. Waltz, *Man, the State and War: A Theoretical Analysis* (New York, Columbia University Press, 2001), 80-81.

[13] Thomas C. Schelling, *Arms and Influence* (New Haven, Yale University Press, 1966), 234.

[14] Ibid., 234. Also, Stephen Van Evera observes Schelling's character of war and peace in his Offense, Defense and the Causes of War Theory. See: Stephen Van Evera, "Offense, Defense, and the Causes of War," *International Security* 22 no. 4 (1998): 9.

Expanding on this idea of the inherent propensity towards war or peace, Stephen Van Evera explores the causes of war and defines five. Two of these hypotheses are important to this thesis: First, war is more likely when states fall prey to false optimism about its outcome; and, second, war is more likely when the advantage lies with the first side to mobilize or attack.[15] These two hypotheses are concerned with perceptions that eventually lead to war.

Although weaponry might be part of the causes of war, it is not the single determining factor leading to the decision to go to war. The perception of a war's outcome is the cause war, and sometimes the perception of the possible effectiveness of weaponry leads to the idea that victory will be easier to achieve. The perception that victory can be achieved easily is called offense dominance. Offense dominance can be real or imagined to be real.[16] The false illusion of offense dominance is called false optimism. False optimism raises the risk of war in two ways; first, false optimism leads the loser to join wars they would otherwise not if they had foresaw the future.[17] Second, the sense of false optimism also leads states to drive a crisis to the brink.[18] History has many examples of wars breaking out as a result of false optimism.[19]

Offense dominance, real or perceived, is an aggregate of military technology, national structures, geographic structures, and military factors.[20] In addition to these aggregate factors there are two contributing factors leading to false optimism: first-move advantage and the sense of offense dominance caused by secrecy.[21] Therefore, offense dominance can be real or imagined, and it consists of aggregate elements. If a nation has false optimism then it harbors benefits of the first move advantage and keeps its military intentions secret.

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[15] Stephen Van Evera, *Causes of War: Power and the Roots of Conflict* (New York: Cornell University Press, 1999), 4.

[16] Van Evera, "Offense, Defense and the Causes of War," 6.

[17] Van Evera, *Causes of War: Power and the Roots of Conflict*, 24.

[18] Ibid.

[19] Ibid., 17-24.

[20] Van Evera, "Offense, Defense and the Causes of War," 6.

[21] Van Evera, *Causes of War: Power and the Roots of Conflict*, 24.

Therefore, one way of analyzing the potential implications of the ASAT weapon upon U.S. naval surface forces is to consider these aggregate features of offense dominance against the backdrop of events leading China to develop an ASAT weapon. Consideration of these factors could provide support for the argument that China's perception of the ASAT weapon will allow it to create a shift in the balance of power, therefore creating a situation of offense dominance.

B. THESIS QUESTION

What value does China perceive in possessing ASAT weapons and how might these weapons be used against U.S. Navy surface forces while operating against the Chinese in a contest over Taiwan's future? More specifically, what elements led the Chinese to develop the ASAT weapon, and how do these examples support the claim that China carries false optimism about being able to create a shift in the balance of power? Furthermore, what is the possibility that China is able to create a shift in the balance of power balance between it and the United States Navy by attacking U.S. space assets? This thesis intends to explore these questions in light of Stephen Van Evera's theory, Offense, Defense and the Causes of War Theory (ODT). By examining the aggregate factors of offense dominance, it will be demonstrated that China perceives the utility of ASAT weapons as being able to create a situation of offense defense. The aggregate factors of offense dominance identified by Van Evera are also areas of contention between the U.S. and China; and in each case, the Chinese possession of an ASAT weapon could theoretically be used to counter possible U.S. intervention in a Taiwan Strait Crisis. It will be argued that the Chinese sense of offense dominance is not reality, rather a case of false optimism. Because ASAT weapons are difficult to deploy in secrecy and their effects on U.S. surface forces marginalized by redundancy and alternate weapon employment methods.

C. RELEVANCE TO U.S. NAVY

Unlike the United States, China's leadership does not make public its military strategy or doctrine; this thesis will help us to understand further a core element on Chinese strategy. Since October 5, 1999, U.S. public law, National Defense

Authorization Act, 2000, requires that the Secretary of Defense submit an annual report to Congress on the military strategy of the People's Republic of China. The most recent report, 2008, states, "much uncertainty surrounds China's future in the area of its expanding military power and how that power might be used."[22] Ronald O'Rourke, a noted naval analyst at CRS who has followed China's modernization for over a decade, states:

> Some observers believe that China wants its modernized military to be capable of acting as a so-called anti-access force –a force that can deter U.S. intervention, or failing that, delay the arrival or reduce the effectiveness of U.S. intervention forces, particularly U.S. naval and air forces.[23]

Additionally, Roger Cliff, of the RAND Corporation, states defense analysts have recently become concerned about a possible 'anti-access' strategy that China might employ in a theater of battle with the United States and that there has not been assessments that address this issue.[24] "Chinese strategists view the U.S. information network as one of its most vital key points to target because of disrupting U.S. communication and critical command-and-control centers would leave the affected U.S. forces in a 'state of paralysis.'"[25] An attack on U.S. space assets could place the U.S. naval surface forces in an environment unknown; U.S. naval forces depend on space and will continue to do so in the future.[26]

It is critical that discussion on this emerging threat be made relevant to today's planning for future naval operations when it appears that China's see itself being able to shift the strategic balance of power in its favor.

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[22] United States Department of Defense, *Military Power of the People's Republic of China 2008* (Washington, D.C., 2008), 1, http://www.defenselink.mil (accessed March 25, 2008).

[23] Ronald O'Rourke, "China Naval Modernization: Implications for the U.S. Navy Capabilities – Background and Issues for Congress," (*CRS*), #RL33153 (2008): 41, http://www.ncseonline.org/NLE/CRS/ (accessed July 2008).

[24] Roger Cliff and others, *Entering the Dragon's Lair: Chinese Anti-Access Strategies and Their Implications for the United States* (Santa Monica: RAND Corporation, 2007), iii, www.rand.org (accessed February 3, 2008).

[25] Ibid., 51.

[26] Naval Studies Board, *The Navy's Needs in Space for Providing Future Capabilities* (Washington, DC: National Academy Press, 2005), 1, http://books.nap.edu (accessed January 24, 2008).

D. ORGANIZATION

This thesis seeks to understand the Chinese perceptions concerning its ASAT weapon and the operational implications of the ASAT weapon with regards to the U.S. Navy surface forces. Within a strategic theoretical dimension, specifically, could the Chinese ASAT weapon create an operational advantage that tips a strategic decision to go to war? The primary question will be addressed while being viewed through the lens of Stephen Van Evera's Offense, Defense and the Causes of War Theory (ODT).[27] This thesis will first be structured to address the central operational question, but it will seek to explore how the Chinese perceive the weapon and what appears to be reality based on an evaluation of U.S. military space assets.

Chapter II will explore Chinese perceptions concerning the ASAT weapon, and evaluate whether their perceptions constitute a form of offense dominance. A complete understanding of the Chinese leadership's perception of the ASAT weapon could be impossible to measure; however, this chapter will explore the aggregate factors leading to offense defense such as the weapon's technology, national security structure, geographical factors and the military factors. In the end, this chapter hopes to bring light the Chinese perception of offense dominance and highlighting that China's insistence of maintaining military secrecy and a first move advantage to create a shift in the balance of power in war is a sign that it might harbor false optimism.

Chapter III will expose Chinese false optimism by evaluating a first strike scenario on U.S. space assets. Three critical space need areas of Sea Power 21 will be evaluated: reconnaissance, global positioning and communications. The risk of reconnaissance satellites will be examined, followed by possible targeting of GPS satellite. Last, the threat to communication satellites will be examined to show that in the

[27] Van Evera, "Offense, Defense, and the Causes of War," 5-43.

event of a worst-case scenario China could not create a shift in the offense balance. It will also demonstrate that as a result of its false optimism, China appears to be readying for future conflict with the United States after the ASAT test.

The fourth chapter will conclude this thesis and discuss its implications for stability in the region and U.S. interests.

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II. CHINA'S PERCEPTION OF OFFENSE DOMINANCE

A. INTRODUCTION

Offense dominance is the assessment that military victory can be easily achieved. The perception that victory can be easily achieved is a combination of the aggregate factors of offense dominance to include the military technology, geography, social structures and military organizations of the time. This chapter explores these aggregate factors of Chinese offense dominance in light of its decision to develop an ASAT weapon. Each aggregate factor is also an area of contention between China and the United States. This chapter seeks to support the claim that China developed its ASAT weapon as a means to shift the strategic balance of power in its favor; and China maintains an offense dominant mentality. This chapter will begin by examining a situation of war in the Taiwan Strait that results from China's impression of offense dominance. It hopes to highlight the vulnerability of war in the region resulting from China's sense of offense dominance. Next, this chapter will discuss the aggregate factors of offense dominance. In the end, this chapter it will point out Van Evera's two causes of false optimism, secrecy and the emphasis on using the first move. Although this chapter may not be able to provide compelling evidence that China harbors false optimism, it will provide a foundation for the third chapter that will expose China's sense of false optimism.

B. OFFENSE DOMINANCE'S CONSEQUENCES

A war starting in the Taiwan Strait could begin under conditions that could have otherwise been settled by cooperative measures. However, when a country possesses the sense the victory can be easily achieved, the need to cooperate with other countries carries less importance.[28] The following imaginary but plausible Taiwan Strait scenario is one example of war stemming from a sense of offense dominance:

[28] Van Evera, *Causes of War: Power and the Roots of Conflict*, 24.

A Chinese flagged vessel engaged in human trafficking leaves from a port located in Fujian Province and experiences engine trouble at its closest point of approach to Taiwan. Prevailing westerly winds blow the troubled vessel into Taiwanese waters; the Republic of China's (ROC) Navy sends one of its vessels to interdict this unknown contact. As the ROC naval vessel nears, the troubled vessel's captain decides to throw the charts over the side, fearing the Taiwanese government will discover the ship's cargo. Upon noticing possible evidence being thrown over the side, the Taiwan naval vessels chooses to close the suspect vessel as quickly as possible. However, the two ships end up colliding, causing fire and flooding. Most of the smuggled Chinese nationals are killed instantly and their bodies are dumped into the waters of the strait. Before both vessels sink, they transmit situation reports to their respective countries.

As a result of the historical tension between Taiwan and China, and China's sense of false optimism stemming from its recent development of its ASAT weapon, the situation quickly spirals out of control. A PLAN naval vessel, close enough to respond, overhears the mayday transmissions, requests and receives permission to heads to the scene. Meanwhile, Taiwan authorities sortie an unmanned aerial vehicle (UAV) to the location of Taiwanese sailors now awaiting retrieval. As the responding Chinese naval vessel continues to uses caution approaching the collision since, its location with regard to Taiwan's territorial waters becomes questionable. Yet, the PLAN vessel continues to pick up Chinese survivors from the water in addition to a single Taiwanese sailor.

The situation turns dangerous. Circling the collision scene from high above, the Taiwanese UAV transmits a clear image of its sailor being retrieved from the waters by the PLAN vessel's crewmembers. Minutes later, as the UAV comes to the edge of its territorial envelop, the live video feed ends with an abrupt static. The UAV's location becomes undetectable from sensors located on Taiwan. The search for the UAV is in vain; it has been shot down by the PLA. A half an hour later, the Taiwanese President is briefed on the situation and makes a public statement that is quickly relayed across the strait: China has interfered with the internal affairs of a sovereign nation and seeks to have its military member returned safely. Taiwan insists that China respect Taiwan's territorial integrity in the future. Upon hearing the statement from Taiwan's President,

China's President Hu Jintao asks the PLA's leadership if it can use force to reunify Taiwan. The answer is "Yes." The order to reunify Taiwan by force is given by means of a naval blockade aimed at stalling American intervention. War has begun. Within two hours of the collision, China's president makes a public address stating the Taiwan separatist forces have invoked China's use of the 2005 Anti-Secession Law. China's leaders feel they have no other choice. The Taiwanese President's statement would most likely been transmitted via the Internet into millions of Chinese homes. China's elite will not risk humiliation of Taiwan referring to itself as a sovereign country, and China now possesses an ASAT weapon and assumes that can be used to create a temporal shift in the military balance between it and the United States, long enough for Taiwan to capitulate.

While the U.S. Ambassador to China is speaking directly with the President of the United States and the Secretary of State, a U.S. reconnaissance satellite stops its transmission as it passes over parts of western China. Within minutes, the United States has confirmation that a missile fired from Chinese territory, most likely from a mobile launcher located along the Taklimakan Desert Highway has intercepted a U.S. military reconnaissance satellite in low earth orbit. This attack is followed by simultaneous attacks on eight other U.S. assets in the same orbit. Before the destruction of these reconnaissance satellites, China's submarines were accounted for in their slips; however, when another reconnaissance satellite is finally able to survey the same Chinese submarine facilities, all the submarines are all gone. The U.S. Seventh Fleet is dispatched to the region.

The above scenario illustrates that weapons do not cause wars, but the perception of victory is generally required for war to break out. By exploring the reasons behind China's decision to develop an ASAT weapon, it might provide insight to its perception about being able to create a shift the strategic balance.

C. AGGREGATE FACTORS OF OFFENSE DOMINANCE

1. Military Technology

States can change the offense or defense balance through wartime military actions.[29] The means to accomplish this shift in the offense or defense balance, via the application of force, is made possible from weaponry. As power countries such as the United States rely upon weapon systems that have become more technically dependent on space, it appears logical that weapons designed to counter this arena become part of a potential adversary's military arsenal. This is especially true of China that is in the midst of military modernization that appears to be oriented towards creating a force capable of using force against Taiwan. The Chinese perceive the ASAT weapon as a strategic force enhancer. The technological achievements of this weapon coupled with the potential implications this weapon carries towards the United States military deepens this perception.

The Chinese ASAT test was a grounding breaking accomplishment toward their military modernization goals. Demonstrated in the morning hours of January 12, 2007, Xichang Space Center, Sichuan China, an aging Chinese weather satellite, Fengyun-1C, was intercepted five hundred and thirty miles above the earth's surface by a Chinese ASAT weapon. This ASAT was a Dong Feng 21 (DF-21) missile, four stage, solid fuel, armed with a kinetic kill vehicle (KKV).[30] The United States intelligence community has labeled this Chinese ASAT weapon the CS-19.[31] This test marked the first satellite destroyed in low earth orbit (LEO) in twenty-seven years, and places China behind the United States and the former Soviet Union in the ability to destroy satellites without the use of nuclear weapons. This test was the fourth ASAT attempt for China; it tested three other ASAT weapons between September 2004 and February 2006.[32]

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[29] Van Evera, "Offense, Defense and the Causes of War," 18.

[30] Shirley Kan, "China's Anti-Satellite Weapon Test," *Congressional Research Service (CRS) Report to Congress* #RS22652 (2007): 1, http://www.ncseonline.org/NLE/CRS/ (accessed July 8, 2007).

[31] Ibid., 1.

[32] Ibid., 4.

The Chinese demonstration was different from the two last Cold War ASAT tests. The last American ASAT test was conducted in 1985, and it consisted of an air-launched anti-satellite multi-staged missile (ASM) strapped to an F-15 and fired 300 miles at its target, a satellite known as Solwind P78-1.[33] The ASM-135 weapon demonstration was unequal to any ASAT weapon of its time; the satellite-attacking missile was launched at an altitude of 31,000 ft and fired from an angle of sixty-five degrees.[34] The Chinese ASAT demonstration, on the other hand, was launched from the Xichang Space Center. It was fired from a mobile transporter-erector-launcher (TEL).[35] This implies that China could potentially fire this weapon from remote locations without the need of a launch pad and could potentially use cover to conceal its location. Additionally, the satellite's destruction created an estimated 35,000 pieces of space debris.[36] Geoffrey Forden, former United Nations (UN) weapons inspector and Strategic Weapon Analyst at the Congressional Budget Office, observes:

> This means that China accomplished the most sophisticated of space maneuvers: a hit-to-kill interception, the equivalent of hitting a bullet with a bullet. This is equivalent to what the US is trying to develop in its national missile defense system and is much more sophisticated than the ASAT the Soviet Union was working in the 1980s: little more than a space mine that slowly snuck up on its target and detonated near by.[37]

The CS-19 most likely employed an onboard telescope that requires the sun's light to intercept its target; however, targets operating in higher altitudes such as Global Positioning Satellites (GPS) would not require such a telescope due to the constant

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[33] William E. Burrows, *This New Ocean*, (New York, Random House, 1998), 549. Additionally, the Soviet ASAT tests of the 1980's were limited to less than 600 miles and were not a timely weapon. Ashley J. Tellis also points out that the Soviet ASAT tests were not as capable as the Chinese demonstration. See: Ashley J. Tellis, "China's Military Space Strategy," *Survival*, 49 (September 2007):3, 41-72 (accessed August 30, 2007).

[34] Ibid. Also, it would be another 23 years before the U.S. tested an ASAT weapon. The USS Lake Erie intercepted U.S.A. 193 with a Standard Missile (SM) 3 on February 14, 2008.

[35] Kan, "China's Anti-Satellite Weapon Test," 1.

[36] T.S. Kelso, "Analysis of the 2007 Chinese ASAT Test and the Impact of its Debris on the Space Environment," http://www.celestrak.com (accessed May 17, 2008). For demonstration of Chinese ASAT test download Chinese ASAT Scenario, http://celestrak.com/events/asat.asp (accessed May 17, 2008).

[37] Geoffery Forden, "How China Loses the Coming Space War (Part 1)," *Wired*, (January 10, 2008), http://blog.wired.com (accessed January 20, 2008).

position in the sun's light.[38] In addition to the KKV armed ASAT weapon, in October 2006, Donald Kerr, Director of the U.S. National Reconnaissance Office (NRO), confirmed that China used a ground-based laser to illuminate a U.S. reconnaissance satellite over its territory.[39] Details of this event have not been made public; however, it can be assumed that China has at least two ASAT weapons. China appears to have placed great importance to the development of these weapons. The development and demonstration of two ASAT weapons within a short period of time is impressive for a country in the midst of the military modernization intended to fight short duration wars, especially in light of U.S. reliance on space. See Figure 1: Chinese ASAT and Mobile Road Launcher.

Although the Chinese ASAT test was a major accomplishment that had only been previously achieved by the U.S. and Soviet Union, the official Chinese response came two weeks following the test, stating that the ASAT demonstration was not directed at any one country in particular.[40] Others speculate that there are drastic implications to the future security of U.S. space assets.

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[38] Geoffery Forden, "How China Loses the Coming Space War (Part 1)." Forden does state that the data provided from the Chinese ASAT test indicates that it could target U.S. GPS satellites. See: Geoffery Forden., "How China Loses the Coming Space War (Part 2)," *Wired*, January 10, 2008, http://blog.wired.com (accessed January 20, 2008). According to a January 19, 2007 article featured in www.Sinodefense.com, the Chinese ASAT, referred to as KT-1, used the first internal navigation system (SINS) to locate its target. This implies that there would be no external references needed to hit the target. See: "KT-1 (KaiTuoZhe-1) Space Launch Vehicle," (January 19, 2007), www.Sinodefense.com (accessed July 30, 2008). A link on this same webpage gives a link to the KT-2 which claims is under development and will give China the ability to reach geosynchronous and polar orbits.

[39] "Space Security 2007," *Space Security* (2007): 134, http://www.spacesecurity.org/publications (accessed March 12, 2008).

[40] Tellis, "China's Military Space Strategy," 41.

Figure 1. Chinese ASAT and Mobile Road Launcher.[41]

It appears the Chinese ASAT weapon posses a possible challenge to the ability of the United States to project its military power. Ironically, the Chinese anti-satellite (ASAT) test came exactly six years to the day, local time in Washington, D.C., January 11, 2001, that the "Commission to Assess United States National Security Space Management and Organization's" report was submitted as pertained to public law 106-65.[42] This report, also known as the Rumsfeld Space Commission, named after the commission's chair and former U.S. Secretary of Defense Donald Rumsfeld, states that not only is the U.S. dependence on space a vulnerability that makes it "potentially attractive target," it also states, "in particular, the Department of Defense and the Intelligence Community is not yet arranged or focused to meet the national security space needs of the 21st century."[43] The report's infamous warning states that the U.S. could suffer from a "Space Pearl Harbor."[44]

[41] Sinodefense.com, www.Sinodefense.com (accessed July 27, 2008).

[42] *The Report to Assess United States National Security Space Management and Organization*, (2001), https://www.dod.mil (accessed July 2007).

[43] Ibid., viii-iv.

[44] Ibid.

Unsurprisingly, on April 24, 2007, United States Air Force (USAF) Chief of Staff, General Michael Moseley, stated the Chinese ASAT test was as 'strategically dislocating' as the 1957 launch of Sputnik.[45] Since the People's Republic of China (PRC) conception of "limited war under high-technology conditions," or its current reference as "local wars under conditions of informatization," China's military writings have identified space as the Achilles' heel of American military operations.[46] Writing about the modernization of the Chinese military in space, Mark Stokes observed in 1999 that, "China's strategic modernization, if successful, will enable the PLA to conduct operations intended to directly achieve strategic effects by striking the enemy's center of gravity."[47] Chinese strategic thought emphasizing attacks on space assets started to gain momentum after 1999. This newly forming military ideology stressed the development of weapons referred to as "assassin's mace" in combination with a doctrine referred to as "The Inferior Defeats the Superior."[48] The adoption of this ideology had huge implications toward the development of the ASAT weapon (discussed below).

The most recent *Annual Report to Congress: Military Power of the People's Republic of China 2008* states that China's January 2007 ASAT test "demonstrated that the PLA's interest in counter-space systems is more than theoretical."[49] This ASAT test could signal that Chinese are moving closer, or assume they are moving closer, to achieving the military modernization of being able to "fight a local war under

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[45] Cathy Harrington, "Chinese ASAT Test Prompts U.S. Rethink," *Jane's Online*, (2007), https://www.janes.com (accessed July 30, 2007). See also, Kevin Pollpeter, *Building for the Future: China's Progress in Space Technology during the Tenth 5-Year Plan and the U.S. Response*, (Carlisle: U.S. Army War College, 2008), 35. Pollpeter states that a 1997 Report by the United States National Defense Panel concluded that space competitors would decrease U.S. military advantage.

[46] Mark Stokes, *China's Strategic Modernization: Implications for the United States* (Carlisle, PA: The Strategic Studies Institute at the U.S. Army War College, 1999), 2, http://www.strategicstudiesinstitute.army.mil (accessed September 1, 2007).

[47] Ibid.

[48] Michael Pillsbury, "China's Military Strategy toward the U.S.: A View from Open Sources," *United States-China Economic and Security Commission*, www.uscc.gov (accessed July 28, 2007).

[49] United States Department of Defense, *Military Power of the People's Republic of China 2008*, 19.

informationized conditions," and create a situation of area-access denial that allows the Chinese the ability to fight a asymmetric naval campaign against the United States.[50]

The Chinese ASAT weapon runs counter to the United States use of space. The Chinese are certainly aware of this fact. Most importantly, the ASAT weapon poses a threat to U.S. dominance in space and ability to project military power is an important element that enables China to perceive the weapon as being capable of shifting the balance of power. The development of the weapon is the ultimate symbol of its offense dominant position. However, the weapon alone cannot explain China's perception of offense dominance.

2. China's Security Structure

China's view of the security environment after the Cold War and the continued separation of Taiwan from the mainland have continued to be a catalyst for its military modernization. Since the founding of the People's Republic of China (PRC) in 1949, China has never had a more secure security environment. The land border disputes with India, the former Soviet Union and Vietnam are no longer situations that might cause war; and, as a result, China has turned towards its coastal periphery to guard against possible threats.[51] Although China has adopted a policy of positively engaging their maritime neighbors, it appears that it will never give up its "sovereign claims."[52] This is certainly the case with Taiwan, which China continually insists that it is part of its

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[50] United States Department of Defense, *Military Power of the People's Republic of China 2008*, I. Asymmetric warfare is defined as the use of unconventional tactics to counter the overwhelming conventional military superiority of an adversary. For an analysis on the possible asymmetric naval warfare in the Taiwan Strait see: Joseph W. Alden, "The Race for Sea Control," (Requirements for graduation from the Joint Military Operations Department, United States Naval War College, 2006) stinet.dtic.mil (accessed: May 25, 2008).

[51] Yao Yunzhu, "The Evolution of Military Doctrine of the Chinese PLA from 1985 to 1995," *The Korean Journal of Defense Analysis* VI, no. 2 (1995): 61-62. Yao gives five reasons for China's improved security environment: (1) collapse of the Soviet Union; (2) the United States emerged from the Cold War "weakened" (3) China's improved relations with its neighbors (4) the rise of economic development has given rise to economic security in the region (5) China will make efforts to work out its differences with its neighbors. Also, Yao states, "Traditionally a continent-oriented people, the Chinese for the last decade [1985-1995] have been reorienting their attitude toward the sea. Literature produced in the late 1980s and early 1990s indicates a change in strategic focus from land borders to maritime interest," 66.

[52] Ibid., 66. Yao also states, "Because in the Chinese conception, territorial integrity is a vital interest that must be protected at any cost. Independence of Taiwan is viewed as an extremely serious infringement upon China's vital interest which is unacceptable under any circumstances," 64.

mainland. Noted Chinese naval strategists Bernard Cole states that China's intentions along its eastern periphery, to include Taiwan, could be described a being a "Great Wall at Sea."[53] It appears that China's anti-access strategy supports this claim.

A year after the show of American naval force during the 1996 Taiwan Crisis, China started to promote its view of the international security scene by emphasizing the "New Security Concept" (NSC). China's NSC is, "China's alternative vision for regional and global international relations and security."[54] There are four reasons for adopting the NSC: China's concern for what it sees as American hegemony; China's need to settle its disputes by force; Beijing's aspirations of having global status; and finally, the NCS was a reaction to the expansion of the North American Treaty Organization (NATO) and other U.S. bilateral military agreements in the region that Beijing views as directed towards the security of Taiwan.[55] David Shambaugh, a noted observer of China's military modernization, states that the NSC should not be taken lightly.[56] All four of these factors of the NSC run counter to the interest of the United States. Additionally, "Although, the new security concept states that nations should not resort to military threats or aggression, the PRC still refuses to withdraw its threats of force against Taiwan if it declares independence because Beijing considers Taiwan sovereignty an internal matter."[57] China' position regarding Taiwan is central to the NSC and its decision to develop the ability to counter the United States in space.

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[53] Bernard D. Cole, *The Great Wall at Sea: China's Navy Enters the Twenty-First Century* (Annapolis: MD, 2000), 29.

[54] Shambaugh, *Modernizing China's Military: Progress, Problems, and Progress*, 292.

[55] Ibid. Shambaugh states: It does represent, in its most systematic exposition, China's official prescriptive view of how international relations should be conducted and security maintained. The NSC is firmly rooted in modern Chinese history and Communist China's myths about fostering a world based on the Five Principles of Peaceful Coexistence: mutual respect for territorial integrity and sovereignty, mutual nonaggression, noninterference in each other's internal affairs, equally and mutual benefit, and peaceful coexistence

[56] Ibid., 293. For more information concerning China's New Security Concept see: David M. Finkelstien, *The People's Liberation Army and China in Transition*, ed. Stephen J. Flanagan and Michael E. Marti (Washington, D.C.: National Defense University, 2003), 197-209.

[57] Christopher M. Farricker, "*Chinese Military Modernization and the Future of Taiwan*" (Master's Thesis, Naval Postgraduate School, 2003), 14.

Furthermore, many of China's leaders view the Taiwan issue as being the last in a series of conflicts from the Century of Humiliation (1842-1949) and the Chinese Civil War (1927-1949).[58] However, China learned that during the 1996 Taiwan Crisis it would have to confront the United States if it wanted to reunify the Island of Taiwan with the mainland.[59] China's position regarding Taiwan remains firm, as expressed in its 2000 White Paper titled "The One-China Principle and the Taiwan Issue."[60] This white paper states that China has long sought a peaceful reunification with Taiwan, but it has not been successful due to "foreign forces."[61] Officially China states, "Taiwan's status is an inalienable part of China has been determined and cannot be changed. "Self-determination" for Taiwan is out of the question."[62] This clear tone regarding the future of Taiwan independence surely is intended for outsiders that might consider Taiwan's independence an international matter, namely the United States (the 1979 Taiwan Relations Act (TRA) discussed below). As a result of its Taiwan stance, China's military modernization was restructured after the 1996 Taiwan Crisis to afford it the possibility of confronting the United States over Taiwan.[63] James Mulvenon and Murray Scot Tanner point out that the goal of keeping Taiwan from establishing permanent separation as the greatest impact on the military modernization than any other national security goal.[64] China's ASAT weapon appears to be a critical element in obtaining this goal.

Additionally, the Chinese government's message concerning Taiwan's sovereignty was again made clear in the 2005 Anti-Succession Law, but this time, the language indicated the use of force could be used if peaceful means are not apparent. Article Eight of the 2005 Anti-Secession Law states:

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[58] Cynthia A. Watson, *The People's Liberation Army and China in Transition*, ed. Stephen J. Flanagan and Michael E. Marti (Washington D.C.: National Defense University Press, 2003), 213.

[59] Shambuagh, *Modernizing China's Military: Progress, Problems, and Progress*, 3-4.

[60] White Paper – The One-China Principle and the Taiwan Issue, (2000), http://www.china-embassy.org (accessed June 20, 2008).

[61] Ibid.

[62] Ibid.

[63] Shambuagh, *Modernizing China's Military: Progress, Problems, and Progress*, 4.

[64] James C. Mulvenon and others, *Chinese Responses to U.S. Military Transformation and Implications for the Department of Defense* (Santa Monica: RAND Corporation, 2005), 10-11.

> In the event that the "Taiwan independence" secessionist forces should act under any name or by any means to cause the fact of Taiwan's secession from China, or that major incidents entailing Taiwan's secession from China should occur, or that possibilities for a peaceful reunification should be completely exhausted, the state shall employ non-peaceful means and other necessary measures to protect China's sovereignty and territorial integrity.[65]

Even before the Chinese government had issued strong legal terms concerning its position on Taiwan, a senior Chinese official from the Academy of Military Science stated that China would risk reunification with Taiwan at the expense of its economic growth.[66] Even as recently as 2003, Chinese Premier Wen Jiabao stated that China would "pay any price to safeguard the unity of the motherland."[67] The strongest indication that China is willing to use force against Taiwan and places great emphasis in the development of weapons designed to give China a military advantage is a statement from Jiang Zemin. During a 1999 gathering of China's elites, Jiang asked China's military generals if they could prevail against the United States in a contest over Taiwan.[68] Being told it was not possible to China to currently succeed, Jiang promised the PLA generals, "We are going to give to you everything you need so that next time you are asked the same question, you can say yes."[69]

It appears that 1999 was an important year in China's decision to develop an ASAT weapon.

The position of the United States concerning Taiwan appears to be in opposition to that of China. Since the U.S. shift of recognition to PRC as the official government of China, the defense of Taiwan has remained a vague aspect of U.S. policy. Although the Shanghai Communiqué expressed America's support for a One-China policy, it did not overtly recognize the PRC's 1949 victory over the Kuomintang of China (KMT) in

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[65] The Anti-Secession Law, 2005.

[66] Cynthia A. Watson, *The People's Liberation Army and China in Transition*, 213.

[67] "China to 'Pay Any Price' for National Unity," *The China Daily*, (November 11, 2003), http://www.chinadaily.com (accessed June 19, 2008).

[68] Shirk, *China: Fragile Superpower*, 193.

[69] Ibid.

Taiwan. The Taiwan Relations Act (1979), Section 3301, subset (b) line items 2-4, states that the United States seeks peace in the region, and the U.S. shift in recognition of China's government is weighted on Taiwan's future being settled under peaceful terms.[70] Most importantly, it states, "to consider any effort to determine the future of Taiwan by other than peaceful means, including by boycotts or embargoes, a threat to the peace and security of the Western Pacific area and of grave concern to the United States."[71] As discussed above, the 1996 Taiwan Crisis and the U.S. response to it made clear that the United States would take any threat to Taiwan seriously. President Bush further indicated continued U.S. support for Taiwan by stating that the United States would take military actions that were appropriate for the security of Taiwan.[72] The 2002 National Security Strategy of the United States paid attention to Taiwan's security by stating that, although China was the fourth largest trading partner with the United States, there remains a difference in opinions between the two countries such as the Taiwan Relations Act.[73] The most recent National Security Strategy of the United States (2006) stated that China and Taiwan must resolve their differences peacefully.[74] It is likely that the United States would consider any forceful move against Taiwan as being a destabilizing factor in Asia and would most likely respond with a military presence.

Additionally, fear of American hegemony in space not only runs counter China's reunification ambitions with Taiwan; it also threatens China's ability to maintain a credible nuclear threat. First, some Chinese military strategists have concluded that the United States is moving in the direction of eventual space weaponization and space dominance.[75] Certainly, U.S. dominance in space could be a potential problem for China if it must eventually take Taiwan by force. One PLA Senior Colonel stated that China

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[70] Taiwan Relations Act of 1979, General Military Law. U.S. Code, Title 22, Chapter 48, Sections 3301-3316 (1979), http://www.access.gpo.gov/uscode/title22/title22.html (accessed July 19, 2008).

[71] Ibid.

[72] Karry Dambaugh, "Taiwan: Recent Developments and U.S. Policy Choices," *CRS Report to Congress* #RL33510 (2008): 13-14.

[73] The National Security Strategy of the United States, 2002, 28.

[74] The National Security Strategy of the United States, 2006, 42.

[75] Zhang Hui, "Space Weaponization and Space Security: A Chinese Perspective," 24, www.wsichina.org (accessed July 24, 2008).

would like to see the peaceful use of space but it appears that it will be weaponized.[76] Second, the notion of space and nuclear security are closely related. U.S. strategic plans for national missile defense such as its Ground Based Midcourse Defense (GMD), is viewed as potentially securing defense and offense measures.[77] In 2002, the United States withdrew from the Anti-Ballistic Missile (ABM) Treaty to guard against potential missile attacks. U.S. GMB could leave China without a credible nuclear deterrent.[78] Certainly, the recent successful U.S. test of an ASAT weapon fired from an Aegis cruiser perpetuates this space hegemony perception. One senior researcher for China's Academy of Military Science has concluded, "China must seek counter-measures to deal with this problem accordingly."[79] China's *People's Daily Online* has referred to the U.S. plan for a regional missile defense as an example of its efforts to maintain a Cold War mentality.[80] This shield, claims this news article, would consist of a multi-layered defense situated along China's first island chain.[81]

China's perception of its security situation and its position regarding Taiwan's independence are both in opposition to the position of the United States. China's long-standing territorial claim over Taiwan is central in its dealings with the United States. China sees no possibility of unifying Taiwan by force without having to confront the U.S. military, and this is something it is unable to due without taking advantage of what it perceives as the United States strategic weakness in space. China views American hegemony and its dominant position in space as a continued threat to its security and the means by which the U.S. is able to continually humiliate China's leadership by keeping it from being able re-unify with Taiwan. Legislation designed to move China closer to Taiwan has created the need to modernize its military with weapons capable of blunting

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[76] "Chinese Colonel Sees Arms in Space, *The Washington Times*, (January 26, 2007), http://www.washtimes.com (accessed July 28, 2008).

[77] Zang, "Space Weaponization and Space Security: A Chinese Perspective," 26.

[78] Ibid. Zhang says that China's development of ASAT weapons is a relatively low cost alternative to secure its nuclear capabilities.

[79] Shxiu Bao, "Dominance in Space," *Beijing Review*, no. 11 (2007), https://www.bjreview.com (accessed May 2, 2008).

[80] "The Untimely Anti-Ballistic Missile System," *The People's Daily Online*, (June 15, 2007), http://english.people.com.cn (accessed July 20, 2008).

[81] Ibid.

U.S. power projection. China feels it has little option but to create technology such as the ASAT weapon that could be used to create a shift in the strategic. China's security concerns have lead it to believe that the best way to secure their interest is to build weapons that are capable of blunting U.S. military power.

3. Geographical Factors of Chinese Offense Dominance

Conquest is made difficult when there are natural buffers between foes including third parties.[82] Not only can this be the case of the United States' security concerns with Taiwan, but also the geographical situation. China's position concerning Taiwan not only includes its perception of ending its national reunification and period of humiliation, Taiwan's strategic position could unlock China from the first island chain that contains its eastern seaboard. With China looking towards the east for its security concerns, it would best serve China to break out of the constraining waters of the South China Sea and into strategic safer waters of the greater Pacific Ocean. Taiwan is the prized geographical feature that offers China better security prospects.

Since its 1949 conception, the PRC has always considered Taiwan part of its territory. However, its changing strategic posture has also brought changes in its territorial claims along its seaboard periphery. This shift is a result of China's reexamination of its 'strategic frontiers.'[83] "The concept of three 'island chains' grew out of the former CMC Vice-Chairman Admiral Liu Huaqing's instructions to the PLA Navy (PLAN) to establish a long-term development plan. Establishing a blue-water presence in the first island chain, which runs from Japan past Taiwan to the Philippines, was to be attained by 2010."[84] Taiwan, naturally, would be the most prized position of the first island chain; it would allow China's navy the ability to springboard into the next island chain, thus potentially countering any plans for a U.S. missile shield and intervention in a Taiwan reunification effort.

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[82] Van Evera, "Offense, Defense and the Causes of War," 19.

[83] Shambuagh, *Modernizing China's Military: Progress, Problems, and Progress*, 66.

[84] Ibid., 67.

Additionally, China continues to demonstrate its maritime ambitions by legal measures. In 1996, China signed and ratified the United Nations Convention on the Law of the Sea (UNCLOS). Bernard Cole states that China's ratification of UNCLOS delineates four things: China's territory is measured 12 nautical miles (nm) from its coastline; extended a contiguous zone out to 24 nm (which a state does not control but may exercise control if necessary); create a 200 nm exclusive economic zone (EEZ); and, lastly, create a 350 nm continental shelf, over which a state might exercise limited sovereignty.[85] However, four years before China became a signatory to UNCLOS, it laid claim to the maritime area of the South China Sea, including the island of Taiwan, under the Law on the Territorial Sea and the Contiguous Zone. The 1996 ratification of UNCLOS cemented the Chinese perception that its 1992 island claims were legitimate. Therefore, in 2004, there was a sense of urgency as Taiwan independence appeared to be moving faster than before, and this resulted in the 2005 Anti-Secession Law.[86] Not being able to forcefully back its territorial claims, the Chinese Communist Party's (CCP) legitimacy now weighs on the ability to create a situation that can effectively challenge the United States military intervention in a Taiwan Strait contingency.

China's position concerning it maritime borders could also be viewed as merging with its space borders. "Justifying China's actions in international law and establishing positions in domestic law are increasingly important for the PLA as its strategists and planners think about space warfare."[87] China's military planners are examining its sovereignty in space as projected above its territorial claims.[88] "There is a debate in China focused on concern about the freedom of other nations to undertake military activities in-or over sovereignty from that normally accepted in international law and

[85] Cole, *The Great Wall at Sea*, 32.

[86] Steve Tsang, *If China Attacks Taiwan: Military Strategy, Politics and Economics*, (New York: Routledge, 2006), 187.

[87] Larry M. Wortez, "The Chinese People's Liberation Army and Space Warfare: Emerging United States-China Military Competition," American Enterprise Institute (AEI) (2007): 2, http://www.aei.org (accessed September 17, 2007).

[88] Ibid., 3.

practice."[89] Chinese legal scholar Ren Xiaofeng views space overflight as battlefield preparation; he states, "Freedom of navigation and overflight does not include the freedom to conduct military and reconnaissance activities."[90] China is well aware that the United States, and namely the U.S. Navy, is the largest customer of space assets.[91] The PLA's Academy of Military Science has identified that 90% United States Navy communication rely on satellites. Therefore, this legal discussion concerning space overflight is aimed directly at legally justifying forceful means to strike the United States' ability to project its power into the region.[92]

Testifying before the U.S.-China Economic and Security Review Commission on February 27, 2008, Peter Dutton, stated that China is seeking to change the traditional maritime rights above its EEZ.[93] "China's efforts to alter the balance of maritime rights are part of its overall anti-access strategy, and could have an impact on the perceived legitimacy of U.S. operations in the region, especially in a time of crisis," stated Dutton.[94]

In summary, geographical factors have aided in shaping Chinese perceptions that creating an ASAT weapon could allow it to create an offense dominant position. Center to this perception is China's reunification ambitions with Taiwan. Taiwan's ongoing independence remains a symbol of Chinese failure to repel what it sees as foreign intervention in its internal affairs. As a result, China has implemented maritime claims backed by legal measures, and it is possible that it might decide to ban space overflight in a time of conflict. These measures constitute a form of offense dominance because China appears to be legally preparing itself for war, and the development of the ASAT weapon could only make these legal actions more credible. Most likely, these geographical

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[89] Wortez, "The Chinese People's Liberation Army and Space Warfare: Emerging United States-China Military Competition," 4.

[90] Ibid., 4-5.

[91] Stokes, *China's Strategic Modernization: Implications for the United States*, 117.

[92] Ibid.

[93] Peter A. Dutton, "China's Views of Sovereignty and Methods of Access Control," *Testimony before the U.S.-China Economic and Security Review Commission*, (February 27, 2008), http://www.uscc.gov (accessed July 17, 2008).

[94] Ibid.

factors have influenced China's decision to create the means to end foreign interference. These legal measures and the ASAT weapon itself are a vast undertaking that complement one other, and is an example of China's sense of offense dominance.

4. China's Military Factors of Offense Dominance

China's military modernization is one of the most important examples of China's sense of offense dominance and it also lends support that it harbors false optimism. While the United States welcomes the rise of a peaceful China much uncertainty surrounds its expanding military power and how it might be used.[95] A combination of four events have shaped China's military modernization and its evolving military doctrine that lead to the its perception of offense dominance: the first U.S. led Gulf War, the 1996 Taiwan Crisis, the 1999 Kosovo War and the ongoing U.S. led War on Terror.[96]

"The Gulf War stimulated deep introspection and analysis in the PLA about the nature of contemporary warfare and the reforms necessary to ready the Chinese armed forces to wage it."[97] The Chinese studies of the first Gulf War concluded that future warfare will be limited geographically and of short duration consisting primarily of high technology.[98] The PLA noted the ability of the United States to control the initiative though the use of space assets.[99] Not only has China thought to have recognized the strengths of the United States military operations during the first Gulf War, it is thought to have recognized its potential weakness in space.[100] The PLA's most important lesson of the Gulf War focused on weaponry, and PLA writings concerning doctrine started to stress the importance of weapons and technologies.[101] This point is an important element

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[95] United States Department of Defense, *Military Power of the People's Republic of China 2008,* I.

[96] Shambuagh, *Modernizing China's Military: Progress, Problems, and Progress,* 3. Shambaugh gives the first three examples as reasons for China military modernization.

[97] Ibid. Shambaugh gives the first three examples as reasons for China military modernization.

[98] Mulvenon and others, *Chinese Responses to U.S. Military Transformation and Implications for the Department of Defense*, 46.

[99] Shambaugh, *Modernizing China's Military: Progress, Problems, and Progress,* 72-73.

[100] Stephen J. Blank, "China's Military Power: Shadow over Central Asia," *Lexington Institute* (2006), 5, http://lexingtoninstitute.org (accessed September 5, 2007).

[101] Shambaugh, *Modernizing China's Military: Progress, Problems, and Progress*, 70.

in this discussion that the Chinese perceive the ASAT weapon as being able to create a situation of offense dominance. The ASAT weapon appears to be the Chinese solution to what the Chinese believe will give them the ability to fight a high tech war in the future. For this reason it is critical to understand that Chinese perception of offense dominance is reinforced by the actual development of the weapon. It appears there has been a considerable investment into this weapon, and now that they possess it, mostly likely, they feel that they can create a temporal shift in the military balance of power. Furthermore, this point combined with Jiang Zemin's promises to the PLA that it would be afforded the resources to counter the U.S. ability to interfere in a Taiwan contingency demonstrates that China harbors an offense dominance perception because it now had developed this capability.

Secondly, the 1996 Taiwan Crisis caused further implications for China's defense modernization. The United States dispatched two carriers, *Independence* and *Nimitz*, after the PLA's Second Artillery began to practice live-fire exercises as a means of showing its growing impatience with Taiwan and the U.S. stance concerning its One-China Policy. According to Robert Ross, the crisis was the turning point in U.S.-China relations.[102] The ability of the United States to respond to the crisis highlighted China's military weakness compared to the capability of the U.S. Navy to maintain a presence in the area without a challenge.[103] Still focusing on lessons it had learned from its study of the first Gulf War, the Taiwan Crisis provided increased momentum for the PLA's military modernization.[104] "Since then many elements of the PLA planning, training, and procurement have become contingency-driven, dominated by the specter of a military conflict with the United States over Taiwan."[105]

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[102] Robert S. Ross, "The 1995-96 Taiwan Strait Confrontation: Coercion, Credibility and Use of Force," *International Security*, vol. 25, no. 2, 2000, 87-88.

[103] Ross, "The 1995-96 Taiwan Strait Confrontation: Coercion, Credibility and Use of Force," 104. Ross states that U.S. officials believe the Chinese were not aware of a United States carrier was transiting the Taiwan Strait.

[104] Shambaugh, *Modernizing China's Military: Progress, Problems, and Progress*, 4.

[105] Ibid.

Building upon what it had already observed during the first Gulf War and the 1996 Taiwan Crisis, China again evaluated the 1999 Kosovo War and drew lessons that applied to its anti-access strategy. Three lessons drawn were: war with the United States was unavoidable; defense measures to employ against the United States can be effective; and the U.S. military has strategic weaknesses.

"The Yugoslav war clearly created a sense of urgency on China's military and strategic circles, with many warning that previous Chinese predictions that "peace and development" were the dominant trends of the times had been wrong, and that war with the United States was imminent."[106] The accidental U.S. bombing of the Chinese Embassy in Belgrade most likely added to this perception.[107] Chinese observers not only perceived that war with the United States was unavoidable, it also concluded that the U.S. led action was declared a multilateral and justified under the banner of a humanitarian intervention.[108] The Chinese leadership perceived that the Clinton Doctrine would be the means through which the United States would intervene into its internal affairs beyond Taiwan to include places such as Tibet and Xingjiang.[109]

Second, although Chinese analysts were impressed with the U.S. led air campaign, observers from the Academy of Military Sciences noted the success of the Serbian force's ability to hide air defenses.[110] As a result, the Yugoslav War allowed the PLA to conclude that it should implement a new program of "three attacks and three defenses."[111] While the three attacks are focused on countering military hardware, the three defenses are defending against enemy reconnaissance and surveillance, enemy precision strikes and the use of electronic interference.[112] Most likely, it was at this

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[106] Shambaugh, *Modernizing China's Military: Progress, Problems, and Progress,* 85.

[107] Ibid., 5. Shambaugh states that, "During and after the war, the Chinese media (including the military media) unleashed a barrage of incentives against the United States unequal since the Cultural Revolution and the Vietnam War."

[108] Ibid., 4-5.

[109] Ibid., 5.

[110] Ibid., 87.

[111] Ibid.

[112] Ibid., 87-88.

moment that Michael Pillsbury noted that Chinese strategists started to emphasize the use of "Assassin's Mace."[113] China's test of an ASAT weapon and Jiang Zemin's promise to the PLA that it will have the means available to confront the United States is relevant to the adoption of the "three attacks and three defenses." More than likely this was the point at which China formed the idea that it could develop a weapon capable of creating a situation of offense dominance.

Lastly, observes Roger Cliff, the Chinese study of the Kosovo War concluded that the U.S. military had many key strategic weaknesses.[114] These perceived weaknesses are that the U.S. Military cannot successful fight more than one war at the same time due to limited resources; the inability to allow its military to intervene in a timely manner due to patrician politics; anti-war concerns after the United States was to suffer casualties; and, lastly, the United States would be unable to execute its successful military missions if it were not for the reliance on its allies.[115] The Kosovo War had another important impacts on the Chinese perceptions concerning U.S. military power. "The conflict over Kosovo convinced the PLA that it must use short-term solutions while modernizing. The goal of catching up with America in IW in the next two decades is not one filled with optimism, especially after watching the advanced performance of NATO weaponry."[116] From the Chinese point of view, the 1999 military action in Kosovo helped to speed up PLA modernization by enhancing the move from mechanized to forces to informational forces.[117] In 2003, "former Chairman Jiang Zemin noted that no matter what changes occur in the form of warfare, even IW, People's War remains China's magic key to beat an enemy."[118] Although the original concept of the Peoples War was defensive in nature, the adoption of the IW concept to include the utility of an ASAT weapons could support

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[113] Pillsbury, "China's Military Strategy toward the U.S.: A View from Open Sources," 8.

[114] Cliff, *Entering the Dragon's Lair*, 46.

[115] Ibid., 46-50. Additionally, the first lesson drawn by some Chinese analysis could continue to be reinforced as the United States continues to quell the fighting in Afghanistan. See: Andrew Ward, "U.S. Considers More Troops for Afghanistan," *Financial Times*, (July 18, 2008), http://www.ft.com (accessed July 18, 2008).

[116] Timothy L. Thomas, *Dragon Bytes: Chinese Information-War Theory and Practice from 1995-2003* (Fort Leavenworth: GPO, 2004), 31.

[117] Thomas, *Dragon Bytes: Chinese Information-War Theory and Practice from 1995-2003*, 31.

[118] Ibid., 137.

the point that Chinese warfare, although, high tech will still involve its asymmetric elements. In the Chinese view, the ASAT weapon is the means to leverage the balance of power and using it could create a shift in the offense dominance even though China's military modernization may never be on equal terms of the United States.

More recently, the War on Terror has afforded the Chinese military analysts further observations.[119] Chinese media watches and reports what is being written in the United States concerning military strength and the ongoing war.[120] One such report states that the U.S. Army's presence in Iraq and Afghanistan has over extended the force and wonders how much longer it can continue.[121] Certainly, these U.S. generated reports gain the attention of Chinese military leadership and further lead them to the conclusion that the U.S. does have a strategic weakness. Larry Wortzel states that Chinese studies of Iraq and Afghanistan have so far led them to believe that the dependence on space assets continues to be a U.S. vulnerability and unchecked remote sensing will allow the United States to use reconnaissance to its advantage.[122]

China's military modernization has been shaped by its reaction to U.S. military power demonstrated during the First Gulf War, the 1996 Taiwan Crisis, Kosovo War and the ongoing War on Terror. Most important, China's 1999 adoption of the "three attacks and three defenses" have helped shape the perception that building weapons such as the ASAT weapon, it could use it to create a shift in the balance of power by targeting what it perceives at the U.S. reliance on space (discussed below). Building upon these points, it is important also to note that China's military expenditures also contribute to its sense of offense dominance; however, it also, according to Van Evera, is an element of false optimism.

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[119] The U.S. lead Global War on Terror (GWOT) will be defined as military action resulting from the attacks of September 11, 2001 to include the U.S. led invasion of Iraq in 2003.

[120] "Study: U.S. Army Stretched to Breaking Point," *China Daily*, (January 25, 2006), www.chinadaily.com (accessed September 3, 2007).

[121] Ibid.

[122] Larry M. Wortzel, "China and the Battlefield in Space," *The Heritage Foundation*, (2003), http://www.heritage.org (accessed July 17, 2008).

a. Chinese Defense Spending

Drawing from the U.S. Defense Department's *Military Power of the People's Republic of China 2008* to discuss China's defense spending, this most recent report states, "China continues to promulgate incomplete defense expenditure figures, and engage in actions that appear inconsistent with its declaratory polices."[123] Although China has settled most of its land border disputes, it has increased its military spending since 1996 drastically, and its declared policy of peaceful reunification with Taiwan appears to be a far second to its military option which is reflected in the amount of money its has invested in its military. See Figure 2 for this constant increase in military expenditures.

These increases are above the inflation experienced between the years 1988 to 1997.[124] In fact, the defense budget continues to outpace the overall growth of the economy.[125] China is committed to investing in its military at the expense of not investing this revenue in other areas; it appears that it is bent on creating a force that is capable of confronting a sizable force beyond its neighbors.

[123] United States Department of Defense, *Military Power of the People's Republic of China 2008.*

[124] Ibid.

[125] Ibid., 31.

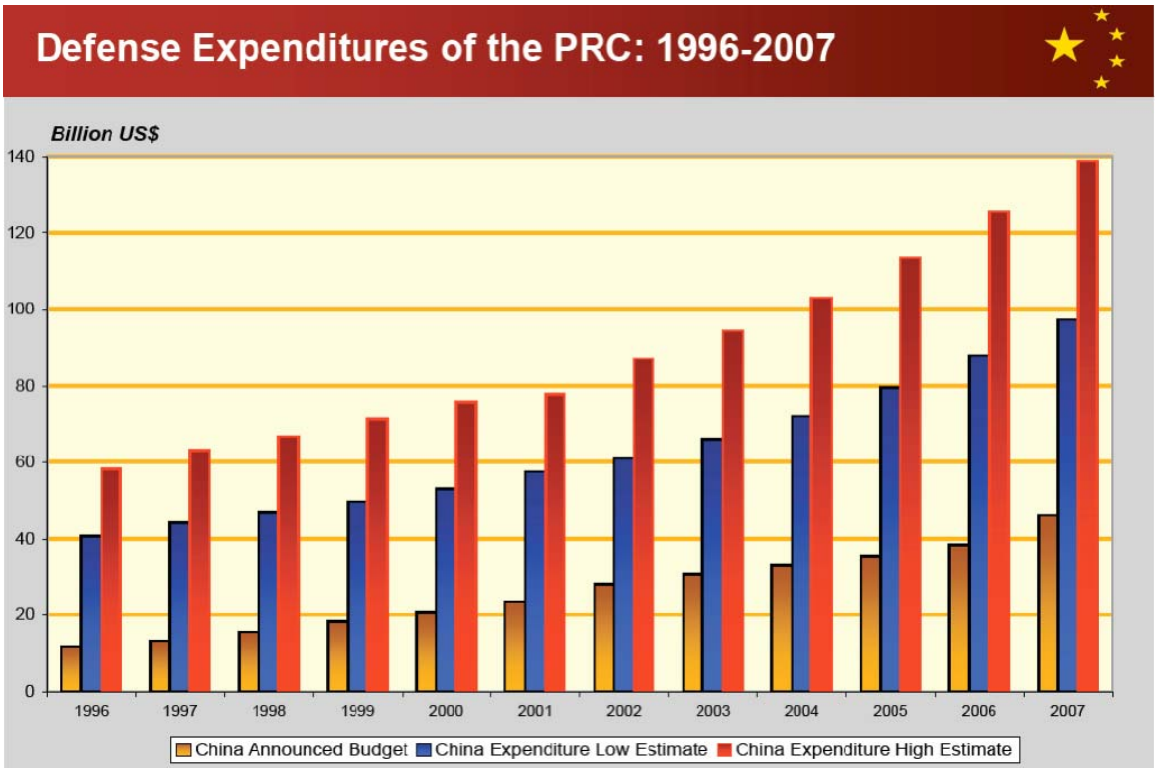

Figure 2. Defense Expenditures of the PRC: 1996-2007[126]

With regards to its military modernization expenditures, Mark Stokes stated in 1999, that the China Aerospace Corporation (CASC) is the most important facet of China's military modernization.[127] CASC is responsible for the development of technologies such as the ASAT weapon; however, China's official budget does not include research and development such as the development of its space weapons.[128] The cost of building ASATs could be an "economically sound decision."[129] Using 2005 data, John-Johnson Freese estimates that China spends roughly $1.4 billion to $2.2 billion on its entire space program, which includes CASC.[130] The value gained from investing in ASAT could imply that China intends to build more ASAT weapons.

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[126] United States Department of Defense, *Military Power of the People's Republic of China 2008*, 32.

[127] Stokes, *China's Strategic Modernization: Implications for the United States*, 6.

[128] United States Department of Defense, *Military Power of the People's Republic of China 2007*, 31.

[129] Stokes, *China's Strategic Modernization: Implications for the United States*, 122.

[130] Marcia S. Smith, "China's Space Program: An Overview," *CRS Report to Congress* #RS21641 (2006): 4, http://www.ncseonline.org/NLE/CRS/ (accessed June 7, 2007).

The Chinese military budget is relevant because not only does it provide an example of increased military spending beyond the current threat environment, it is also one of the first overt examples that China harbors false optimism. China's officially reported military expenditures appears to be far from an accurate, so what is it actually spending on its military is unknown.[131] China's lack of transparency concerning its military spending and its undisclosed military doctrine leads to an elevated level of uncertainty, as pointed out in the most recent report on the military power of the PRC.[132] This matter of secrecy concerning China's military budget is made more serious by the China's development of an ASAT weapon. Not disclosing its military spending while also discussing the best way to defeat the United States by attacking space assets are all examples that China carries a sense of false optimism.

b. Chinese Doctrine

One of the most important elements of the Chinese's offense dominance mentality is the evaluation of its secretive military doctrine. The evaluation of Chinese military doctrine provided below is the last element supporting that the position that China perceives the ASAT weapon as being able to create a situation of offense dominance. It also suggests that China harbors a since of false optimisms. Chinese doctrine is centered upon the theory that a first strike on space systems is the key to Chinese victory. Chinese doctrine, therefore, is the smoking gun to the claim that it harbors an offense dominate position and that its emphasis on using the first move advantage to create a temporal shift in the balance of power points to the possibility that it harbors false optimism.

In the year that China was in the midst of studying the effects of the U.S. led Gulf War (1995), Steven Lambakis authored an article featured in *Orbis* entitled, "Space Control in Desert Storm and Beyond."[133] In this article, Lambakis made three observations concerning the use of space during the First Gulf War: the United States

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[131] United States Department of Defense, *Military Power of the People's Republic of China 2008*, 31-2.

[132] Ibid., I.

[133] Lambakis, "Space Control in Desert Storm and Beyond."

information systems in space were unchallenged; space control will be as important as sea control; and, lastly, in 1994, the U.S. Naval War College conducted a war game that simulated Chinese attacks on naval space assets that caused the loss of the U.S. Seventh Fleet.[134] It is unknown to the author if Chinese military students of the first Gulf War received Lambakis' article; however, Lambakis did state the obvious: space was becoming more important in the United States' ability to conduct modern warfare. Months later, in December 1995, the Chinese leadership adopted the "Two Transformation" based on its assessment of the Gulf War.[135] This transformation focused on two things: being able to fulfill the 1993 instructions that call for the ability to fight a local war under high-tech conditions; and, second, creating an army based on quality.[136]

Starting in 1993, the CMC issued a set of instructions to the PLA called "Military Strategic Guidelines."[137] David Finkelstein states, as explained by the PLA's National Defense University, "The military strategic guidelines are the fundamental military policies of the party and the nation. They are the overall principles for planning and guiding the development and utilization of the armed forces.'"[138] Simply put, this is the doctrinal aspect of China's military modernization. Since the Military Strategic Guidelines have been issued, they have remained the driving force under which China has sought to modernize its military for the past 15 years.[139] On the other hand, and similar to these 1993 strategic guidelines, are the ideas of "Active Defense." The two ideas go hand-in-hand. PLA Senior Colonel Yao Yunzhu says that the Chinese military

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[134] Lambakis, "Space Control in Desert Storm and Beyond."

[135] David Finkelstein, *China's Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the Chinese People's Liberation Army*, ed. James C. Mulvenon and David Finkelstein (Alexandria, VA: CAN, 2005), 3, www.cna.org (accessed September 2007).

[136] Ibid. David Finkelstein summarizes the Chinese military modernization by calling it "Three Pillars" that consists of weapon development, new operational concepts and institutional reforms that support the first two.

[137] David Finkelstein, *Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military*, ed. Roy Kamphausen and Andrew Scobell (Carlisle, PA: GPO, 2007), 95. Finkelstein states on January 13, 1993 Jiang Zemin delivered the concept known as "Military Strategic Guidelines" but these are officially known as the "Military Strategic Guidelines of the New Period."

[138] David Finkelstein, "China's National Military Strategy: An Overview of the "Military Strategic Guidelines," *Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military*, 82.

[139] Ibid., 95-96.

believes that future wars will be a combination of these two concepts.[140] While "Military Strategic Guidelines," are instructions to modernize the PLA into a modern force of the 21st century, "Active Defense" has evolved from the Mao Zedong military thought of asymmetric warfare but retains the core element of fighting a stronger force with less. The modern version of China's Active Defense as described by David Finkelstein follows:

- Overall, our military strategy is defensive. We attack only after being attacked. However, our operations are offensive.
- Our counteroffensive will not be limited by space and time.
- We will not put boundaries on the limits of our offensives.
- We will wait for the time and conditions that favor our forces when we do initiate offensive operations.
- We will focus on the opposing force's weakness.
- We will use our own forces to eliminate the enemy's force.
- Offensive operations against the enemy and defensive operations for our own force protection will be conducted simultaneously.
- We will maximize our advantage against the opposing force.[141]

"In short, the PLA's attention is now doctrinally fixed on being able to prosecute short campaigns inflicting shock and paralysis to level the technological playing field at the inception of hostilities by concentrating PLA's best capabilities against the enemy's most important assets."[142] As Mao Zedong would say, "You fight your way, and we'll fight our way."[143] It appears that Chinese military doctrine has evolved from its people's war concept to its current manifestation of being able to fight by employing highly technical weapons in an offensive manner. The ASAT weapon was developed for this reason and this reason alone. Instead of drawing the enemy deep into interior lines, the ASAT weapon will take advantage of U.S. space assets that pass

[140] Yao Yunzhu, "The Evolution of Military Doctrine of the Chinese PLA from 1985 to 1995," 76.

[141] David Finkelstein, *Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military*, 82.

[141] Ibid., 88-89.

[142] Ibid., 72.

[143] Yao Yunzhu, "The Evolution of Military Doctrine of the Chinese PLA from 1985 to 1995," 76.

overhead and unprotected. The offensive use of the ASAT weapon, in theory, permits China to create a devastating first move advantage. Additional utility could be gained from using the ASAT weapon in an offensive manner, once used, the Chinese perceive that it will further assist in defensive position after an adversary's space situational awareness has been degraded. China views the possession of ASAT weapons certainly has a place in the "Two Transformation" concept by inflicting a "shock and paralysis."

Furthermore, the 9th Five-Year Plan, 1996-1999, the CMC, under Jiang Zemin's guidance, issued its guidelines for military operations and tactical level of war called the "New Generation Operations Regulations."[144] Although this did not change Chinese strategy, it did cut across every facet of the PLA.[145] This newly issued doctrine drew on the lessons not only from the First Gulf War, the 1996 Taiwan Crisis and Kosovo but also the shift in perception of the changing security environment. The "New Generation Operation Regulations is the campaign level guidance of how the PLA will employ its military force."[146] In 2003, these thoughts on army building were "elevated" to the hierarchy of thought of Mao Zedong and Deng Xiaoping.[147] These publications are not made public, so whatever doubt the West carries concerning China's military doctrine is centered on not knowing how China plans to use its military force. This also furthers the case for Chinese false optimism because China hides its military doctrine and feels that it needs to conceal its intentions. The need to keep its doctrine secret is most likely a result of its insistence that the PLA should seize control of the battlefield before the outbreak of hostilities.

"In January 2007 (around the time of the ASAT test), the PLA General Staff Department (GSD) released its yearly guidance on military training. For the first

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[144] David Finkelstein, *China's Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the Chinese People's Liberation Army*, 1. "New Generation Operations Regulations," are the equivalent of the United States Military Joint Publications.

[145] Ibid., 2.

[146] Ibid.

[147] David Finkelstein, *Right Sizing the People's Liberation Army: Exploring the Contours of China's Military*, 78.

time the training is focused on training under 'informationized' conditions."[148] Therefore, it appears that the PLA's effort to modernize has moved past the stage of adopting its doctrine and now is focused on training its troops for combat. Furthermore, it might suggest that China has fully adopted the mentality that it can use the ASAT to create a shift in the strategic balance. It is possible that the ASAT test was part of this new training environment. Some of these military writings will be examined below, and it serves as the strongest support for the Chinese perception of ASAT weapon as being able to level the playing field in favor of China.

c. Chinese Military Thought

Although official Chinese military doctrine is not open to the outside, a number of Chinese military authors have written a great deal concerning military modernization that has been made available to an English only audience. Additionally, a Foreign Broadcast Information Service (FBIS) report has concluded that PLA authored and published material is subject to filtering by the General Political Department (GPD).[149] If Chinese military authors have produced material from one of China's leading military education centers, then most likely, it reflects guidance issued during the New Generation Operation Regulations. Additionally, these PLA authored articles offer means for its officers to suggest warfare methods to China's leadership.[150] What was written between the 1996-1999 time frame is important to the study of China's doctrine because it more than likely represents some aspects of Chinese thoughts on war fighting in informationalized conditions that have been officially adopted as part of the military doctrine.[151]

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[148] United States Department of Defense, *Military Power of the People's Republic of China 2008*, 5. It also states that there is a push to transform the training environment to address the new emphasis on informationalized condition called "Outline for Military Training and Evaluation (OMTE)."

[149] "An Assessment and Analysis of PLA Publications," *Foreign Broadcast Information Service* (2005): 12, www.opensource.gov (accessed July 17, 2008).

[150] Ibid.

[151] David Finkelstein says that the period from 1996-2000 produced plenty of material from creditable Chinese sources. See: David Finkelstein, *Right Sizing the People's Liberation Army: Exploring the Contours of China's Military*, 77.

d. Chinese Thought on Information Warfare

Senior Colonel Wang Baocun and Li Fei, members of the Academy of Military Sciences, define information warfare as being "combat aimed at seizing the battlefield initiative; with digitized units as its essential combat force; the seizure, control, and use of information as its main substance; all sorts of information weaponry and systems as its major means."[152] Furthermore, the authors state there are five major elements of information warfare that include the primary element of destroying enemy information centers.[153] As far as attacking these targets, Wang and Li state:

> Information offense means attacking enemy information systems. Its aims are: destroying or jamming enemy information sources, to undermine or weaken enemy C&C (command and control) capability, and cutting off the enemy's whole operational system. The key targets of information offense are the enemy's combat command, control and coordination, intelligence, and global information systems. A successful information offensive requires three prerequisites: 1) the capability to understand the enemy's information systems, and the establishment of a corresponding database system; 2) diverse and effective means of attack; and 3) capacity to make battle damage assessment [BDA] of attacked targets.[154]

Other Chinese authors such as Major General Wang Pufeng, former director of the Strategy Department, Academy of Military Science, suggest that the Chinese have recognized that information warfare will control the outcome of future wars.[155] Firepower and information are linked, states Wang.[156] "There is a question of how to use weakness to defeat strength and how to conduct war against weak enemies in order to use information superiority to achieve greater victories at a smaller cost."[157] In order to face an enemy that holds a superior position, Wang suggests that the PLA must emphasize using inferior methods to achieve victory, 'using the inferior to overcome the

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[152] Baocum Wang and Fei Li, *Information Warfare*, trans. Michael Pillsbury (Washington, D.C.: National Defense University Press, 1998), 328.

[153] Li, *Information Warfare*, trans. Michael Pillsbury, 328.

[154] Ibid., 329.

[155] Pufeng Wang, *The Challenge of Information Warfare*, trans. Michael Pillsbury, 318.

[156] Ibid.

[157] Ibid.

superior.'[158] Being able to create the situation of defeating the superior with inferior military power, Wang recommends that the most important system is the tactical guided missile attack that could conceal and strengthen survival capacity to provide an effective threat.[159] Stating his principles of firm control of the battlefield, Wang states:

> When China's enemies mainly use their air force and navies to conduct strategic information warfare, China will be in the strategic position of engaging in defensive warfare along interior lines. The progress and outcome of the war will be determined by the state of China's advance preparations and defense situation during the war. In defensive warfare, China should still thoroughly implement an active defensive strategy. In addition to hiding and concealing forces, in combat, especially during key phases in key areas, we must engage even more actively in air defense warfare and intercept and attack enemy weapons as they arrive in surprise attack.[160]

Another author, Chang Mengxiong, member of the Committee of Science, Technology and Industry of the Systems Engineering Institute, states, "Conversely, if one side can effectively weaken the information capability of the other side, even if its capability on other ways is less, the other side will dare not take any ill considered action. These two situations constitute 'information dominance.' It can prevent war from breaking out."[161] Chang summarizes his overall thought on information warfare by stating, "Information warfare will be the most complex type of warfare in the 21st century, and it will decide who will win and who will lose the war."[162]

In summary, these authors stress the concept of defeating the superior with the inferior by being able to create a first strike scenario against enemy information hubs. This certainly, supports the development of ASAT weapons as a means to confront the United States by using an offensive posture. These authors all appear to support that China will have the ability to create a shift in the strategic balance once they have the weapons able to achieve these measures.

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[158] Pufeng Wang, *The Challenge of Information Warfare*, trans. Michael Pillsbury, 319.

[159] Ibid., 318.

[160] Ibid.

[161] Ibid., 255.

[162] Ibid.

People's Liberation Army-Navy (PLAN) Captain Shen Zhongchang, PLAN Lieutenant Commander Zhang Haiyin and Lieutenant Zhou Xingheng, officers at the Naval Research Institute in Beijing state that the use of high tech arms will make direct attacks on naval battlefields possible from outer space.[163] "By the next century, as high-tech space technology develops, the development of space-based weapons systems will be bound to make 'mastery of outer space' prerequisites for naval victory, with outer space becoming the new commanding elevation for naval combat."[164] These three authors continue by observing that future naval conflicts will break out much faster than previous wars and suddenness will play a decisive factor in winning these battles.[165] Due to this sudden outbreak, it is important that forces quickly obtain a favorable battlefield stance, first strikes.[166]

The same three authors continue their approach to naval warfare in the 21st century in a follow on article featured in the 1996 edition of *China Military Science*.[167] This article emphasizes more attacks on C4ISR systems than the previous article. Noting that the United States has also noted that its communication networks in space could be easily targeted by potential enemies, the three authors state, "In future naval war, destroying the opponent's information network will have significance in controlling information and taking the initiative in the war."[168] Shen Zhongchang, et al., state that in information war the effectiveness of naval vessels is largely dependent on its soft systems (reconnaissance, monitoring, communication, navigation and meteorology), and once

[163] Zhongchang Shen and others, *21st Century Naval Warfare*, trans. Michael Pillsbury, 263. First published in the *China Military Science.*

[164] Ibid., 267.

[165] Ibid.

[166] Ibid.

[167] Ibid., 275-284.

[168] Ibid., 278-279.

these are removed, these craft are unable to perform their missions.[169] Additionally, they state, “Missiles are the main weapon not only for modern sea war but also for future sea information war.”[170]

In summary, Chinese writings on the future warfare were examined; these writings were written during the time period that is thought to have influenced China’s current military doctrine. China’s military doctrine has been tailored to provide the guidance for its military modernization intended to fight wars under conditions of informationization, and striking at an enemy’s center of gravity as a means of defeating a superior military force. China believes that space is the critical force enabler that allows powerful countries to exploit the situation of war from the outbreak. Being able to impede this strategic frontier before the United States, China concludes, will allow it to create a situation that would render space dependent militaries from being able to project its power. These writings strongly suggest that China is under the impression that possessing this capability is a necessity for fighting and winning against a more powerful country, the United States. These writing further suggest that these weapons shall be the primary means to create a shift in the strategic balance of power. Weapons such an ASAT hold significant implications towards China’s ability to conduct a war under condition of informationization. Now that China has tested the weapon, it appears it assumes that it can be use it to defeat the superior with the inferior. Most likely, China maintains a sense of offense dominance. Without outside knowledge of Chinese military doctrine and the continued emphasis on secrecy lends support for the claim that China harbors false optimism. The continued emphasis on gaining the first strike to achieve this is central to the argument that China harbors an offense dominate mentality.

This offense dominant position has resulted in the perception that it has the means necessary to confront the U.S. power. Factors such as the military technology, geographical factors, social structures of security and the military organization of China have all contributed to a need for offensive options, but China’s insistence on secrecy and

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[169] Zhongchang Shen and others, *21st Century Naval Warfare*, trans. Michael Pillsbury, 263. First published in the *China Military Science*, 282.

[170] Ibid., 282.

the need to undertake a first strike against space assets suggests that it may also harbor false optimism. For this reason, China's ASAT test is worthy of mention. After years of concluding that it can weaken the United States by attacking its space assets, it has now successfully tested the weapon. As mentioned above, false optimism is one of the leading causes of war. In the case of China, its offense dominant perspective has continued after the successful ASAT test.

D. IMPLICATIONS OF OFFENSE DOMINANCE AFTER THE ASAT TEST

1. Promotions within China's Military Industrial Complex

Months following the test, Bates Gill and Martin Kleiber suggested in a *Foreign Affairs* article that some observers of China misunderstood the recent Chinese ASAT demonstration.[171] They state, "Beijing's right hand may not have known what its left hand was doing."[172] They suggest that the PLA's Second Artillery executed the ASAT test without consulting the PRC leadership.[173] However, this seems unlikely for a couple of reasons. First, in light of China's ongoing campaign to quell any challenge to its leadership, it seems more likely that CCP/CMC would not allow its military and defense industry to conduct an ASAT test without its knowledge, especially one that caused an international backlash over the amount of debris created by the test. Second, it appears less likely China's leadership would have not been aware of the ASAT test due to the failures of the previously ASAT tests. Certainly, the CMC would be interested in knowing that its investment in ASAT technology was finally coming to fruition, especially given all the attention to the development of ASAT technology and the military writings directed toward the development of creating weapons capable of defeating the superior with the inferior. It appears that the ASAT weapon is a pinnacle weapon in China's military modernization and not reporting its test is difficult to accept given the conditions under which the weapon was developed.

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[171] Bates Gill and Martin Kleiber, "China's Space Odyssey," *Foreign Affairs*, vol. 86, no. 3 (May-June 2007), 2-3.

[172] Ibid., 2.

[173] Ibid.

Furthermore, instead of removing the leadership responsible for the January 2007 ASAT test from their positions', several people in the defense industry were promoted. In July 2008, the PRC moved General Chen Bingde from the position of head of General Armaments Department (GAD), which includes its space weapon development, to Chief of the General Staff where he will have authority over all of China's 2.3 million-member military.[174] General Chen held a number of positions in the Nanjing Military Region prior to assuming the role as Chief of Staff, mainly planning for preparations for a conflict with Taiwan.[175] General Chen is also a member of the CMC. Therefore, this promotion could been seen as China's leadership wanting to have some expertise close to the decision making circle, especially one with knowledge of its ASAT capabilities.

Other promotions followed the wake of the successful ASAT test. Kevin Pollpeter has referred to the promotion of five defense industry members as the "rise of the space gang."[176] In August 2007, space professionals were appointed to top positions in China's space weapon development bureaucracy.[177] These include: Zang Qingwie's promotion from general manager of China Aerospace Science and Technology (CASC) to the head position of China's Commission on Science Technology and Industry for National Defense (COSTIND).[178] In addition to Zang's promotion, four of the eight top positions at GAD also point out that these appointments indicate that these people will continue to influence the decision making process of the military industrial complex.[179] More than likely, these promotions demonstrate the leadership's satisfaction with the ASAT weapon test and the desire to push its military modernization goals.

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[174] David Lague, "China Steps up Military Focus on Taiwan," *The New York Times*, (October 10, 2007), http://query.nytimes.com (accessed May 24, 2008).

[175] Ibid.

[176] Kevin Pollpeter, 'The Stars of China's Space Program: The Rise of a "Space Gang"? *China Brief, Jamestown Foundation*, vol. 7, Issue 17, (September 19, 2007), http://www.jamestown.org (accessed June 20, 2008).

[177] Ibid.

[178] Ibid.

[179] Ibid.

2. Status of Taiwan after the ASAT Test

After the ASAT test, China continues to maintain secret military intentions. Cross-strait tensions also remain, but now China possess a weapon that it has concluded will allow it to take advantage of a U.S. military weakness. Senior Chinese government and party officials stated before the party congress that China would fashion a new policy to deal with the Taiwan.[180] Instead of a more forceful move such as firing missiles, as it did in 1996, Chinese President Hu Jintao, stated that he was willing to explore peaceful means to reunify Taiwan during the 17th Party Congress in October 2007.[181] However, Taiwanese President, Chen Sui-bian, called Hu's offer a treaty of surrender of the Taiwanese people, rejected the proposal.[182] There is evidence that China has continued to grow more impatient with Taiwan after January 11, 2007. Jianwei Wang, states the recent Taiwanese attempt to gain access to the United Nations via a name change has caused, "growing consensus among the leadership and elite that in the contexts of the Anti-Succession Law, Beijing has no other choice than to take some action including "non-peaceful means."[183] It is very possible that China perceives itself as being able to create a situation that will allow it to use force successfully without having to confront the total military capability of the United States. The ASAT test has most likely added to this sense of offense dominance.

Taiwan has announced that it would once again seek UN membership in July 2008.[184]

3. The U.S. ASAT Test and China's Military Exercises

When the United States intercepted its errant satellite, USA-193, on February 21, 2008, China's Foreign Ministry Liu Jiachao requested that the United States provide the

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[180] Lague, "China Steps up Military Focus on Taiwan."

[181] Keith Bradsher, "Taiwan Leader Dismisses Hu Overture," *New York Times*, (October 18, 2007), www.nytimes.com (accessed July 31, 2008).

[182] Ibid.

[183] Jianwei Wang, "Time for "New" Thinking on Taiwan," *China Security*, vol. 4, no. 1 Winter 2008, 110-126, 2008 World Security Institute, 111.

[184] "Sixteenth Time Lucky? Taiwan Seeks UN Spot Again," *Asia One News*, (July 30, 2008), https://asiaone.com (accessed July 31, 2008).

data from the ASAT launch according to the 1967 Outer Space Treaty.[185] A Center for Defense Information article observes that China, on the other hand, was not compliant with the 1967 treaty when it conducted its ASAT test because it was suppose to notify other signatures that it intended to conduct a test that could harm space objects.[186] Additionally, on February 12, 2008 China and Russia jointly submitted to the Conference on Disarmament (CD) the draft Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects (PPWT).[187]

On March 4, 2007, Beijing announced a 17.8% increase, and was later revised by the state council to 19.47%, or $45.99 billion.[188] If China aims at producing more ASAT weapons, certainly is a relevant topic worth close monitoring. Based on its perception of offense dominance, it appears that China will further invest in this weapon.

One of the last elements supporting the claims that China maintains an offensive dominant position with regard to its ASAT weapon is recent PLA exercise. According to a analysis after the ASAT test, Chinese open sources have reported that PLA Second Artillery are conducting exercises aimed at concealing movement from American reconnaissance satellites.[189] This appears to be part of the new training environment that was adopted last year but also part of the "three defenses." China's sense of offense dominance is perpetuated in its adoption of training based on the combat environment and in the sense that it is able to create a shift in the strategic balance of power. The emphasis of hiding artillery forces, mobile launchers, from reconnaissance has huge implications for being able to conduct a successful attack against U.S. naval surface

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[185] Eric Hagt, "The U.S. Satellite Shootdown: China's Response," *Bulletin of Atomic Scientists*, (March 5, 2008), http://www.thebulletin.org (accessed June 18, 2008).

[186] Eugene Marder, "How China's Anti-Satellite Weapon Test Can Breathe New Life into Article IX of the Outer Space Treaty," *Center for Defense Information* (CDI) (2008): 1, https://www.cdi.org (accessed July 7, 2008).

[187] "China and Russia Jointly Submitted the Draft Treaty on PPWT to the Conference on Disarmament," Ministry of Foreign Affairs for the People's Republic of China, (February 12, 2008), http://www.mfa.gov.cn (accessed August 7, 2008).

[188] United States Department of Defense, *Military Power of the People's Republic of China 2008*, 31.

[189] "PLA Training Emphasizes Countermeasures against Imagery Reconnaissance," *Foreign Broadcast Information Service* (2007): 1, www.opensource.gov (accessed July 17, 2008).

forces. Once China feels that it can hide from U.S. reconnaissance satellites it will become even more convinced that it can create a situation of offense dominance. The risk of war in now higher due to the Chinese perception that it can create a shift in the balance of power between it and the United States.

E. OFFENSE DOMINANCE – CHAPTER SUMMARY

This chapter examined the Chinese perspective of offense dominance through the lens of Stephen Van Evera's Offense, Defense, and the Causes of War Theory. The factors shaping the Chinese perception of offense dominance were explored through the aggregate factors offense dominance such as military technology, geographical factors, social structures and lastly the military factors. In each case, every factor runs counter to the position of the United States. The ASAT weapon itself is an advanced weapon that could strike at vital U.S. space assets, and serves as a marked improvement in the ability to destroy satellites in low earth orbit. The Chinese perception of reunification with Taiwan appears to be in opposition to the United States interests. The geographical ambitions of China and its continued legislation to reunite it with Taiwan are all examples that development of the ASAT weapon could now be used to achieve a position of being able to confront the United States. The military modernization of China and the doctrine all imply that is preparing to confront the United States. One of the important factors leading China to develop the ASAT weapon was its evaluation of the Kosovo War. After its study of the 1999 air campaign in Kosovo, China adopted the "three attacks and three defenses." It appears that this has greatly influenced China's sense of offense dominance by leading it to believe that it can create a shift in the strategic balance by conducting a first strike against U.S. space assets.

China harbors an offensive dominant position concerning the potential use of its ASAT weapon. As a result of China's emphasis on maintaining a level of secrecy that is closely tied to its doctrinal need to strike U.S. space assets first, it is possible that it also has incorrectly assessed in potential victory and maintains false optimism. Stephen Van Evera points out that false optimism is the cause of many wars. Therefore, it is quite

reasonable to assume that the next time U.S. naval forces are operating near China's periphery due to heightened tensions between China and Taiwan, U.S. space assets could be attacked due to the perception that it would give China the ability to create a situation of offense dominance.

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III. FALSE OPTIMISM EXAMINED

A. REALITY CHECK: INTRODUCTION

China appears to have concluded that it cannot militarily confront the United States in a Taiwan contingency unless it takes advantage of the first move that is designed to creating a shift in its offensive capabilities. Some argue that China's strategy would be aimed at creating a naval blockade to keep the U.S. at a distance. As evidenced in the previous chapter, China might use its ASAT weapon as a means of creating this shift. Now that China possesses the weapon, how effective could the ASAT weapon be in repelling the U.S. naval surface forces from its coast? What effect would it have on the operational capabilities of U.S. naval surface forces?

This chapter seeks to demonstrate that China would find it nearly impossible to create a shift in the balance of forces between itself and the United States by attacking its space assets, thus clarifying any misunderstanding resulting from China's false optimism. The chapter will begin by discussing the U.S. Navy's needs in space that enable it fulfill its maritime strategy. Then it will look at the most likely attack on U.S. space assets in low earth orbit. After an examination of China's possibilities of being able to shoot down U.S. space reconnaissance assets, it will conclude that such an attack would be extremely difficult to accomplish; and, even if it where to become a reality, U.S. civil space assets could be used as a reserve imagery source. Next, the risk to GPS satellites will be examined. This will demonstrate there appears to be an evolving threat; but if U.S. reconnaissance satellites remain intact China will not be able to destroy much needed GPS satellites. Lastly, the risk to communication satellites will be evaluated. It will also demonstrate that China does not appear to posses the capability to attack all communication satellites that could potentially be used by the United States military, thus not possessing a risk. The United States military could continue to provide power projection after an attack on its satellites.

B. THE MARITIME STRATEGY AND SPACE SUPPORT

A U.S. Navy response to a Taiwan Strait crisis will be founded upon the six core pillars of the nation's maritime strategy, *A Cooperative Strategy of the 21st Century Seapower*. These six pillars of the U.S. maritime strategy are identified as the following: forward presence, deterrence, sea control, power projection, maritime security and humanitarian assistance/disaster response.[190] These operations will not be hindered by anti-access strategies.[191] Certainly, U.S. space assets will contribute U.S. maritime opposition to anti-access measures, as pointed out earlier; the United States Navy is the largest user of space. The maritime strategy of the United States links the over-arching concepts of Sea Power 21 and its tenets: Sea Strike, Sea Shield, Sea Basing and FORCEnet.[192]

C. UNITED STATES SPACE ASSETS AND THE NAVY'S NEED

Space Security 2007 recognizes that the United States military maintains eight reconnaissance satellites in earth's lower orbit along with other force enhancing elements such as communication and Global Positioning Satellites. See Figure 3.

190 National Maritime Strategy, *A Cooperative Strategy of the 21st Century Seapower*, 2007, 12-14.

191 Ibid., 13.

192 "Developing a New Maritime Strategy," *Rhumblines*, (September 12, 2006), https://www.chinfo.navy.mil (accessed August 20, 2008).

Current programs	Function	Orbit	Constellation	Future planned systems
Defense Satellite Communications System III	Communications	GEO	9	Advanced Wideband (2009)
Military Satellite Communication System (Milstar)	Communications	GEO	5	Advanced Extremely High Frequency (2008); Transformational Satellite Communications System (TSAT) (2014)
Interim Polar Satellite Program	Communications	GEO	2	Enhanced Polar System (2014)
UHF Follow-on Satellite	Communications	GEO	8	
Satellite Data System	Communications	GEO	4	Wideband Global SATCOME (2007); Mobile User Objective System (MUOS) (2009)
Defense Meteorological Satellite Program	Weather	LEO	6	
Global Positioning System	Navigation	MEO	31	
Defense Support Program	Early Warning	GEO	4-8	Space Based Infrared System (2008); Alternative Infrared Satellite System; Space Tracking and Surveillance System (2007)
N/A	Tactical Warning			Space Radar (2015)
Crystal	Imaging	LEO	4	
Lacrosse	Imaging	LEO	3	
Misty	Imaging	LEO	1	
Naval Ocean Surveillance System (NOSS)	SIGINT	LEO	15	
Advanced Orion (Mentor)	SIGINT	GEO	3	
Vortex (Mercury)	SIGINT	GEO	2	
Trumpet (SB-WASS)	SIGINT	HEO	3	

Figure 3. Key U.S. Military Space Assets.[193]

193 *Space Security* (2007): 134.

Naval operations depend on the following satellites to perform its missions: Intelligence/Surveillance/Reconnaissance, Communications, Position/Navigation/Timing (PNT), Space Control, Ballistic Missile Warning/Defense and Metrological and Oceanographic (METOC).[194] In terms of the overall strategic framework of Sea Power 21, a 2005 study on the current and future needs of the Navy's space assets has identified the U.S. Navy's space requirements as shown in Figure 4.

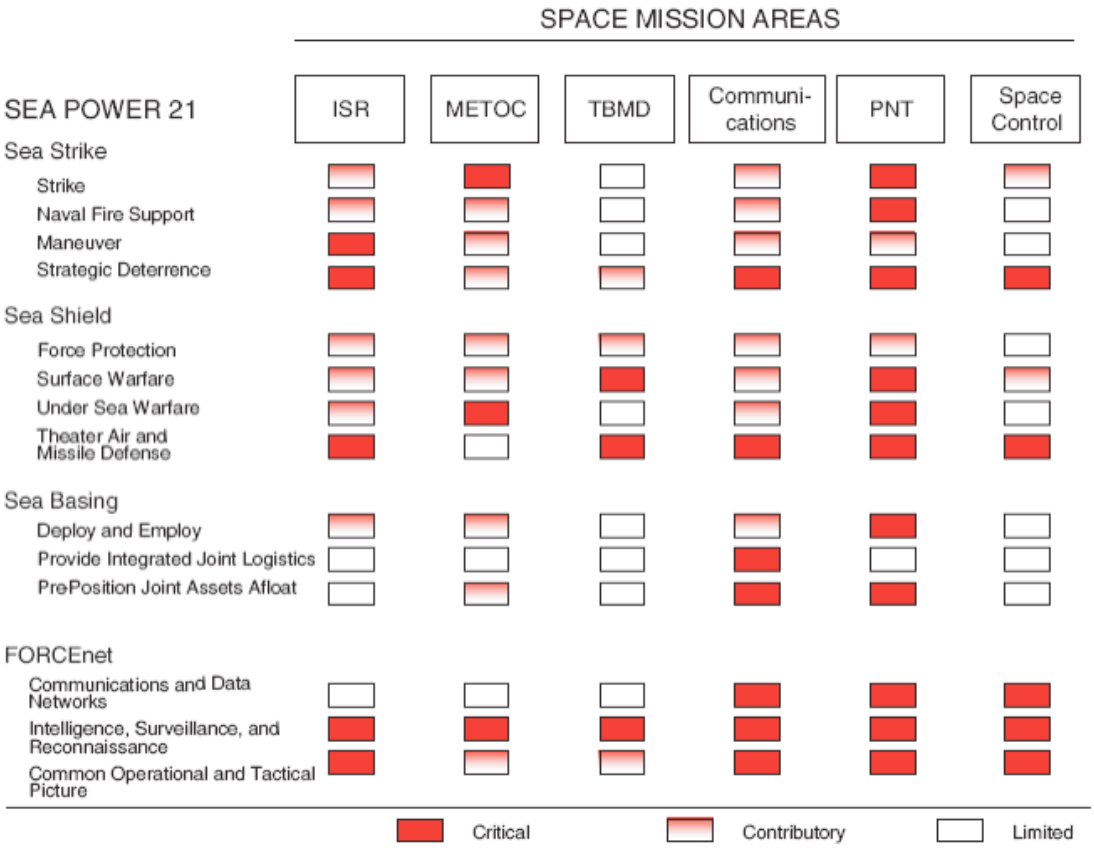

Figure 4. Sea Power 21 Space Mission Areas [195]

194 Kenneth Deutsch, Statement to the Strategic Forces Subcommittee of the Senate Armed Services Committee, Space Hearing, March 4, 2008 (accessed July 15, 2008).

195 *The Navy's Needs in Space for Providing Future Capabilities*, 59 "A 'critical' dependency reflects a space mission area that is considered absolutely necessary for accomplishment of the particular Sea Power 21 capability."

The Navy's primary needs in space can be summarized as the following areas: ocean and littoral surveillance, secure communications, real time measurements (GPS).[196]

D. ATTACKS ON SPACE ASSETS

1. Attacks on Low Earth Orbit Space Assets

According to all open sources, China simply cannot create a devastating first strike against U.S. low earth orbit assets. A worst-case scenario space attack, according to Geoffrey Forden's evaluation, China could only destroy a total of nine U.S. satellites, and it would have to be done simultaneously against LEO assets.[197] Destroying nine satellites in a quick and decisive manner would involve months of planning.[198] Open source material that suggest that China would find it difficult to execute a space attack of this size covertly; and if a reality, it would only limit, not prevent the U.S. Navy from executing its strike and defense missions. China would have to preposition its mobile launchers throughout China, two launchers site per satellite.[199] How well China is able to maintain covertness in positioning its mobile launchers throughout China is questionable. China may assume that they can keep paired TELs hidden from intelligence satellites, but it has been reported new and improved reconnaissance satellites are able to distinguish between camouflage and vegetation in addition to detect thermal heat sources.[200] However, as mentioned in the last chapter, China is currently conducting exercising aimed at concealing its movements.[201] However, this measure to dodge U.S. reconnaissance satellites may in fact be a result of China sense of false optimism.

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196 *The Navy's Needs in Space for Providing Future Capabilities*, 58.

197 Forden, "How China Loses the Coming Space War (Part 2)" To destroy LEO assets in this manner, Forden states, would have to be completed with a twenty-minute time frame. There are large numbers of U.S. LEO assets over China several times a week.

198 Ibid.

199 Ibid. To make sure they do not miss the target, Forden concludes that China would have fire two missiles, thus requiring two mobile launchers per satellite.

200 "U.S. Space Based Reconnaissance Reinforced," *Jane's*, (October 17, 2001), http://www.janes.com (accessed August 25, 2008).

201 "PLA Training Emphasizes Countermeasures against Imagery Reconnaissance," *Foreign Broadcast Information Service*.

China would need a contingency day for a worst-case scenario attack on nine satellites; therefore, a total of 36 TELs would be required to be propositioned throughout China.[202] If China were to move its TELs throughout its territory in preparation for such a space attack, it seems likely that intelligence personnel would be likely to forecast the exact day of the coming attack due to the practicability of LEO assets and the position of the Chinese TELs.

Furthermore, with most of the U.S. assets in LEO consisting of reconnaissance and NOSS satellites, according to Figure 4, it appears that the Navy surface forces could most likely loose electronic intelligence, reconnaissance, and Naval Ocean Surveillance Systems (NOSS). According the Space Mission Areas of Sea Power 21, a loss of NOSS assets appears not to affect Sea Basing, but could affect the mission areas of Sea Strike, Sea Shield and FORCEnet, but not totally disable these mission areas. However, NOSS satellites targeting might also prove difficult to target. NOSS satellites orbit grouped together in order triangulate vessels' positions.[203] Therefore, if China were to target NOSS satellites, then it could be assumed that its mobile launchers would be clustered together in groups of four to six.[204] Being able to accomplish a surprise attack of this magnitude appears not to be possible, and China would also loose the element of surprise. It is possible that if the United States wished to remove the threat of a pre-emptive attack, it could exercise a first strike option upon the launchers.

Additionally, China is limited in the amount of missiles needs to mount an attack of this scale. According to the figures presented in the last report on the military power of the PRC, China is assumed to possess between 60-80 CSS-5 missiles. See Figure 5.

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202 Forden, "How China Loses the Coming Space War (Part 2)." The attack positions would only be good for one day, so having a back up plan should be assumed.

203 Ibid.

204 Ibid.

China's Missile Force			
China's Missile Inventory	Ballistic and Cruise Missiles	Launchers	Estimated Range
CSS-2	15-20	5-10	3,000+ km
CSS-3	15-20	10-15	5,400+ km
CSS-4	20	20	13,000+ km
DF-31	<10	<10	7,200+ km
DF-31A	<10	<10	11,200+ km
CSS-5	60-80	60	1,750+ km
CSS-6	315-355	90-110	600 km
CSS-7	675-715	120-140	300 km
DH-10	50-250	20-30	2,000+ km
JL-2	Developmental	10-14	7,200+ km

Figure 5. China's Missile Forces[205]

As noted earlier, the CSS-5 is believed to be the modified version of the DF-21 missile. Most likely, China would have to deploy nearly three-fourths of its CSS-5 launchers to create an effective first strike attack against U.S. space assets, and it could be further assumed that it would have deploy to nearly all the launchers to successfully create an attack under these conditions.

Not only would China's space attack preparation be difficult to hide from surveillance satellites, it appears that it could not create a gap in coverage thus creating a window of opportunity, allowing it to set in motion an anti-access strategy. The other Sea Power 21 mission area such as Sea Strike and Sea Shield appear to be supported by civil use satellites in the event of such losses to U.S. military LEO assets. The Navy Tactical Exploitation of National Capabilities (TENCAP) appears to supplement space assets lost after such an attack. The purpose of TENCAP is to exploit the current space assets of the nation and the information they provide to the Navy commander when needed.[206] "Bottom line of the program is to make the information form the national assets readily available to the commander."[207] The U.S. Imagery Intelligence (IMINT) community has

205 United States Department of Defense, *Military Power of the People's Republic of China*, 2008, 56.

206 Navy Tactical Exploitation of National Capabilities (TENCAP) FAS, http://www.fas.org (accessed August 20, 2008).

207 Ibid.

used commercial imaging to as "gap-fillers."[208] National Geospatial-Intelligence Agency (NGA) is the largest customer of GeoEye.[209] GeoEye is the largest provider of commercial imaging; it provides imaging for Google.[210] Early September 2008, GeoEye will launch the GeoEye-1 satellite. The imaging from this satellite will be the best commercial imaging on the market with a 0.41-meter resolution and a three-meter spatial accuracy.[211] In addition to GeoEye, other commercial providers of satellite such as Digital Globe also provide imagery services to NGA.[212] The French company Spot Image is also capable of providing imaging in the event of a loss of LEO space situational awareness. The use of commercial imaging satellites while coupled with the United States imaging satellites creates a fleet of satellites capable of fulfilling the mission of Sea Power 21. The number of dual-use satellites is more than China's missiles and China's space capabilities. The Union of Concerned Scientists has created a graph depicting the number of dual use satellites by country. See Figure 6.

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208 Michael J. Gething, "Imagery Intelligence: Boom Time for Image Intelligence as Digital Exploitation Burgeons," *Jane's* (2001), https://www.janes.com (accessed July 30, 2007).

209 "Obrimage Receives Clearview Contract Award from NGA," March 29, 2004 http://geoeye.mediaroom.com/ (accessed August 18, 2008).

210 Andrea Shalal-Esa, "GeoEye Signs Deal to Provide Imagery to Google," *Reuters*, (August 28, 2008), http://news.yahoo.com.

211 John Craft, "Providing Mapping Capabilities, Spatial Resolution and Geolocation Ability: Geoeye's Next Generation Imagery Satellites," *Geo Information*, vol. 11, no. 4, (June 2008), http://fluidbook.microdesign.nl/geoinformatics/04-2008/, 18-19.

212 National Geospatial-Intelligence Agency (NGA), http://www.nga-earth.org (accessed August 27, 2008).

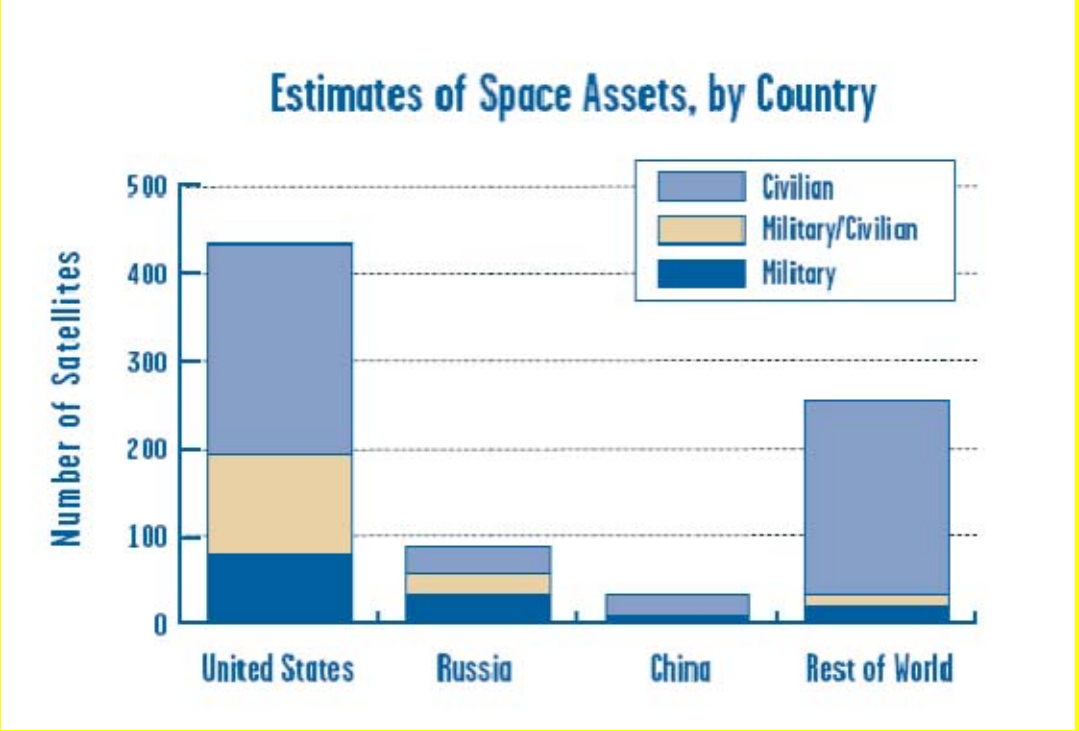

Figure 6. Estimates of Space Assets by Country[213]

2. Maneuvering of Satellites as the Precaution

The maneuvering of satellites can also provide a measure of protection for U.S. reconnaissance satellites. In the 90 minutes required for a LEO satellite to orbit the earth, it passes over the equator at a spot roughly 2,500 kilometers (kms) west of the previous orbit track over the earth's surface.[214] This makes a LEO orbits path highly predictable. See Figure 7.

[213] "Ensuring Space Security," *Union of Concerned Scientists*, (May 2006), https://www.ucsusa.org (accessed August 29, 2008).

[214] David Wright, Laura Grego, and Lisbeth Gronlund, *The Physics of Space Security: A Reference Manual* (Cambridge, MA: American Academy of Arts and Sciences, 2005), 40-42, http://www.ucsusa.org/global_security/space_weapons/the-physics-of-space-security.html, (accessed August 29, 2008).

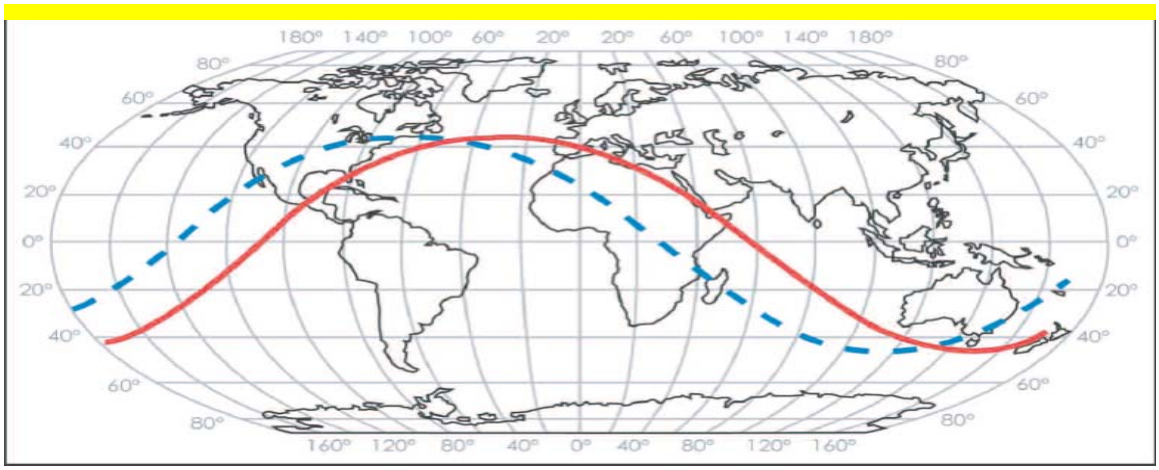

Figure 7. Typical Orbit Ground Path of LEO satellite[215]

Although the orbits of U.S. reconnaissance are highly predictable, it has been pointed out by Norman Freidman that earlier models of the U.S. Key Hole (KH) satellites, KH-11, carried a considerable amount of fuel for maneuvering for ASAT avoidance.[216] KH-11's predecessor, Crystal, is reported to have more fuel and possibly has the ability to be refueled by Space Shuttle crews.[217] Fuel needed to maneuver to avoid Chinese targeting therefore would not appear to limit the United States' ability to maneuver these satellites.

As previously discussed, however, Chinese ASAT deployments may provide the warning necessary to maneuver LEO satellites to further complicate Chinese targeting abilities.

Based on the number of Chinese TELs required for an attack on nine low earth orbit satellites and the option to maneuver LEO satellites, it could further complicate the targeting. Even after a worst-case scenario attack, the United States is left with more imaging assets that can be maneuvered, keeping Chinese TELs unable to predict the satellites track over ground. Therefore, reconnaissance satellite could continue to provide

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[215] Write, *The Physics of Space Security: A Reference Manual*, 31.

[216] Freidman, *Seapower and Space*, 97.

[217] Charles P. Vick, "Improved- Advanced Crystal/ IKON/ "KH-12"," *Global Security*, (April 25, 2007), http://www.globalsecurity.org, (accessed August 25, 2008).

imagery of Chinese force movements. It appears that maneuvering reconnaissance satellites in earth's LEO could allow the U.S. to provide a counter measure against further ASAT attacks.

Creating the worst-case scenario described above for U.S. LEO space assets would be difficult. With the required number of ASAT launchers needed to pull of a sudden attack of LEO assets, it seems highly unlikely that China would be able to position its launchers without being detected first. Due to the predictable track over ground of LEO satellites, intelligence professionals could predict the day of attack due to the disposition of Chinese TELs. Ocean surveillance satellites, NOSS, appear to be more difficult to target due to the fact that these satellite orbit in close proximity to another, so a potential attack affecting the United States naval surface ability to locate enemy ships at sea will most likely remain intact. Reconnaissance satellite are important for surface force operations but a potential loss can be replaced by other assets under Navy TENCAP and other commercial service programs capable of provided excellent detail for naval warfare. Additionally, if China decided to use its ASAT weapon, the U.S. could move its satellites, thus making it difficult for the Chinese to know in advance to disperse its launchers. Table 1 shows how the U.S. Navy uses commercial space assets.

Satellite Name	Operator	Operating Orbit	Number of Satellites	Mission/ Product
Geostationary Operational Environmental Satellites (GEOS)	National Oceanic and Atmosphere Administration (NOAA)	GEO	4	Meteorological
International Telecommunications Satellite Organization (INTELSAT)	Intelsat, Ltd.	LEO/MEO/GEO	53	Communications
International Maritime Satellite (INMARSAT)	Inmarsat Inc.	GEO	10	Communications
LANDSAT	National Aeronautics and Space Administration (NASA) & United States Geological Survey (USGS)	LEO	2	Imagery
Satellite Poor l'Observation de la Terra (SPOT)	Spot Image	LEO	3	Imagery
Tracking and Data Relay Satellite System (TORSS)	NASA	GEO	9	Communications

Table 1. Major U.S. Civilian Satellites in Military Use[218]

3. Attacks upon Global Positioning Satellites

Possible attacks on GPS satellites also appear to be a difficult task; however, if successful, it could be potentially one of the most destructive means to disable the surface force. GPS satellites, the space segment, operate in Medium Earth Orbit (MEO), a range of approximately 12,000 miles. The ASAT weapon demonstrated in January 2007 most likely would not be able to achieve this distance, so one of China's fixed launch sites would have to be used to reach MEO. Currently, China has three operational sites and one is under construction on Hainan Island.[219] Geoffrey Forden's study of this possible scenario concluded that China, using only its three operational launch facilities, could destroy a total of 16 GPS satellites.[220] This could affect the operability of GPS over and around China's periphery for periods of eight hours followed by periods of 16 hours of operability, and this pattern would continue until the U.S. was able to replace these lost

[218] "Major U.S. Civilian Satellites in Military Use," *MILNET*, https://www.milnet.com (accessed August 27, 2008).

[219] Xin Dingding, "New Carrier Rocket Series to be Built," *China Daily*.

[220] Forden, "How China Loses the Coming Space War (Part 2)."

satellites.[221] However, with a fourth launch site China could be able to take out more GPS satellites and create a larger time period without GPS coverage. In addition, according to the Sinodefense website, China is currently developing another ASAT weapon called the KT-2 and KT-2A that is capable of reaching geosynchronous orbit.

An attack on GPS assets appears to potentially be most limiting to naval operations. Almost all areas of the Sea Power 21 concept would be affected. China could use this inoperability of U.S. GPS to launch deadly attacks against U.S. surface forces while U.S. combat teams are adjusting to acquire situational awareness.[222]

However, U.S. reconnaissance satellites could easily view the large missiles in plan site as China's Second Artillery readied them for launch. On average, it takes 18 hours to fuel these missiles.[223] More than likely, constant U.S. reconnaissance satellites overflight would notice this reading process. If all three or four launch sites appeared to be readying for a possible attack, the U.S. could exercise an option to launch a pre-emptive attack, taking these facilities out of commission, and the survivability of reconnaissance satellites could provide the imagery necessary to maintain situational awareness of the Chinese deep space launch facilities. If targeting of GPS satellite were to be successful, naval surface forces would still be able to employ weapons. Although precision strike missions might be degraded, ships will still switch from a true bearing to a relative bearing. Advance warning may provide U.S. forces to shift to non-precision weapons options and begin to base position data on GPS sources.

4. Attacks on Communication Satellites

A preemptive attack on U.S. communication satellites could appear to be much like a preemptive attack on GPS satellites. Just like GPS satellites, communication satellites are located in deep space, GEO orbit. Reaching GEO orbit requires larger missiles that most likely need to be launched from a fixed facility. The readying of these

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221 Forden, "How China Loses the Coming Space War (Part 2)."

222 For a possible scenario see: "The Race for Sea Control."

223 Forden, "How China Loses the Coming Space War (Part 2)."

missiles most likely would be exposed to reconnaissance satellites. Therefore, reconnaissance satellites provide the first warning against an attack on communication satellites.

If an attack centered on communication satellites it does not appear that China could disable all communication satellites. First, the launch facilities cannot launch enough missiles in comparison to the number of U.S. military communication satellites. Second, if U.S. military commutation satellites were to be taken out, more than likely Navy TENCAP could enable to the immediate use of civil satellites to fulfill the communication needs. For example, during Operation Iraqi Freedom (OIF), the U.S. military was able to transfer over 14 billion bits per second using 84% of civil satellites. [224] Most of the U.S. satellites military and civil satellites in Figure 6 are communication satellites.

FORCEnet is mostly dependent on communication satellites, so it can be assumed that the robust U.S. communication satellite system could support this need.

E. CHAPTER III CONCLUSION

China would find it difficult to create a successful surprise attack on U.S. low earth orbit space assets, and if conducting a covert attack, would have limited success. The PLA would most likely need to position its TELs throughout China in advance, but due to the predictable orbit of low earth orbit satellites intelligence annalists would foil the coming attack and maneuver the satellites to a safe orbit, avoiding Chinese targeting and the ability to maneuver the TELs into position to pose a threat. Targeting NOSS satellites would prove harder to conceal. If attacks were to occur, Navy TENCAP could quickly be used to apply overlap coverage in place of the lost assets. Recent PLA Second Artillery exercises are aimed at foiling the U.S. ability use reconnaissance satellites to track movements. If reconnaissance satellites are secure, attacks on other space assets are more difficult to achieve. Any attack to the space segment of GPS would have to be initiated from a launch facility capable of reaching medium earth orbit. This would require missiles to most likely be readied and fueled out in the open for reconnaissance

[224] Forden, "How China Loses the Coming Space War (Part 2)."

satellites to view. China is known to be developing a fourth deep space launch facility and the KT-2 ASAT missile that can reach GEO orbit. If China were able to conduct an attack on GPS satellites it could cripple the U.S. naval surface force, therefore, space reconnaissance of China's launch facilities is critical for the ability of the Navy to promote its Sea Power 21 concepts with the threat of attacks upon the GPS space segment. Lastly, due to the similar reasons of deep space launch, attacks on communication satellites would be nearly impossible to conduct without indications and warnings. With the continued commercial use of communication satellites in U.S. military operations, China will find it nearly impossible to cripple the communication infrastructure. China could not successfully attack U.S. space assets and create a shift in the balance of power. Although it appears that China might contain an offense dominate position due to its possession of ASAT weapon, it has in fact incorrectly measured its ability to create a shift in the balance of power.

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IV. CONCLUSION

This thesis examines Chinese perceptions concerning its ASAT weapon and the operational implications of the ASAT weapon concerning the U.S. Navy surface forces. Within a strategic theoretical dimension, the reality of the Chinese ASAT weapon is considered with regards to its ability to create an operational advantage that is thought to influence the decision to go to war. The thesis focuses primarily on the Chinese perception that they may be able to create a temporal situation that could favor its offense capability by using an ASAT weapon, offense defense. It also explores if the Chinese perception of offense dominance is real, or imagined to be real, as viewed through the lens of Stephen Van Evera's Offense, Defense and the Causes of War Theory. It shows that China's sense of being able to shift the strategic balance in its favors was not real, but was incorrectly assessed. This incorrect assessment is known as false optimism. False optimism leads states to join wars that they would not normally if they foresaw the outcome. History has demonstrated the false optimism is the cause to many wars. Now that China possesses the ASAT the likelihood of war breaking out in the Taiwan Strait is greater than before.

China's sense of offense dominance has been created by aggregate factors leading to offense dominance, and in all of these areas China's concerns run counter to U.S. interests. Additionally, China's sense of false optimism is a result of its continued secrecy and its emphasis on being able to use the first strike maneuver to create a shift in the strategic balance between it and the United States. China will possibly use its ASAT weapon against the United States when it has decided that reunification with Taiwan cannot be achieved through peaceful measures and U.S. naval forces are in the region to promote stability.

Chapter II demonstrated that China's position were at odds with the interests of the United States, thus creating the need to develop the means to counter power projection capabilities of the United States. The ASAT weapon appears to be a logical outcome of its military modernization, and one that allows them to perceive that they are closer to being able to fight a war under conditions of information.

China's interest in reunifying with Taiwan is the driving forces in developing weapons capable of blunting U.S. military power, especially the U.S. Navy. China's geographical ambitions and its continued legislation to reunite with Taiwan are evidence that development of the ASAT weapon may be used in a potential confrontation with the United States. China's military modernization and its doctrine imply that is preparing to confront the United States by launching first strike attacks on its space assets. Additionally, China's false optimism is a result of its insistence that it must take a first strike move, yet in order to achieve this shift in the military balance of power it must maintain a level of secrecy. It is quite reasonable to assume that the next time U.S. naval forces are operating near China's periphery due to heightened tensions between China and Taiwan, U.S. space assets could be targeted to create in China's perception a situation of offense dominance.

China's ability to conduct a devastating first strike against U.S. space assets is very limited, as Chapter III explored. This chapter concludes that China will currently find it difficult to create a successful surprise attack on U.S. low earth orbit space assets; therefore making surprise attacks on other space assets nearly impossible. To conduct an attack on low earth orbit assets, the PLA would most likely need to position its mobile launchers throughout China in advance, but due to the predictable orbit of low earth orbit satellites intelligence analysts could predict a surprise attack in the making. Maneuvering the satellites to a safe orbit and avoiding Chinese targeting appears to be a reasonable solution. Potential targeting of NOSS satellites would also prove difficult to conceal. If attacks on space assets were to occur, Navy TENCAP could quickly be used to apply overlap coverage.

Any attack to the space segment of GPS would have to be initiated from a launch facility capable of reaching medium earth orbit. This most likely would require missiles to be readied and fueled out in the open for reconnaissance satellites to view. China is known to be developing a fourth deep space launch facility and the KT-2 ASAT missile that can reach GEO orbit. If China were able to conduct an attack on GPS satellites it could limit the U.S. naval surface force, but not totally cripple ability to conduct offense operations. Space reconnaissance of China's launch facilities is critical for the ability of

the Navy to prevent a surprise attack against GPS and, if overtly attacked give sufficient warning for alternate weapon employment. Lastly, due to the similar reasons of deep space launch, attacks on communication satellites would be nearly impossible to conduct without indications and warnings. With the continued commercial use of communication satellites in U.S. military operations, China will find it nearly impossible to cripple the communication infrastructure.

Naval surface forces would be able to conduct defensive operations if space assets were to become targets. Although the United States might find Chinese launch facilities reading missiles, it appears that conducting pre-emptive attacks would not result. Reading its launch facilities is not an act of war, and most likely, any first strike against the United States would have to follow. U.S. naval surface forces are left with little choice but to wait for a coming Chinese space attack. However, once it has become obvious that China is willing to risk war with the United States, it will be able to use non-precision weapons in place of precision weapons. Certainly, the ability to conduct joint operations will not be hindered due to redundancy of communication satellites. More than likely the U.S. Air Force will be able to work in tandem with naval forces.

To better protect is interest in space and its ability to project military power, the United States should ensure that it maintains sufficient reconnaissance ability. With the Chinese ability to shot down low earth orbit satellites and the doctrine that appears favoring striking space assets, reconnaissance satellites have now become a more critical element of surface warfare. Most importantly, once space assets have become the targets of Chinese aggression, it should also be assumed that it also embark in other forms of asymmetric warfare that some observers of China's military modernization have suggested.

China is moving closer to what it perceives as being able to confront the U.S. military.

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