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GEO-POLITICAL CONSIDERATIONS TO CHINA'S RISE IN SPACE POWER

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Chinas military space threat to the US hegemon status is real and growing. Evidence of Chinas recent rise in space military capability is evident through their recent anti-satellite (ASAT) demonstrations, robust R&D programs, and national motives to become a regional power. China understands the geo-political importance of using military space as an avenue for regional and worldwide recognition and is posturing itself with a historically-proven military ‗active defense culture within their military space programs. The US response to Chinas emerging threat is slow and under-prioritized. This lack of a response is apparent with a current unbalanced national strategy for China and sub-standard funding levels for significant national and DoD military space acquisition programs. Competing national security priorities such as the GWOT are crippling the ability for the US to provide the best response to overmatch Chinas rise in military space power. Through the use of open source information, this research follows a problem/solution methodology to address the above problems in reacting to Chinas rise in military space. The solution to this problem recommends five building-blocks or steps that if adopted, can enable new US leadership to better posture its national strategy, funding priorities, and its guidance to Geographical Combatant Commanders (GCCs) to adequately address Chinas military space capability. For instance, one recommendation is to implement a stronger military Instrument of Power (IOP) to complement the USs existing diplomatic and economic emphasis with China. To achieve a solution, the US must find a way to encourage China to be more transparent with its military space intentions.

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Preface

I joined the US military space community exactly two months before 9/11. In my last seven years in space force enhancement, space control, and national (ISR) space acquisition programs, the majority of my efforts appeared to support the Global War on Terrorism (GWOT). Supporting the GWOT has been a personally rewarding experience and is no doubt an all important mission for the US and its military. Nevertheless, I often contemplate if there is sometimes too much concentration on this cause at the expense of other emerging space faring nations which we hear about every day in the space community. I am convinced that China is one of these nations, as real-world events and international relations theory often remind us. I propose that the US defense industry and its leaders cannot afford falling victim to the 'six-year-old soccer ball theory', where we all chase after the same problems [the ball] without keeping an eye on the bigger picture, our national space strategy. If China truly is the next competitor to US hegemony, whether economical, technological, or military, it raises the question: how are we as a nation preparing to respond?

I would like to thank two proven space professionals, my research advisors at Air Command and Staff College, Lt Cols Rick Rogers and Brian Tichenor for their feedback and coaching in this endeavor to examine a US response to a rising Chinese military space threat. In addition, my advanced space research elective curriculum and fellow space professional peers' insight has proven invaluable in gaining a deeper perspective in modern military space theory and application which helped to enhance this project.

Abstract

China's military space threat to the US hegemon status is real and growing. Evidence of China's recent rise in space military capability is evident through their recent anti-satellite (ASAT) demonstrations, robust R&D programs, and national motives to become a regional power. China understands the geo-political importance of using military space as an avenue for regional and worldwide recognition and is posturing itself with a historically-proven military 'active defense' culture within their military space programs.

The US response to China's emerging threat is slow and under-prioritized. This lack of a response is apparent with a current unbalanced national strategy for China and sub-standard funding levels for significant national and DoD military space acquisition programs. Competing national security priorities such as the GWOT are crippling the ability for the US to provide the best response to overmatch China's rise in military space power.

Through the use of open source information, this research follows a problem/solution methodology to address the above problems in reacting to China's rise in military space. The solution to this problem recommends five building-blocks or steps that if adopted, can enable new US leadership to better posture its national strategy, funding priorities, and its guidance to Geographical Combatant Commander's (GCCs) to adequately address China's military space capability. For instance, one recommendation is to implement a stronger military Instrument of Power (IOP) to complement the US's existing diplomatic and economic emphasis with China. To achieve a solution, the US must find a way to encourage China to be more transparent with its military space intentions.

GEO-POLITICAL CONSIDERATIONS TO CHINA'S RISE IN SPACE POWER

"There is no American consensus about how we should deal with growing Chinese power. Nor is there a unified US government strategy for doing so."

- Ambassador Chas W. Freeman Jr.

Introduction

At the dawn of the 2009 Obama administration, the new commander in chief has a full foreign policy agenda with a focus on deterring worldwide terrorism, hunting down al-Qaeda and Osama Bin Laden in Pakistan, stabilizing Iraq and Afghanistan, quelling Iran's nuclear efforts, repressing Israel and Palestine conflicts, and massaging a resurging Russia.[1] With these foreign policy distractions, it would be unfortunate and regrettable if relations with China move downward on the President's list of national security priorities. Even though current foreign relations with China appear to be admirable, China's recent economic rise and specifically, its rise in military space power, is beginning to deserve as much attention as other foreign policy issues, so much so that it should be elevated in the national strategy of the United States.

The purpose of this research is to address US shortfalls in national strategy and defense space funding which are required to adequately respond to China's rise in military space power. This US response to China's military space power warrants a deeper look at geo-political considerations. Failure to concentrate adequately on the East Asia region may result in unintended consequences of accepting too much political and military risk with China.

Using various open source researched information, this paper will attempt to answer two underlying geo-political questions with respect to China and its rise in space power. First, do US leaders believe China's claim that national motives for developing space power are for peaceful purposes—in other words, should the US view the build-up as an act of stabilization in the region or an act of war? If the answer is the latter, then US leadership must answer a second

question of what is the appropriate US strategic response to China's rise in space power and is that response curtailed by precedence given to other competing defense priorities.

To support the paper's thesis, this research will incorporate a qualitative problem/solution methodology. The problem presented is that China is an aggressive space-faring nation and the US is not developing effective national strategy and space policy to deal with the problem. The five-step solution suggested by this research includes strengthening the national strategy and national space policy with a focus on using space a deterrent to China's rising threat. Implementation of this solution would aim to instill an increased commitment to adequately fund appropriate space acquisition programs to successfully overmatch the Chinese space threat.

To dissect this problem/solution, the research will first frame the problem by exploring the threat of China's rise in military space power and their geo-political intentions involving space capability to further national interests. Second, the paper will explore why China's rise is a growing dilemma for the US by looking at an unbalanced National Security Strategy (NSS), National Defense Strategy (NDS), Quadrennial Defense Review (QDR), and National Space Policy. Third, it will investigate how funding other priorities such as GWOT come at the expense of space acquisition programs. Finally, the research will propose a five-step solution for the national strategy to contest China's emerging threat.

The Threat: China's military space build-up

"Space is now considered to be one of China's 'strategic frontiers'…military satellites are now legitimate targets in war."

- Steven Lambakis, author, *On the Edge of Earth, The Future of American Space Power*

Now more than ever, China's military, economy, and resource consumption is growing at a monumental pace. China has the desire to become a world recognized regional superpower in

the 21st century. As a result, China is posturing itself with a 'peaceful rise' grand strategy that will eventually compete with the US for hegemon status. Polls show that half of the American public believes China will pose "the biggest challenge to U.S. world power status in the next hundred years."[2] Robert Kagan, in an article entitled "*What China Knows That We Don't"*, contends that China aims "in the near-term to replace the United States as the dominant power in East Asia and in the long-term to challenge America's position as the dominant power."[3]

China's recent rise in space capability can be attributable to three areas: one, by its recent booming economy, second, by its recent technological revolution, and third, by its cultural ideology or tradition. Economically, China has the 4th highest GDP in the world with $3.3 trillion dollars, only slightly behind Germany and Japan compared to the US.[4] Technologically, ever since the late 1990s, the Chinese continue to focus on a fundamental restructuring of its defense industry evidenced by its shifting control of defense enterprises from the military to the civilian government.[5] Culturally, China will likely choose to remain consistent with its 'People's War' strategy to only engage in military action when they know they can succeed. China is therefore building up its space military capability to support this cultural ideology.

Addressing China's economy as justification for their military space build-up, Joseph Nye in *Paradox of American Power* believes that *"*as long as China's economy does grow, it is likely that its military power will increase, thus making China appear more dangerous".[6] With its newfound economic prosperity, China has nearly doubled military expenditures over the course of the 1990s.[7]

The second motivating factor of a technical revolution stems from an increase in China's technical education. The West is beginning to take notice of China's higher education system with its large increase in number of Chinese secondary education graduates. China's graduation

rate has approximately quadrupled in the last six years.[8] According to the National Science Foundation in 2007, "it is widely recognized that there will be substantially more PhD engineers and scientists in China in 2010 than in the United States, as China produces three times the number of engineers per year."[9] These results are beginning to pay off militarily for China. In addition to a massive re-modernization effort of its conventional military, the People's Liberation Army (PLA) revamped its Research, Development, Test and Evaluation (RDT&E) program and funding to concentrate on "new concept weapons" such as laser beam, electromagnetic, microwave, and nanotechnology.[10] This education and technical revolution is similar to what the US experienced during the Cold War arms race where the Soviets were "ahead in missile development and number of submarines, and closing the gap in aircraft, more efficient in R&D, leading in space, and turning out scientists and engineers at a faster pace."[11]

The third influential factor for China's rise in military space build-up is its cultural ideology and obligation of past military history to defend their homeland. One of China's fears in that defense is the simultaneous strengthening of two US-led Pacific alliances with Australia and Japan that Beijing believes is developing an anti-China focus.[12] China has a long history of employing an 'active defense' strategy to protect its homeland and interests. [13] Therefore, cultural ideology may ultimately dictate China's eventual use of their space military capabilities.

While it is understandable that economic, technological and cultural reasons may justify China's 'peaceful' build-up of space capability, US leaders ought to scrutinize China's military motives. China knows there are "important political, security, and economic benefits tied to space" and may choose to defend these gains at any cost.[14] China views US space platforms as a strategic center for America's defense architecture and is looking to match, suppress, or surpass this capability.[15] The PLA has been carefully absorbing and reacting to US published material

on space warfare and counter-space operations and is even developing its own doctrine for warfare in space.[16]

Furthermore, Chinese political leaders have been reluctant to discuss their military (space) modernization strategy, which reinforces US suspicions about Chinese intentions.[17] This lack of transparency with the Chinese keeps the US guessing whether China has a true space control advantage, and will likely result in the US overestimating China's true space capability. US leadership needs to better understand where China is heading with their newfound economic prosperity and what end-order military effects result from this financial success.

While China's political leaders are reluctant to disclose their motives, the PLA has often been open with its intention to dominate space. In a March 2007 statement to the US-China Economic and Security Review Commission, Mary Fitzgerald claimed that Chinese military scientists stated and believe that "whoever loses space loses the future."[18] Fitzgerald contends that the Chinese believe that space warfare will become the "core of future non-contact combat" and that without space dominance, a nation-state puts itself in the disadvantageous position of "being defeated first and then going to war."[19] Her recommendation to the commission warned that with China's immense progress in new concept weapons such as lasers, "America should cease to be complacent about the sanctity of its orbital assets".[20]

To truly assess whether or not China's build-up of military space capability is a legitimate threat to US national interests, US leaders must first ask whether or not they view China's space build-up as peaceful acts towards regional stability or as an act of war. Jim Oberg, the author of *Space Power Theory*, contends that "the Chinese government has obviously selected space operations as an area to prove their status as a modern great power."[21] Oberg's

opinion aside, a look at the recent unclassified facts of China's recent infatuation with military space build-up is necessary to form an independent assessment.

On 11 January 2007, China demonstrated ground-based offensive anti-satellite (ASAT) capability by shooting down one of its inactive weather satellites. No advance notice of the test was given, nor has China convincingly explained the intention of the test, other than that it was for peaceful purposes.[22] This act needs to serve as a wake-up call for the US acknowledging China's rise in military space power. During a Dec 2007 report to Congress, Jeffrey Logan stated that although the ASAT test may have been a strategic demonstration of Chinese deterrence, others may see it as a "nefarious display of China's space capabilities, and a sign that China has more ambitious objectives in space."[23]

The ground-based ASAT test by itself may have proved to be a benign space event, however, when combined with previous statements of space militarization, it strengthens the argument that China may be posturing itself more strongly for space dominance in their region. Two open-source examples are worth mentioning. First, China openly declared the development of "parasitic satellites" as an additional method to deploy an ASAT weapon.[24] According to the latest thinking among Chinese defense professionals, "ASATs are legitimate weapons."[25]

Second, China has made significant offensive military space progress in recent years. Dating back to 1998, a Pentagon report to Congress stated that the PLA was building lasers capable of damaging sensors on space-based reconnaissance and intelligence satellites.[26] Since that time, Larry Wortzel, former director of the Strategic Studies Institute of the US Army War College, confirms that the PLA is exploring a variety of space weapons through theoretical, basic, and applied research. These include: satellite jamming, collisions between space bodies, kinetic energy weapons, space-to-ground attack weapons, high-power laser weapons, high-power

microwave and electromagnetic weapons systems, and particle beam weapons.[27] If these trends are accurate, it appears that the Chinese may be posturing for an *Astropolitik* strategy, or dictum, that "who controls Low-Earth Orbit controls Near-Earth Space. Who controls Near-Earth space dominate Terra [earth]."[28]

In addition to satellite disruption, denial and destruction capability, China is now contemplating space military benefits of strategic bombing with their new unmanned space plane under development, named the Shenlong. If heat shielding and hypersonic technology prove successful, this vehicle could strategically bomb at will with free maneuver in the transverse region of the atmosphere.[29] According to Richard Fisher, "the development of the Shenlong should be viewed as a second warning of China's commitment to building combat capabilities in space."[30] He further contends that the platform "may be intended to attack targets on earth", or "carry out counter-space combat missions."[31]

Evidence of these types of Chinese military space threats and capabilities armed with the knowledge that China is willing to use them should cause US senior leadership to demand direct answers of China's true intentions for military space application. China's persistent claim that all military space build-up is strictly for peaceful purposes may not satisfy what the DoD learned from the Cold War where the Soviets contended, "that nearly every military space application could be described as peaceful, even the stationing of weapons in space (as a defensive measure, of course)."[32]

Therefore, until the US achieves full, open communication with China, US leadership should posture its military counter-space capability along with its political and economic muscle. By doing so, the US can prepare for the worst-case scenario as recommended in a Dec 2007 report to Congress, "mistrust over space goals and mutual uncertainty should result in the need

for worst-case planning."[33] Furthermore, senior US leaders should re-evaluate their perceptions of China's space military threat to avoid contentment with US's space superiority. As described best in astro-politics, "the lack of an enemy in space is most assuredly causing complacency in the United States, stunting the expansion of its space capabilities."[34] With China's aggressive space military build-up, they may be the very "enemy" that wakes up the US space industry.

The Unbalanced Strategy

"Space is now a contested domain where, without adjustments to our strategy, we may not be able to count on unfettered access to space systems should others persist in their course of developing counter-space weapons."

- Gen James Cartwright, Former USSTRATCOM Commander

If senior US leaders become convinced that China's space militarization is a real and growing threat to our national security, why does our national strategy and policy for space appear unbalanced when addressing China? Perhaps senior leaders are not fully convinced that China is a serious military threat and rather choose to view the Chinese as a friendly global trading partner. This perception is understandable since the Chinese continue to seek a large foreign investment in the US economy. As of December 2007, China is the second largest foreign holder of US treasury securities (thereby funding a portion of the US national debt) with $477.6 billion dollars.[35]

Based on a geo-political perspective however, our nation's NSS, NDS, NMS/QDR and National Space Policy need to be more forceful and consistent when addressing China's military space ability. In addition, these national strategies and policy require critical 'adjustments' as the former STRATCOM commander suggested in the quote above in order to enjoy 'unfettered access to space systems' for years to come. Everett Dolman confirms this thought that today's

US space strategy is elusive and contradictory by suggesting that it is "not decisive, guiding, or illuminating."[36]

The latest 2006 NSS document should set the tone for all other strategy, policy and funding. As evidenced in sections six and ten, this document's primary focus on China is that of financial cooperation and globalization challenges rather than pursuing an active military defense against rising or asymmetric space threats. In section eight, 'developing agendas for cooperative action with other main centers of global power', paragraph seven is entirely devoted to addressing East Asia. President Bush refers to the region as one with "great opportunities and lingering tensions".[37] Rather than reading about a military response to an emerging threat however, the strategy chooses to focus almost exclusively on the economic and diplomatic instruments of power (IOP). An example of this peaceful economic partnering with China is to press for open markets, financial stability, and deeper integration.[38]

The 2006 NSS suggests forging new international (economic) initiatives and institutions to spread freedom, prosperity, and security of the East Asia region.[39] Once again, rather than a military build-up solution, the strategy strives for diplomacy and economic prosperity via institution building. An example cited is to form and enhance new arrangements or partnerships such as the US- Association of Southeast Asian Nations (ASEAN) partnership which focuses on problem-solving. While these economic and diplomatic focus areas are an essential step to long term prosperity with China, they do not directly address a near-term response to their rising military (space) capability.

With the knowledge that China is a current and future emerging threat, it is perplexing that the NSS gives the benefit of the doubt that China will continue to operate under a 'peaceful development' umbrella. On this subject, the NSS states:

> China's leaders proclaim that they have made a decision to walk the transformative path of peaceful development. If China keeps this commitment, the United States will welcome the emergence of a China that is peaceful and prosperous and that cooperates with us to address common challenges and mutual interests…The United States encourages China to continue down the road of reform and openness, because in this way China's leaders can meet the legitimate needs and aspirations of the Chinese people for liberty, stability, and prosperity.[40]

It is positive that the NSS later leaves an opening for a US military response if China decides not to demonstrate peacefully. The challenge however will reside in military enforcement of the NSS's warning that "China cannot continue expanding their military in a non-transparent way."[41]

The more recent 2008 NDS is the Secretary of Defense's interpretation of the NSS and guidance to the defense department. It contains five main objectives (and ways to achieve them) and four areas of managing risk in today's strategic environment. This guidance will shape the NMS/QDR and joint campaign planning of military operations. The NDS does a better job than the NSS recognizing China as an emerging threat, one worthy to address militarily. It states,

> China is one ascendant state with the potential for competing with the United States. For the foreseeable future, we will need to hedge against China's growing military modernization and the impact of its strategic choices upon international security. It is likely that China will continue to expand its conventional military capabilities, emphasizing anti-access and area denial assets including developing a full range of long-range strike, space, and information warfare capabilities.[42]

Acknowledging China as a threat is a positive step for the US to answer their military capability. Nevertheless, a shortfall with this strategy is that it neglects near-term military posturing towards China in the near-term. There is more emphasis in the NDS on a future emerging threat towards China than the acknowledgement of a current threat that demands military action today. There are two reasons why the reader of the NDS might assume US leadership's focus on China appears to favor a focus on the long-term threat.

The first is DoD's unclear mention of a Chinese military response in the first five 2008 NDS objectives. With this vagueness, the NDS is accepting China's near-term asymmetric risk in favor of focusing on other global defense priorities and objectives such as defending the

homeland, winning the GWOT, deterrence, and preventing adversarial use of WMDs. The prioritization of these objectives will ultimately drive GCC campaign plan priorities, thereby placing them in a crisis action mode forced to quickly plan for China's space threat if attacked.

The NDS objective of 'promoting security' is the only one of the five objectives that mentions addressing China's threat. In this objective however, the strategy repeats the NSS's theme of a cooperative approach in dealing with China, and similar to the NSS, does not have a clear military response to China. It states, "a critical component of this strategy is the establishment and pursuit of continuous strategic dialogue with China to build understanding, improve communication, and to reduce the risk of miscalculation."[43] The NDS promises that the DoD will "respond to China's expanding military power, and to the uncertainties over how it might be used, through shaping and hedging."[44] The NDS leaves the reader hanging however as it fails to define what types of shaping and hedging to pursue. In fact, the very next paragraph promises to "develop a comprehensive strategy to shape China's choices."[45] From this statement, the reader could infer that the US may not even have a strategy in place to adequately respond to China's current military (space) threat.

In the 'future challenges risk' section, the NDS acknowledges that China is developing technologies to disrupt US traditional advantages.[46] The NDS mentions that in order to hedge against this loss or disruption of these traditional advantages it will handle them with "mitigation strategies" and "alternative parallel means", neither of which are well defined.[47]

Nevertheless, the NDS is on a good path acknowledging China as a potential threat to national security, citing Chinese counter-space threats of anti-satellite attack and cyber warfare. This addition to the NDS opens the way for the US to develop military solutions that counter China's developing counter-space technologies. This acknowledgement could lead to securing

additional DoD counter-space funding and technology development that match China's efforts. Cyber warfare is an important addition to the strategy that should cause US decision makers to consider how to best militarily protect its terrestrial-based control segments of space systems.

The third strategy document worth assessing for evaluation of China's emerging military space threat is the 2006 QDR, in lieu of an outdated NMS. The four priority areas listed in the 'Operationalizing the Strategy' section of the QDR are: defeating terrorist networks, defending the homeland in depth, shaping the choices of countries at strategic crossroads, and preventing hostile states and non-state actors from acquiring or using WMD.[48] In the 'shaping choices' section, China is mentioned as a major and emerging power and that "of the major and emerging powers, China has the greatest potential to compete militarily with the United States and field disruptive military technologies that could over time off set traditional US military advantages absent US counter strategies."[49] This begs the question: what are these US military strategies?

The QDR actually does a good job acknowledging China as a threat to national security, even its counter-space capability; but it too misses the mark with how to respond militarily. With respect to China's build-up it states, "the pace and scope of China's military build-up already puts regional military balances at risk. China is likely to continue making large investments in high-end, asymmetric military capabilities, emphasizing electronic and cyber-warfare; counter-space operations."[50] The QDR chooses to remain focused on US policy by "encouraging China to play a constructive, peaceful role in the Asia-Pacific region and to serve as a partner in addressing common security challenges."[51] This response to China's build-up however lacks military muscle or coercion.

The QDR boasts that the US will work to ensure that all major and emerging powers are constructive actors and will dissuade them from developing "disruptive or other capabilities that

could enable regional hegemony or hostile action against the United States."[52] This strategy may be too little, too late with respect to dissuading China. In part one of this paper, it is arguable that this development has already occurred and is alive and well with respect to China's military space capability. A better strategy towards China would be to focus on dissuading them from employment of space capability *already* developed.

Furthermore, the 2006 QDR suggests diversification of its basing posture "to defeat aggression should deterrence fail."[53] To achieve this objective, the document suggests posturing of conventional platforms and capabilities to include "persistent surveillance and long-range strike, stealth, operational maneuver and sustainment of air, sea and ground forces at strategic distances, air dominance and undersea warfare."[54] Seen here, there is no mention of offsetting China's counter-space activities with US counter-space capabilities.

The last strategy document to assess with respect to evaluating China's military space threat is not strategy at all, but rather the 2006 National Space Policy. This guidance from the President intends to govern the conduct of all US space activities, both civil and military. The latest update has dominant themes of the peaceful notions of space, primarily focused on the civilian sector. The policy's first four guiding principles focus exclusively on space exploration, claims of space sovereignty, and rights of passage in space.[55] The 2006 NSP current policy however is the first of the national strategy documents to suggest a conventional military space response, albeit later in the 'guidance to the SecDef' section. Here, the President gives his #1 guideline to the Secretary of Defense to maintain space control capabilities (in addition to space support, force enhancement, and force application).[56] Promoting this guideline to an up-front principle in the document would make a stronger policy for the military considerations of space. Although this guideline is a positive endorsement in the 2006 NSP, there still lies a disconnect

between the NSP and other defense related national strategy documents as there is little to no mention of maintaining US space control efforts in the NSS, NDS and QDR. The NSP should be more consistent with the previously addressed military strategies of the NSS, NDS and QDR.

US leadership should also consider strengthening the current 'general guidelines to the US government' section of the 2006 NSP with the military IOP. After ten years between updates, the emphasis of the 2006 NSP update still focuses on the civil sector by strengthening the space science and technology base, strengthening US industrial competitiveness, developing space professionals, and encouraging the use of US commercial space capabilities. Guidelines to operationally counter emerging space-faring nations (such as China) should be included.

The Funding

"The U.S. military now has fewer resources to build up the capabilities to win a potential war with China over Taiwan. This is a goal Chinese diplomacy has, on its own, never managed to achieve…until Iraq."

- Steve Tsang, Former Director of the Asian Studies Centre, Oxford University

One assumption why national Strategy may be lacking a solid military response is that by design, guidance from national strategy dictates the prioritization of DoD funding, to include space acquisition programs. If national strategy were to place China as a higher objective over other priorities, or even address a military response more repeatedly, the DoD would place itself in a dilemma to fund programs at the expense of other worldwide priorities such as the GWOT. It may be easier for senior US leaders to simply assume the risk of a rising China since the US defense budget may not be able to afford the cost of maintaining space superiority over China without sacrificing other national security priorities and programs.

An unintended consequence of assuming this risk however is that national strategy may give the perception of a hollow promise to take action against China's noncompliance if

required. For example, the 2008 NDS promises "we will continue to improve and refine our capabilities to respond to China if necessary."[57] However, the same document claims that "this approach tailors investment of substantial, but not infinite, resources in ways that favor key enduring US strategic advantages."[58] In other words, a proper military response to China may not be affordable, thereby resulting in an overreliance on other IOPs such as diplomacy and economics to deter aggression.

According to the Office of Management and Budget (OMB), the US government expected to spend $661.9B on the GWOT through 2008 (see appendix A).[59] In FY08 alone, the DoD requested $483B to cover its peacetime costs and an additional $141.7B to cover FY08 costs of the GWOT.[60] Of the DoD total yearly budget, roughly $25-30B is for defense related space programs.[61] According to a 2006 Congressional Research Service study, annual US space budgets (classified and unclassified combined) in recent years have averaged around $20B per fiscal year.[62] Needless to say, this is a small percentage of the overall defense budget for a mission area that provides so much promised yet proven capability to support the warfighter.

Compare the US defense spending trend with that of China. China's defense budget rose 17.5 percent in 2008, gained 19 percent in 2007 and a record 20.4 percent in 2006.[63] While these percentage increases in China's defense spending equates to only $45-58B, it represents the biggest jump in more than a decade for China.[64] The fact remains that China's defense budget is only a tenth of the US defense budget, but it is not the total amount that matters, but rather the constant, sustained growth trend that should cause US leaders and policymakers to take notice. In Oct 2006, the Chinese (civilian and military) space budget reportedly broke the $2B mark, but could be higher.[65] According to a speaker at a recent Center for Naval Analysis (CNA)

corporation conference on China's space program, their true military space position is "less clear relative to other players" and "the Chinese military space budget is similarly opaque ."[66]

Based on US national priorities, funding GWOT may come at the expense of a fully funded US military space program. Achieving the objectives of GWOT requires a financial and political commitment to fight a long, protracted war which can choke limited DoD budget resources for years to come. According to an analysis of the 2008 defense budget, even if the number of US troops deployed in GWOT operations drastically reduces over the next few years, the total amount of funding for the GWOT could reach nearly $1 trillion by FY 2016.[67] Many of these defense dollars for GWOT are being taken or re-shuffled at the expense of other DoD programs, such as space, which are desperately needed to counter emerging threats such as China. Recent programs such as the Air Force's Transformational Satellite (TSAT), space radar, and the NRO's Broad Area Space-based Imagery Collector (BASIC) program de-scoping or cancellation are proof that US space capability is feeling the pressure of funding required to sustain the GWOT.[68]

These trends will likely continue if the Obama administration continues to focus on GWOT priorities (over other threats) possibly giving lesser priority to US defense space programs. The opinion of some that satellite acquisition has not been efficient in recent years may exacerbate and further prohibit additional US military space program funding. In a November 2008 article in the *Space Review*, Dwayne Day submits that "despite the fact that our security depends upon them, there is little public outcry of the fact that, as many Defense officials and others concede, the military and intelligence space programs are a total mess."[69]

Thomas S. Moorman, Booz Allen Vice President and former Vice Chief of Staff of the US Air Force, believes the US is slowly improving space acquisition efficiencies however.

During a 2007 American Institute of Aeronautics and Astronomy (AIAA) Space Conference speech, he said, "large overruns and Nunn-McCurdy breaches spawned a view "space is broken" and, as a consequence credibility has eroded. From my knothole, I think we are turning the corner on this problem by emphasizing basic blocking and tackling skills and placing a priority on technology maturation, systems engineering, mission assurance and program control."[70]

Despite real challenges with US satellite development and requirements, now is not the time to take an acquisition holiday on funding much needed space programs for our nation. How the Congress and DoD choose to respond to funding space programs in the near future will have a significant impact of the nation's ability to continue contesting China's emerging space capability. An example of how not to respond (in acquisition terms) is evident in the FY 08 DoD budget request. In this request, the Space Based Infrared System (SBIRS) is the only space program mentioned by name as a 'major acquisition program' for R&D and procurement dollars by the Air Force, last on the list after the F-22, F-35, B-2, C-17, and KC-X.[71] None of the other services even mention military satellites as a major acquisition program for FY 08.

Space power cannot afford a similar financial dilemma of cost vs. capability as the F-22 where Congress and DoD continue to de-scope the weapon system. In a February 2008 press release, US Air Force generals insisted that without "an additional $30 billion to buy 200 more F-22 fighters, the United States will lose the world-wide air superiority."[72] Ironically, the Air Force argued the need for "the maximum number of F-22s in the event of a war with China."[73] The root cause of the escalating F-22 price tag has stark similarities with space acquisition programs due to design challenges and cost overrun trends because of growing requirements of the systems. The F-22 now costs $160 million to build, which is twice the cost of a new, lighter, F-35, and in turn, four times the cost of an F-15C.[74]

Similar to the F-22 claim by Air Force generals, if the space program does not receive continued funding for its national and defense space satellites, it may eventually find itself on the short end of space (vice air) superiority with China. Regardless of this warning however, space acquisition funding is likely to remain relatively flat as is the entire Air Force budget, according to the analysis of the FY 08 defense budget (see appendix B).[75]

With the evidence of waning funding, the DoD by way of national strategy must take a harder look at how it intends to promise national security of space and posture itself for a military response if required. JP 3-14, *Space Operations*, contends that "the purpose of security is to never permit the enemy to acquire unexpected advantage."[76] The emphasis should be on the word 'acquire'. China is on their way developing, procuring, testing, and employing what could eventually be their 'unexpected advantage', which gap will continue to close if the US does not have the right focus on funding space programs that enable this security.

Just how far must this gap decrease before China gains an unexpected advantage or space superiority over the US? In a February 2006 Air University paper entitled "*Chinese Space Superiority?"*, Lt Col Smith suggests that in the event of a US-China conflict over Taiwan, the Chinese do not yet quite have the ability to achieve space superiority over the US due to a lack of persistent ELINT capability, robust navigation, or a space-based missile warning program.[77] Despite these shortfalls of China's space capability, he still insists however that establishing space superiority in the early stage of future combat operations is critical. Smith contends that "the space superiority equation could change dramatically" with China if better ELINT capability were acquired and used in concert with their overhead imagery capability.[78] In this scenario, denying an adversary access to space information becomes essential.

Regardless of the debate of who has space superiority over the East Asia region, it is difficult to ignore China's aggressive rise in military space capability. China already has a notable space capable arsenal of imagery, communication, navigation, remote sensing, meteorology, and previously mentioned offensive anti-satellite capabilities. In addition, a 2006 Pentagon report claimed that the Chinese Huanjing program is fielding up to eight satellites to provide visible, infrared, multi-spectral, and synthetic aperture radar (SAR) imaging capability.[79] Even further, over the next decade, China is planning to eventually deploy advanced imagery, reconnaissance, and Earth resource systems with military applications.[80] This ever-growing space arsenal may close the gap quicker than expected, putting the US's distinct space advantage further at risk.

The Solution

" The United States policy and military leadership must not become complacent…the blinders Americans refuse to remove will establish the very conditions needed for a technologically inferior, space-aware enemy to achieve a military decisive advantage over the U.S. military giant early in this century."

- Steven Lambakis, author, *On the Edge of Earth, The Future of American Space Power*

An analysis of China's military space threat and the mediocre military response outlined in US national strategy, policy and funding is the genesis for suggesting a five-step geo-political solution to better hold this *military* 'decisive advantage' referenced by Lambakis above. The solution to maintain a US space superiority advantage over China must involve a US military show of force backed by solid national strategy, policy and funding of military space programs.

Step 1: ***US leadership should conduct frequent evaluations of its views on China's military space program***

Speaking of China leaders, the President of the United States in his 2006 NSS cautions that they "cannot stay on this peaceful path while holding on to old ways of thinking."[81] US leadership should practice this same advice with respect to their view of China's rising space military capability. Gone should be the days of complacency to the emerging threat of China.

From a novice interpretation of current national strategy and policy documents, US policymakers do not view China's space build-up as a 'front-burner' issue. This is evident as mentioned earlier in the paper under the unbalanced strategy section where national strategic and defense focus areas and objectives, as well as national space policy concentrate almost exclusively on a peaceful development solution to tame China's rise. According to the CNA think tank, it is "quite possible for China to catch up with the United States in, for example, a 20-year time frame."[82] The national strategy and space policy should reflect this sense of urgency. As discussed in part 1, since the Chinese are intent on developing their space capabilities, keeping an eye on their new space development and making sure the US is matching it with requisite capabilities of its own becomes even more imperative.

The final consideration of step 1 is the timeliness of national strategy and policy revisions. While frequent intelligence assessments are likely given on China's space threat to US leaders and policymakers, the follow-on guidance and policy on how to effectively use the best mix of IOPs for China cannot afford to wait every other year or every four in the form of a national strategy or policy update. Instead, a specific space policy for addressing China's space capability should be developed and kept current for military and political leaders to reference often. If a US government over-consumed with other foreign policy matters prevents the creation of a China-specific policy, they should seek out reputable past performers such as the RAND cooperation to propose a suggested single strategy to address China.

Step 2: ***Adjust the national strategy and space policy to include stronger military space IOP solutions for China***

The military IOP is typically the last of the four employed by the commander in chief, usually after diplomacy, economic sanctions, or information operations fail to produce their desired effects. Nevertheless, proper military courses of action developed in campaign planning depend upon clear, unambiguous and relevant strategic guidance to initiate the process. The new Obama administration should consider all national strategic and defense guidance, documents and policy for better standardization and implementation of the military IOP. This includes a clearer understanding of military desired end states in the East Asia AOR and desired US national interests in the region, specifically with China.

First, when updating the NSS in 2010, after a thorough threat analysis of China's military capabilities, the POTUS should give just as much credence and consideration for the military IOP as it currently does the diplomatic and economic partnering ambitions. If the threat warrants, the next NSS should get tougher on China and more practical in addressing their realism-based intentions often disguised under China's 'peaceful development' umbrella. Simply pursuing the status quo 2006 NSS strategy of peaceful, cooperative ties with China will not fully answer China's rise in (space) military power.

Although the incumbent Defense Secretary remains at the helm of the department under the new administration, there is still room for improvement with respect to the NDS and how it addresses China's threat militarily. As an example, the NDS could have better balance between its stated current objectives and how it proposes to manage current and future risk. The NDS should strengthen its position that China is not merely a future threat, but deserving of a

contingent military response today. The next update to the NDS should raise the priority on US space control to better posture its own space forces to address China's space military capability.

As a fall-out of the NDS, the next CJCS-driven QDR or NMS should be updated to include space assets or capability to its 'deter conflict' section, to "aid the ability to prevent attack" and "respond decisively to any attack" in dissuading potential adversaries.[83] US military counter-space power can help achieve this critical objective and add to other deterrents mentioned in the QDR such as a solid nuclear arsenal and missile defense. Therefore, the NDS should contain stronger language in line with National Space Policy on the President's number one guidance to the Secretary of Defense on space control and space force application missions.

As pointed out in the unbalanced strategy section, the 2006 National Space Policy is not without its need for adjustments as well. The one aspect of the policy that should not change is keeping the counter-space guidance to the SecDef. This guidance should however make its way into the NSS since the POTUS is the author of both documents. As previously suggested, the next National Space Policy should include additional guidelines to militarily counter emerging space-faring nations such as China. In addition to the right to self-defense of US space assets for peaceful purposes, the National Space Policy should include a dictum to demonstrate the ability to offensively deny an adversary access to space, especially in times of war or if US space assets are known to be threatened. This policy change would essential advocate an inclusion of offensive counter-space to the current, defensive only counter-space military option.

Step 3: ***Increase national and DoD space budgets as funding for GWOT decreases, even if a US-China military space race ensues***

Although it is not clear how long the Long War (GWOT) will consume a good portion of the annual US defense budget, increasing DoD funding to space programs is critical not only in supporting the GWOT, but also in deterring threatening space-faring nations such as China. The argument to maintain the space control advantage is emphasized from General Thomas D. White's statement, "capability to deter war is enhanced by the ability to control space and that, in future wars, space control will be coequal with air and sea control." [84] Today's DoD budget however does not reflect an equal funding stream of air-land-sea-space and cyber domains.

In order for the US to be successful with deterring China's rise in space power, they need to be first to the punch – they must establish and maintain an aggressive offense to develop, procure and posture US military space assets similar to the effort given during the nuclear arms race of the Cold War. Leading space theorists such as Jim Oberg and Everett Dolman suggest that weaponizing space is inevitable.[85] If this is to be the case, the US cannot afford to lose this race of controlling space. Oberg agrees that the US cannot afford to lose this opportunity (to be the first to field them), otherwise it will likely find itself held hostage to the state that does.[86] Whatever the solution, a geo-political consideration to tactfully assess this space race is required so as not to diminish the years of good economic relations with China.

The US cannot be first to the punch without the proper care, feeding, and funding of its space acquisition programs. Consistent with rebalanced national strategies and space policy, the DoD along with the Air Force should re-prioritize requirements for programs that support both the GWOT long war and emerging space threats such as China. Strategy and policy changes should drive funding allocation justified by events such as the recent Chinese ASAT shoot down. At the time of the event, STRATCOMs General Cartwright told a Senate subcommittee that China's test showed that the US needed to invest in a variety of systems such as "quick ground-

based counterstrikes to disable enemy anti-satellite jammers and lasers, and better space-based sensors to detect these attacks"[87] Events such as these should drive more funded requirements, not just more requirements for space systems.

A final consideration for this step of the solution with China is to continue aggressive R&D funding with experimental military space and counter-space efforts such as those led by the Air Force Research Lab and Defense Advanced Research Projects Agency. If two months of GWOT funding truly does equal an entire year of the US defense space budget, increased funding to these types of R&D centers and space acquisition product centers is a small price to pay to maintain the upper hand over China in emerging space technology. With an increase of funding, however, the efficiency of the space acquisition workforce and its programs must find a better path of rigor and execution to keep space programs on schedule and within budget.

Step 4: ***Provide relevant space guidance to PACOM AOR campaign planners***

Steven Lambakis, the author of *On the Edge of Earth, the Future of American Space Power*, hits the mark on how military planners should prepare for asymmetric threats such as China's military space capability. He asserts that "the United States lacks the luxury today of focusing on a single threat, meaning that there is always the possibility that the next enemy will not accommodate US defense planners by choosing the 'right site' for a crisis or battle."[88]

US campaign planners in the PACOM AOR are likely to provide our nation's first military response in responding to a Chinese military space attack. Therefore, these planners must have the best available course of action relevant to the threat at hand. In order for a credible PACOM AOR plan to be established, US employment of the military IOP for space should be included in the center of gravity (COG) analysis, phasing and lines of operations with

applicable counter-space decisive points, and branches or sequels for the joint force commander's consideration.

Due to China's emerging space threat, the PACOM GCC (as do all GCCs) deserves clear guidance from national strategy. To make informed military decisions, they need to understand from a space perspective, what DoD space capability is required to defend a given AOR. They need to know if the DoD has the proper military space capability to respond, and whether civilian leadership is willing to accept the risk of losing critical US military space assets in a given conflict. Explicit guidance will help the GCC posture for an asymmetric or preemptive space attack from China.

Step 5: ***Push for space cooperation with China to increase transparency and reduce 'worst-case' planning***

Once a solid revised national strategy, robust space acquisition funding levels, and GCC contingency plans are in place, US decision makers and warfighters need to know when and how to best employ them. To help dictate the execution of a solid national strategy and application of US space power, US leadership must gain and maintain a constant sight picture into China's true military space ambitions. In a similar light with current US national strategy's predominant theme of economic cooperation and partnering with China, US leadership should also push for open and honest international dialogue on space capability.

Interaction between US-China military space development and employment activities should have a purpose to find mutual benefits for both countries' military space programs. For example, sharing information on heat shielding or hyper-sonic technologies could extend benefits into each country's civil space program and economy as well. In turn, cooperative efforts in space R&D may lead China scientists to be more open with their military space

applications. It is short-sighted to believe that Chinese transparency will improve simply by establishing a strong economic partner since each country has realist intentions to first consider.

A barrier to achieve openness with China's military space intentions may likely continue to be a challenge or a product of their culture. US diplomats may never successfully change China's nature of keeping their opponents guessing by holding information close hold or employing surprise tactics. Engrained in this culture is Sun Tzu's mantra "to subdue the enemy without fighting is a skill."[89] From a space cooperation perspective however, perhaps a bilateral agreement with China's space community, focused on mutual benefits could be a tool that embarks on a path of transparency of their military space program.

Conclusion

The research in this paper endeavored to frame a real security threat facing the US military today and in the near future, that of a rising military space capability in China. Through a realism-based lens, this paper framed a national security problem by exploring China's national strategic ambitions for space, and a sample of their recent military space developments and actions. This problem continues with evidence of unbalanced US national strategic guidance and policy towards China which drives a lack of adequate US military space program funding.

To consider China's military space threat, US leaders can begin by referring to military guidance given in JP 3-14, *Space Operations.* It admonishes the US military to know the adversary and to understand their access to, use of, and dependency on space systems. It gives commanders a warning to "maintain awareness of threats to space forces in their AORs and take measures to preempt or counter those threats in order to preserve US freedom of action in, and access to, space."[90] This estimate is ever so true with the military space threat of China today.

To consider the unbalanced national strategy which drives the funding, US leaders can follow recent principles behind the 2008 NDS. Explaining the intent of the 2008 NDS, Defense Secretary Gates suggests that, "the defining principle driving our strategy is balance" and that the DoD "must set priorities and consider inescapable opportunity costs."[91] The national strategy indeed needs to set China as one of these priorities to better seek this balance. If not, the US will miss the opportunity to be fully prepared to combat China's space capability when called upon.

This problem deserves a more specific US strategic and military response to maintain the space edge to overmatch China's emerging space threat. The response is one of complexity, due to the dilemma of choosing national security priorities and funding of the GWOT at the expense of other defense priorities such as military space. Despite its challenges however, the solution to this problem begins with US leadership re-evaluating their view of China's military space capability, followed by including stronger military space IOP guidance in its national strategy, and then by increasing funding to US defense space acquisition programs. These steps will then allow GCCs across the globe to fully plan and incorporate space capability into their campaigns. All of these steps may be of limited worth however if the US cannot find a way to cooperate with China and gain more transparency into their true intentions of military space.

China's military space threat is real. The US national response should be just as real. Near-term US strategy, policy and funding are critical requirements to provide a more tangible, realistic strategic response to emerging threats from space-faring nations such as China. To posture US policymakers with an appropriate military space response, the recommended five-step solution offers one approach to analyze certain geo-political implications of the current and future situation of China's rise in military space power.

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APPENDIX A

Increasing Support for Defense Operations in the Global War on Terror

(in billions of dollars)

Enacted							Enacted To Date	Request		Total
2001	2002	2003	2004	2005	2006	2007		2007	2008	
9.3	8.3	62.2	62.0	100.5	114.5	70.0	426.8	93.4	141.7	661.9

Note: Funding levels exclude budget authority for Operation Noble Eagle that covers homeland defense and civil support missions in effect since the terrorist attacks on September 11, 2001. Levels include funding for the Intelligence Community.

Source: Office of Management and Budget on FY 08 DoD budget

APPENDIX B

Department of the Air Force Budget
(budget authority in billions of dollars)

Year	2002	2003	2004	2005	2006	2007	**2008**	2009	2010	2011	2012	2013
Current $	100.2	125.2	125.5	127.9	141.7	134.1	**136.4**	142.6	144.4	147.5	150.2	152.2
FY 08 $	120.3	146.0	141.8	139.8	149.2	134.1	**136.4**	139.0	137.3	136.9	136.1	134.5
% of total	*29%*	*29%*	*27%*	*26%*	*26%*	*26%*	***28%***	*28%*	*28%*	*28%*	*28%*	*28%*

Source: CSBA, June 2007. Based on DoD data

List of Abbreviations

AIAA	American Institute of Aeronautics and Astronomy
AOR	Area of Responsibility
ASAT	Anti-Satellite
ASEAN	Association of Southeast Asian Nations
BASIC	Broad Area Space-Based Imagery Collector
CJCS	Chairman Joint Chiefs of Staff
CNA	Center for Naval Analysis
COG	Center of Gravity
DoD	Department of Defense
ELINT	Electronic Intelligence
GCC	Geographical Combatant Commander
GDP	Gross Domestic Product
GWOT	Global War on Terrorism
ISR	Intelligence, Surveillance and Reconnaissance
IOP	Instrument of Power
NDS	National Defense Strategy
NMS	National Military Strategy
NRO	National Reconnaissance Office
NSS	National Security Strategy
OMB	Office of Management and Budget
PACOM	Pacific Command
PLA	People's Liberation Army
POTUS	President of the United States
QDR	Quadrennial Defense Review
R&D	Research and Development
RDT&E	Research Development Test and Evaluation
SAR	Synthetic Aperture Radar
SBIRS	Space Based Infrared System
STRATCOM	Strategic Command
TSAT	Transformational Satellite
WMDs	Weapons of Mass Destruction

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