1AC Non-Satellite Assets – GREENHILL

## 1AC Plan

**Plan: The United States federal government should ensure a substantial increase in space-effects with non-satellite assets in space beyond the Earth’s mesosphere.**

## 1AC Deterrence

**Current reliance on satellite assets undercuts hegemony’s effectiveness and makes a space attack inevitable**

**Rendleman, Air Force Colonel, 10** - Colonel, U.S. Air Force (Retired), (James, Astropolitics, 8:220–255, 2010, “A Strategy for Space Assurance,” Ebsco Political Science)

The 11 January 2007 test of a Chinese ground-based, direct-ascent anti-satellite (ASAT) kinetic-kill interceptor against one of their own defunct weather satellites generated considerable angst across the United States space community. The 2007 test demonstrated that the importance of space capabilities is also their Achilles heel, that is, their deadly weakness in spite of overall strength; it is far too easy to neutralize space systems and their power. In the broad strategic context, space capabilities have their own set of unique, inherent vulnerabilities, which are largely the result of orbital mechanics. This invites destruction, damage, and even just mischief delivered by even the least significant adversary. However, other nations may seek to deny U.S. advantages in space through a variety of negation and prevention actions.

Negation Threats

Satellite systems consist not only of spacecraft, each with their own payload and bus, but also a supporting infrastructure—ground control stations, tracking and control links, commonly referred to as the tracking, telemetry, and control (TT&C) links, data links, launch facilities, and an industrial base. Each of these components is at risk to threats of physical and cyber attack, and sabotage, and can be negated, simultaneously or each in detail. The satellite payload, bus, links, and infrastructure can be negated by using a variety of permanent or reversible means to achieve one of the five possible effects, known as the ‘‘five Ds’’—deception, disruption, denial, degradation, and destruction.5

Space-based threats proliferate as a result of the ever-growing global availability of technology and access to the space domain. There are huge incentives for states to invest in and use space, and the spread of space technologies has occurred. States with sufficient resources can now reach out to space and ‘‘touch’’ satellites through a variety of means, and achieve one and even more of the five Ds. Spacecraft are vulnerable to direct ascent weapons as demonstrated by the Chinese ASAT test, and to a variety of other groundbased, airborne, and space-based ASAT technologies. Direct-ascent launched, or orbit-based nuclear devices, can be detonated, generating radiation and other lethal effects to destroy unshielded electronics over a wide lethal range. Co-orbital ASATs could be employed, comparable to the old Soviet system that was tested extensively in the 1970s and early 80s. In a less likely scenario, space-borne mines can also be deployed in close proximity to spacecraft, or exploded to generate debris clouds that destructively engage whole classes of satellites in the same orbital plane or in crossing orbits. Ground, space-based, or airborne lasers could be used by adversaries to wreak havoc. Blinding operations could be executed and inflict effects ranging from temporary ‘‘dazzling’’ to permanent burnout of optical or other sensors with intense energy bursts.

Ground systems, supporting communications, and their nodes, are vulnerable to diverse land, sea, or air kinetic attacks, including sabotage. Unprotected systems are also susceptible to electronic attack through jamming and electromagnetic deception techniques. Jammers emit signals that mask or prevent reception of desired signals; these methods can disrupt uplinks, downlinks, and even cross-links. By disabling the means of command and control, and data communications, jammers render satellites inoperable or unavailable. Electromagnetic deception techniques can be employed to confuse systems; this could include sending false, but deceptively plausible, commands that cause spacecraft to perform damaging or wasteful maneuvers, modify databases or execute configuration changes, or otherwise destroy it.

Similarly, supporting terrestrial ground stations, computer networks, and links are vulnerable to information operation and cyber attacks. These attacks could involve directing global denial of service tasks, injecting fake commands, malicious software and viruses into the space system, performing unauthorized monitoring and disclosure of sensitive information (data interception), and causing unauthorized modification or deliberate corruption of network information, services, and databases.

In sum, there is a wide span of kinetic and other types of attacks an adversary could consider and employ. There is potential that even non-state actors can access some of these technologies and space systems, and achieve several of the five Ds; however, it is unlikely they can obtain and then employ a full-spectrum of these means and achieve all of these effects. Conducting an attack within the space domain involves a rather substantial investment to develop, acquire, operate, and sustain needed shooter, sensor, and command and control systems. Given the scope and commitment needed to affect such a move, an on-orbit attack would probably be made only in the context of a larger strategic struggle, perhaps as a prelude to or part of early combat operations. On the other hand, inexpensive jamming technology is available to even the poorest potential adversaries. As such, jamming poses the most used and growing threat to space systems. Some argue that jamming also carries with it implicit political and legal sanctions since no major space power has moved to ban or make even temporary and reversible jamming illegal. This may change now that a number of nations have banned together to object to recent Iranian satellite jamming.6 Cyber adversaries and criminals are also beginning to hone their craft. They present an evolving threat to space systems; and like jamming, cyber threats can be developed and deployed for only modest investments.

Prevention Threats

Prevention actions generally involve economic, political, informational, and diplomatic instruments of national power. For example, an extremely large creditor nation could employ its considerable economic clout and leverage in an attempt to compel or blackmail the United States to not license or permit imaging of its territory, preventing its use, and reducing its exposure to such observation. The creditor nation could seek to accomplish its objective by destabilizing the world market place. It could refuse to purchase treasury offerings that underpin the burgeoning U.S. fiscal and trade deficits, perhaps arguing that remote sensing, especially commercial remote sensing, of its territory infringes on its territorial and sovereign rights, or that it constitutes ‘‘unlawful’’ industrial espionage, and is thus, an unfair trade practice.7 Commercial remote sensing systems are nowan important resource for the United States Government and its national security needs. U.S. Government orders help sustain and stabilize the remote sensing industry,8 and any limitations on activities, whether for U.S. Government customers or commercial ones, imposed in response to external economic threats could evolve to cause problems. In an alternative scenario, a state, acting through political allies and proxies, could exert considerable influence and dominance to affect a change in U.S. law. This change could restrict licensing of commercial remote sensing imagery, restricting the market place and impacting business models for producers.9

As a diplomatic prevention example, adversaries could attempt to use international forums and treaties to deny frequency rights needed by U.S. military or intelligence satellites by making spurious ‘‘paper satellite’’ filings with the International Telecommunications Union (ITU). ‘‘Paper satellites’’ involve ITU applications for satellite orbital slots, many for ‘‘speculative’’ systems that will never leave Earth. These filings can block access to scarce spectrum and orbital resources.10 The ability to place communications and other satellites in geosynchronous orbit (GEO) positions could be held at risk. Some characterize some of these types of actions as a form of ‘‘lawfare.’’ ‘‘The term lawfare describes the growing use of international law claims, usually factually or legally meritless, as a tool of war. The goal is to gain a moral advantage over your enemy in the court of world opinion, and potentially a legal advantage in national and international tribunals.’’11

Prevention actions taken to hobble U.S. space systems are not armed attacks. As is discussed later, the use of force is only authorized under the United Nations (UN) Charter in response to an armed attack, or upon authorization of the UN Security Council. As such, using armed force to deter and defeat prevention actions involving political or diplomatic subterfuge or intrigue may be unlawful under international law. Creative alternative solutions must therefore be found to assure access to space when facing these types of threats.

Implications for U.S. Space Strategy

The wide span of threats poses profound implications for U.S. space strategy and its execution. First, unlike the Cold War era, the United States now confronts a wide array of global actors, all operating with different motivations and incentives, some of which could become potential adversaries who can attack or threaten space capabilities. These state and non-state adversaries exhibit a wide array of political, economic, technical, and social differences. Having many potential adversaries makes each of them harder to understand. This complicates efforts to understand motivations and to influence perceptions for deterrence purposes. These differences, in turn, increase the likelihood of misperception, undercutting strategies to protect access to space capabilities. When one’s attention is divided, deterrent measures that are appropriate for one target may not be useful, or even counterproductive, for another. This requires tailored intelligence efforts, information operations, and transparency efforts in order to avoid or minimize disputes and prevent problems.

Second, the broad array of adversaries exhibit widely varying risk-taking behaviors. Risk-taking behavior can strongly influence an adversary’s perception of a situation. Understanding this phenomenon can lead to better ways of influencing those perceptions. Unfortunately, potential adversaries may not care that space systems offer tremendous value and capabilities to all nations, or care whether conflict in space could create space debris that could cost all nations access to the domain. A strategy to assure continuing access to space assets must therefore be sufficiently flexible to address both risk-averse and risk-taking adversaries. Indeed, potential adversaries may shift from risk-taking to risk-adverse over a relatively short period of time. China may fit in this category. Within a decade or two, it will have its own extensive space-based communications, navigation, and intelligence, surveillance, and reconnaissance satellite constellations, all of which will be integrated into its military operations. No doubt, China will embrace that evolution and become very reliant on space capabilities; this will shift it from an asymmetric competitor to one similar to the United States or Russia. Third, with the demise of the Soviet Union, some political commentators and critics described the United States as a ‘‘hyperpower’’ not just a ‘‘superpower.’’ 12 Though buffeted by recent events involving Iraq, Afghanistan, the Global War on Terror, and the 2008 global financial meltdown, U.S. military supremacy continues. But, that supremacy does not make or guarantee a successful space strategy. Adversaries may believe they have a higher stake than the United States in the outcome of a particular crisis or conflict. Alternatively, the United States stake in the crisis may not be commensurate with the possible cost of involvement by the United States military and the rest of its national security apparatus. The first alternative may encourage mischief by adversaries; the second discourages U.S. action. As a result, adversaries may find threats of U.S. action in response to hostile acts affecting U.S. access to space systems to be non-credible.

Fourth, while the United States has produced superlative space capabilities, it has not produced enough systems ready to survive the new kinetic, exotic, jamming, and cyber threat environment. The vulnerability exists because the spacecraft developed and deployed today are in many ways the same as those originally fielded during the Cold War. During that epic struggle, there was a tacit and then explicit understanding that each superpower would not attack and overwhelm the other’s space systems, except in the direst of circumstances, perhaps during the throes of a nuclear conflagration. Indeed, a number of agreements between the superpowers adopted the understanding and ruled out interference with national technical means, including space assets. This belief in the superiority of space systems and power blinds the United States to the inherent strategic weaknesses and vulnerabilities in these systems. This, predictably, can now be exploited by potential adversaries, such as China, who, with their recent ASAT test, appear more willing to fully explore the technologies needed to expand the limits of conventional war to include the space domain. Consequently, by historically and diplomatically reducing the threat, engineering of some satellite threat detection, attack avoidance, and other defense subsystems have not matured enough so that they are sophisticated, nimble, and robust enough to counter new 21st Century adversary attack capabilities.

**Deterrence failure is inevitable because of satellite reliance**

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The strategy to deter nuclear attack worked throughout the Cold War; the Soviet Union was powerful, but it was also a rational adversary. For this reason, the United States worked hard to understand the culture, goals, incentives, and ideals of the Soviet Union. The Soviet Union was also open to, and reciprocated, U.S. diplomatic engagement overtures. The United States has gained great advantage through development and integration of space capabilities. This has forced potential adversaries to evolve techniques to neutralize this superiority. Attacks on U.S. space systems can be performed through terrorist proxies, third parties, or covert acts that offer perpetrators plausible deniability for damage inflicted. The United States now confronts a diverse set of adversaries, and their rogue leaders are arguably much more risk prone, or perhaps, just oxymoronic, acting deliberately reckless. These adversaries know full well the importance of space capabilities to U.S. diplomatic, military, and economic success. They see that attacking and disrupting space capabilities presents a significant opportunity to deny U.S. national objectives, to retain or expand their own relative power, and to compensate for their own lack of conventional strength.

Deterrence has failed throughout history ‘‘because the object of deterring measures fails to notice them, does not find the measures credible, or is pursuing an agenda sufficiently important enough to its interests that it is prepared to ignore the deterrence attempt.’’30 Given this, the United States cannot depend solely on deterrence to secure itself. It must prepare for the possibility that its measures could fail. Therefore, defenses should also be deployed; though the extent of these should be measured and balanced against their utility, and measured by projected costs, lost opportunity costs, likely effectiveness, and effects obtained in the end.

Deterrence and defense tasks are inexorably linked to each other. As noted by Robert Butterworth, ‘‘Defenses offer protection, while deterrence threatens punishment. Defenses can succeed whether the enemy believes in them or not.’’31 There are a number of active and passive defensive capabilities that can be developed and deployed to protect space systems, particularly against kinetic-kill ASATs and jammers.

**The plan creates credible deterrence by denial- key to access space effects**

**Tomme, 5** (Edward B., 1/2005, Airpower Research Institute, “The Paradigm Shift to Effects-Based Space,” <http://www.au.af.mil/au/awc/awcgate/cadre/ari_2005-01.pdf>, mat)

Near-space can also be a deterrent to opponents’ counterspace efforts, a distinctly strategic defensive mission. Potential adversaries are quick to recognize the US dominance in space, and also quick to recognize our associated space related vulnerabilities. 124, 125, 126 One relatively easy way to negate this dominance would be to explode an exoatmospheric nuclear device. In addition to the destructive electromagnetic pulse (EMP) such an explosion would immediately create, it would also supercharge the Van Allen radiation belts for a period of six months to two years. Military satellites are presumably hardened against the EMP, but the extra radiation doses a satellite operating within the belts would receive could reduce the life expectancy of such a satellite to mere months. Additionally, the enhanced orbital radiation environment would remain lethal enough to delay reconstitution launches for one to two years. 127 Near-space can address these nuclear detonation issues by providing an alternative method for delivering space effects that would be unaffected by lingering space radiation. The availability of these assets could be a strategic deterrent to the intentional launch and high-altitude detonation of a nuclear device. For example, one of the primary space effects that threaten potential adversaries is the US dominance in navigation. Additionally, the availability of precision timing is critical to homeland security. All automated teller machine, credit card, and bank-to-bank transactions are synchronized via worldwide timing; should that timing function fail our economy would be turned off for a significant period of time. Precision navigation and timing are currently performed by a constellation of semisynchronous Global Positioning System (GPS) satellites orbiting at about half GEO altitude, right in the heart of the Van Allen belts. Although the GPS mission is currently accomplished with satellites to ensure efficient global coverage, that is not the only way it can be done. The Air Force Space Battlelab is currently working a preliminary investigation of GPS accuracy augmentation and GPS reconstitution using near-space platforms, and the Air Force Unmanned Aerial Vehicle Battlelab recently conducted a similar investigation that successfully demonstrated the usefulness of a UAV as an aid to GPS navigation in a jamming environment. 128 There appear to be no technical hurdles to either augmentation or reconstitution via near-space platforms, although the number of required platforms would be significantly higher than the existing constellation to provide global coverage. It would appear to be more realistic to envision near-space reconstituting theater-sized regions. The existence of a readily-available, relatively inexpensive reconstitution method for US space effects, GPS via near-space being only one example of the capability, could thus tend to dissuade an adversary from committing to such a politically-charged action as a nuclear detonation when the payoff would be so short-term and the costs so high.

**Even rogue states could take out US assets**

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Spacefaring prowess is a common attribute of the dominant powers in the world today. Special attention must be paid to so-called rogue states that have access to space-related technology and may even be spacefaring but do not have the conventional forces to achieve their policy aims. Those aims tend to be very intense, and these players may seek space weapons as an asymmetric hedge against spacefaring adversaries who may try to coerce them.

The dominant military powers in the world, some of whom are potential adversaries, also tend to be the dominant spacefaring states. Because of the economic benefits and exponential enhancements that spacepower delivers to terrestrial warfighting, those states are under increasing pressure to defend their space systems and to counter those of their potential adversaries. This may lead to a space weapons race and an immediate escalation of hostilities to "wipe the skies" of enemy satellites should war break out between two or more dominant military space powers.29

When assessing the interplay between the spectrum of conflict and the spectrum of belligerents, it may be the case that war between two weak actors will not likely extend into space. However, if the power is perceived to be disparate, a weak actor is far more likely to use space weapons against a powerful state as an asymmetric defensive move.30 A powerful state may counter the space systems in use by a weaker adversary, but it is likely to do so by placing diplomatic pressure on commercial vendors, or executing attacks on their ground stations, or launching highly selective covert attacks on the satellites they use by employing temporary and reversible means.

**Space vulnerability makes war inevitable**

**Smith 11** Colonel and PhD in IR, 11 (M.V., Colonel, PhD in Politics and IR @ University of Reading, Citing Colin Gray, “Chapter 17: Security and Spacepower, Part of “Toward a Theory of Spacepower,” Edited by Charles Lutes and Peter Hays, National Defense University Press, http://www.ndu.edu/press/lib/pdf/spacepower/spacepower.pdf, EMM)

It is a rule in strategy, one derived empirically from the evidence of two and a half millennia, that anything of great strategic importance to one belligerent, for that reason has to be worth attacking by others. And the greater the importance, the greater has to be the incentive to damage, disable, capture, or destroy it. In the bluntest of statements: space warfare is a certainty in the future because the use of space in war has become vital. . . . Regardless of public sentimental or environmentally shaped attitudes towards space as the pristine final frontier, space warfare is coming.20 The strategic value of space to states is not in question. Advanced spacefaring states are already reliant—and moving toward dependence—on space-derived services for activities across every sector of their societies. Spacepower is becoming critical to their styles of warfighting. Likewise, the injury that can be caused to such states by menacing their space systems can be considerable. Given these incentives, the beast of war will either break its chains all at once or stretch them slowly over time.21

**The plan solves vulnerability and prevents an arms race**

**Weston, Air Force Major, 9** (Scott A., 3/1/2009, Air and Space Power Journal, “Examining Space Warfare,” <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj09/spr09/weston.html>, mat)

The main argument for US weaponization of space turns on the inherent vulnerability of space assets and the fundamental need for them to ensure national security and prevent another Pearl Harbor. Space-based weapons and ASAT systems seem to reduce vulnerability either through active defense or deterrence (though that assertion becomes questionable if one takes into account the likely weapons race that would result). They do nothing, however, to address the dependence of military forces upon such systems and create a requirement for a permanent “global fortress” in space. But recently, near-space technologies such as high-altitude unmanned aerial vehicles have shown potential for reducing military dependence upon space-based assets by performing command and control, communication, and ISR missions similar to those conducted by satellites.42 Sensible policy making requires debating the implications of trying to directly defend space assets versus developing alternative military capabilities that would reduce our military reliance upon space and thus diminish the attractiveness of space assets as targets for our adversaries. Though long-term investments, both space-based defenses and near-space vehicles create very different potentials for US space policy. Uncontested control of the high ground of space seems tempting, especially for a superpower. It is unrealistic to base US policy on this school of thought, however, due to the ability of other spacefaring states to counter US interests by developing their own space weapons and beginning a new arms race—or simply bypassing deployed defenses. 43 Though stable, current US space policy cannot last without a strong diplomatic structure. The rise of another nation to challenge the United States in space will surely alter the status quo in a manner unacceptable to us. Bruce DeBlois articulates a better choice: “The decision to weaponize space does not lie within the military (seeking short-term military advantage in support of national security) but at the higher level of national policy (seeking long-term national security, economic well-being, and world­wide legitimacy of US constitutional values).”44 This view uses the current US ability to lead negotiations from a position of authority and power to ensure the creation of rules of the road and, eventually, treaties that will protect US space interests in the future. Combined with existing passive defenses and the development of near-space defenses for addressing security vulnerabilities and requirements, a “space sanctuary” provides economic, political, and even security advantages.

**China is preparing to attack US space assets—that escalates to full-scale war**

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AND SPACE WARFARE,” Ebsco Political Science)

The PLA is exploring in theoretical research, basic research, and applied research a variety of forms of space weapons.77 These include:

. satellite jamming technology;

. collisions between space bodies;

. kinetic energy weapons;

. space-to-ground attack weapons;

. space planes that can transit and fight ‘‘up or down’’ in the upper atmosphere or space;

. high-power laser weapons;

. high-power microwave weapon systems;

. particle-beam weapons; and

. electromagnetic pulse.78

PLA authors credit the U.S. with having the most advanced capabilities in the areas of kinetic energy weapons, particle beam weapons, and directed energy. The PLA does have various forms of jamming capability, and has done a lot of work on the concept of colliding space bodies. The dilemma here for the military theorists or planner in the U.S., is that this is really space science and rocket science. Although Chinese military theory, basic research, and applied research into these areas are transparent, the successes or weapons systems that may become formal programs are not transparent. Regardless of whether the algorithms are correct or not, it is clear that the PLA is serious about space warfare. The destruction of their own weather satellite and the blinding of a U.S. satellite mean they are achieving some success.

PLA theorists think that internal lines of communication are most favorable for successful military operations, whether the offense, defense, or maintaining a logistics chain.79 They see internal lines as superior to the conduct of military operations on external lines.80 The Chinese see their regional position in Asia as superior to that of the U.S. because the U.S. has to fight, communicate, and re-supply along extended exterior lines, while China enjoys interior lines of communication within the range of its aircraft, missiles, and submarine fleet. This means that in a conflict, they would probably use their jamming and antisatellite systems to disrupt American lines of communication, command and control, situational awareness, and efforts at coordination at the extended ranges of military conflict for the U.S.81

One of the most disruptive things the PLA could do, therefore, would be to neutralize the U.S. ability to use tracking and data relay satellites, which provide the global, real time sensor and communications capabilities for network centric operations. The PLA believes that the U.S. is heavily dependent on its satellite systems, more dependent than the PLA. That is changing, however. As the PLA modernizes its own Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4SIR) systems, it is becoming as dependent on space and information systems as the U.S. Therefore, its policies of space control and space deterrence for military purposes are no longer forms of asymmetric warfare. Rather, the contest will be over which force can most effectively disrupt the other’s military operations. Space warfare will likely become an integral part of traditional conflict.

The Implications of Attacks on Reconnaissance Satellites

One problem that begs an answer is whether the PLA is considering the implications of exercising the capabilities it is developing. That is, when researchers consider a form of space warfare, or develop capabilities to be applied in space weapons, are there also PLA officers in the policy or war planning sphere thinking through the implications of employing that capability? If not, an incident could quickly escalate and get out of control, leading to an exchange of weapons or a deeper crisis.

For example, four officers from the PLA’s Second Artillery Command College, in Wuhan, have published an analysis of how to jam or destroy the space-based ballistic missile advanced warning systems of the U.S.82 In their article, the officers note, ‘‘a space borne missile early warning system will play a pivotal role in future space wars.’’83 They set out the capabilities and parameters of the U.S. Defense Support Program (DSP) early warning satellites, including the geosynchronous orbits of the satellite sets, their axis of look, the infrared bands they cover, and their shortcomings. The authors discuss how to destroy the U.S. DSP satellites with other satellites, ground-based lasers, or direct ascent weapons.84 They also have a discussion of how to jam the satellites, their satellite-to-ground transmissions, or to camouflage the infrared radiation emitted by a missile to make it more difficult for the warning satellite to detect an attack.85

In their conclusion, the authors find that maintaining a strategic ballistic missile capability is a powerful deterrent to prevent the U.S. from launching a large scale military attack or intervention aimed at China’s own military operations on its southeast coast, i.e., to intervene in Chinese military operations against Taiwan.86 Their view is that ‘‘destroying and jamming space borne missile early warning systems not only can paralyze such anti-missile systems, but also will help us [the PRC] win the war in space.’’87 The PLA is also aware of the most advanced U.S. synthetic aperture radar imaging systems and are thinking through how to neutralize or jam them.88

The problem in this reasoning is that there is no consideration given to a likely American reaction to the disruption of its missile early warning systems. One possible reaction by the U.S. is that it might well think it is coming under immediate attack and launch its own strike against China’s strategic missile forces. Another reasonable reaction by U.S. forces might be to strike the source of the Chinese attack, particularly if it came from a ground based laser or direct ascent launch. Even if such a reaction by the U.S. used conventional weapons, the PLA may find it has created a deeper crisis that led to an American strike on Chinese soil. These four PLA authors do not seem to have considered the ramifications of their own research.

Space Deterrence

Space power theorists, like Cai, advocate the ability to control parts of space for limited periods. Huang Zhicheng, in reaction to U.S. Air Force Space Command manual AFM 2–2.1, Space Warfare and Countermeasures, develops the concept further, advocating a regime of ‘‘space deterrence’’ to counter American space superiority. 89 For Huang, this shift toward space deterrence mirrors a trend in U.S. space theory.90 Huang defines this as ‘‘the use of strong aerospace power to create or demonstrate a threat to an opponent’s space power to deter that opponent in a practical way.’’91 The goal of this concept of deterrence is to increase the PLA’s power in weapons systems, information gathering, and command and control to improve national warning systems in China, create fear in an adversary, and degrade the adversary’s power.92 The key to achieving this level of deterrence, according to Huang, is to concentrate one’s own economic, military, and science and technology power to ‘‘ruin an opponent’s economy and ability to function in space.’’93 The intention behind the December 2006 blinding of a U.S. satellite by a Chinese laser and the 11 January 2007 destruction of a Chinese weather satellite by the PLA’s own direct ascent kill vehicle is clear when interpreted through this concept of demonstrating space deterrence.94 As Huang concedes, for a deterrent to be credible, one must demonstrate the capability. A deterrent must be demonstrated. It is also important to note that effective space deterrence, as conceived by this writer, includes crippling attacks on information networks and C4SIR systems.

In the future, there could be other examples of space deterrence to let the U.S. and other countries know that they do not have free reign in space or over China. The PLA could demonstrate various forms of jamming. In doing so, the PLA would conduct operational tests of the work being done on jamming synthetic aperture radar satellites. Chinese journals do discuss maneuvering space bodies to intersect in orbit. This type of maneuvering lends itself to accidental collisions between space bodies. China could deny the hostile intent of such accidents, but they still would demonstrate a space deterrent capability.

Conclusions

There are a number of important findings to this research effort. First, in the event of conflict with the PLA, military operations carried out across all the domains of war, ground, sea, air, space, and the electromagnetic spectrum, or information- and cyber-warfare, are likely. Any military operations in space will be part of a more coordinated cyber or information attack on an enemy’s knowledge and command systems. Second, there will probably be strategic warning, even if there is operational or tactical surprise, in any future conflict between China and the U.S. Prior to direct conflict, the PLA and the Central Military Commission will likely justify any of its actions by conducting what it calls legal warfare.95 Third, the concept of legal warfare will be applied by the PRC Foreign Ministry, the security services, Chinese Communist Party liaison Department, and the PLA to exploit political divisions in the U.S. over nuclear testing and space-based weapon systems. Fourth, the PLA will seek to exercise space control in a limited area of conflict. The PLA will probably observe the internationally accepted definitions of commons in space, over 100,000 m, in peacetime. If direct conflict breaks out, altitude limits on space control are off, and any systems carrying adversary military traffic or signals are probably fair game for the PLA.

U.S. Navy Secretary Donald Winter, on a visit to Australia in August 2007, said that the U.S. still wants to understand what the Chinese intention is in its military modernization.96 This concern over how China will engage in military operations in space is really about intentions. There are a number of China’s activities and policy positions coming from Beijing that make it hard to interpret Chinese intent. Among these are: China’s expansive territorial claims, combined with periodic incidents of the use of armed force to reinforce these claims;97 the justification for extending the territorial claims of China into the reaches of outer space outlined in this paper; and the shaping of the ‘‘space battlefield’’ with legal arguments that would justify China’s actions to prevent space observation over its territory.

The U.S. has taken a course with China that is far different from the isolationist and confrontational approach with the former Soviet Union during the Cold War. Both states are heavily involved in trade, economic, and political engagements with each other. Nonetheless, both states are wary of the potential for conflict with the other, and there exist some deep fundamental differences of national interest. Whether one is a proponent of arms control agreements or not, the dialogue between the U.S. and the Soviet Union over arms control and treaties produced a body of mutual understanding that holds up today. The U.S. and the Soviet Union seemed to realize that it is potentially destabilizing to define the upper limits of sovereignty. Thus, neither country interfered with the other’s free passage in space. Also, they agreed that the ability to conduct strategic verification from space stabilized the nuclear balance. No such dialogue has taken place with China. The PLA has either ignored or rebuffed American efforts at such a dialogue. Often, senior military or Chinese Communist Party leaders have told Americans that to engage in such a dialogue is an example of a cold war mentality.98 Yet discussions on these issues are important to clarify the rationales for America’s positions on space and serve as threat reduction measures.

Although China’s intentions are not fully known, they can be inferred from Chinese actions, like the attack on a U.S. satellite with a laser and the destruction of its own weather satellite as a demonstration of capability. PRC intentions can also be inferred from judicious reviews of its military literature. By observing the military capabilities China is acquiring and reading its military literature, it is clear that China’s leaders are preparing as though they may have to fight the U.S. To this end, the PLA is busily preparing the space battlefield in advance with legal arguments, as called for in its doctrine. As a result, there are very sound reasons to prepare to defend American interests in space, to engage in mutual threat reduction measures, and to pursue programs that will ensure that the U.S. military will have access to space in any future conflict.

**Chinese governmental structure makes the risk of conflict uniquely high—the plan is key to prevent a strike that would destroy conventional and nuclear deterrence**

**MacDonald, arms control director, 11** - Senior Director, Nonproliferation and Arms Control Program, U.S. Institute of Peace (Bruce, CQ Congressional Testimony, “MILITARY AND CIVIL SPACE PROGRAMS IN CHINA”, 5/11, lexis)

One characteristic of too many wars in the last century is that they are the result of miscalculation that ignites the tinder of fundamental geopolitical tensions. Averting major power conflict requires skillful management of tensions by senior leaders of the major powers. China has become much more internationally sophisticated, though with important exceptions, in its dealings with the rest of the world than has been true in the past, and this is reflected in its civilian leadership. Unfortunately, the PLA's senior officer corps trails its civilian counterparts in this respect. They have much less interaction with foreign official and travel abroad much less frequently than their U.S. counterparts. This means that the PLA overall views world events from a less knowledgeable and sophisticated perspective, a danger in this increasingly complex world, and could explain, for example, the political "tonedeafness" of the PLA in the manner they conducted their 2007 ASAT test.  
This PLA problem becomes more serious when one realizes that the PLA is organizationally separate from the rest of the Chinese government, and reports only to the Central Military Commission, currently chaired by President Hu Jintao. President Hu, and his likely successors, have no significant military background, and the majority of the CMC's members are top PLA officers, suggesting that civilian oversight of major military decisions and consideration of their larger implications are not as carefully reviewed as in the U.S. government. Normally this would not be too great a concern, but in a crisis this could be dangerous. Add to this the fact that China has no equivalent of our National Security Council, a critically important body for coordinating our security decisionmaking, and one comes away concerned about the relative insularity of the PLA in the Chinese power structure.  
In a crisis, the PLA probably cannot be counted on to show as sophisticated a sense of judgment as one would hope any country's military leaders, even an enemy's, to show. All these problems and many more pose potential threats to internal political stability and Communist Party control, providing ample opportunity for crisis and conflict in the years ahead.  
Overview of The Strategic Landscape of Space  
Space assets, and the communications and cyber links that enable them to function, are the means by which essential national security information is either generated, transmitted, or both. This information is the lifeblood of U.S. conventional military superiority and plays a key role in U.S. strategic nuclear posture as well. As such, these space related assets represent extraordinarily appealing targets in any future conflict, and their relative vulnerability can provide dangerously attractive incentives in a crisis to preempt, escalating to war. Resisting this temptation to attack may be morally virtuous but could be strategically unwise: going first in a space conflict with a nearpeer space adversary appears to offer many advantages, while absorbing such a strike, with all its attendant destruction of military capabilities, and then responding to the attack against an opponent fully expecting such a response, appears to be militarily and strategically quite undesirable.  
As technology advances, the ways of interfering with, disrupting, or destroying information streams in space or supporting space systems will likely increase, as will U.S. and others' dependence upon such systems. Providing defensive options for U.S. space assets should be pursued where appropriate, but most space observers believe that offense has the advantage in space over defense, as General Cartwright observed last May. Cartwright also noted that the challenging issues that space poses has made the Space Posture Review "the most difficult of all the defense reviews" the Obama Administration has undertaken.  
The overall U.S. goal in space should be to shape the space domain to the advantage of the United States and its allies, and to do so in ways that are stabilizing and enhance U.S. and allied security. The United States has an overriding interest in maintaining the safety, survival, and function of its space assets so that the profound military, civilian, and commercial benefits they enable can continue to be available to the United States and its allies. This need not mean that China and others must perforce be disadvantaged by such an arrangement - there should be ample opportunity for many countries to benefit and prosper from a properly crafted system of space management.  
There is an inherent risk of strategic instability when relatively modest defense efforts create disproportionate danger to an adversary, as with space offense. And there is a serious risk of crisis instability in space when "going first" pays off - destroying an adversary's satellites before he destroys yours. We don't know what would happen in a crisis, but the potential for space instability seems high and likely to grow.

**The impact is Taiwan war and nuclear preemption**

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The erosion of the US ability to execute the space threat warning mission has serious implications for US national security to include: the loss of a key early warning indicator of an attack on the US homeland; the loss of space capabilities which would degrade US warfighting effectiveness; the preventable loss of critical high-value satellites, facilities or services; the increased possibility that adversaries could develop new weapons or covertly conduct probing attacks on US space systems; and the lack of a credible means to execute stated US policy in response to an attack against space assets.

One of the most serious impacts of the failure to develop or execute a reliable space threat warning and attack verification system is the loss of a key early warning indicator of an attack on the US homeland or an attack that is part of a major regional action by a near-peer adversary such as an attack on Taiwan by the Chinese mainland. The Japanese attack on Pearl Harbor, whose goal was the destruction of the Pacific Fleet, was not done as an isolated act, but as part of the start of a larger campaign to establish a Japanese Pacific sphere of influence which included the forceful acquisition of US territories. At this time, the Pacific Fleet was viewed as a US center of gravity whose destruction would enable Japan to achieve regional domination and discourage future US intervention. Today, our space-based assets may represent the equivalent of the WWII Pacific Fleet. Further, other nations have stated they view the US reliance on space as a potential Achilles ’ heel and a center of gravity whose destruction or disruption is critical to future military success against the US.44

Although a major attack on the US is not likely, the loss of US space-based early warning capability and ground-based missile warning radars could undermine nuclear deterrence strategy resulting in a devastating miscalculation that the US was vulnerable to a nuclear first strike. The perception that US space capabilities are vulnerable to a surprise attack also weakens conventional deterrence. In the case of a US-China conflict over Taiwan, the Chinese might seek to disrupt or destroy regional space capabilities as part of a delaying strategy to deny US forces access to the region until their military operations were well underway, making the Chinese takeover of Taiwan a *fait accompli*.45

A successful Pearl Harbor-type attack on US space assets would degrade US fighting effectiveness. Today, space represents the ultimate high ground and it is unlikely that a nation, whose military ambitions might provoke US involvement, will willingly cede that high ground. The level of battlespace awareness space-based platforms provide makes any attack using large massed forces difficult to accomplish. The ability to neutralize these platforms would improve the circumstances required to gain a strategic advantage over US and allied forces. As General Lord stated in his Congressional testimony: “A resourceful enemy will look at our centers of gravity and try to attack them. Our adversaries understand our global dependence on space capabilities, and we must be ready to handle any threat to our space infrastructure.”46 With the increased US reliance on space assets for communication, intelligence, surveillance, and reconnaissance (ISR); and command and control of our deployed forces; a successful space attack could significantly delay US response to regional aggression. During Operation IRAQI FREEDOM (OIF), over 60% of theater communications traveled via satellites.47 The Defense Satellite Communication System (DSCS) provided 90% of all protected communications and 70% of all military satellite communications into theater.48 These capabilities significantly enhanced command and control of US and allied forces. Further, the employment of the satellite-based Blue Force Tracker system resulted in an unprecedented level of situational awareness which decreased fratricide and facilitating search and rescue operations and reinforcement operations.49

The United States also maximized the use of the space-based Global Positioning System (GPS) to enable precision weapons delivery, allowing the use of fewer and smaller weapons to achieve effects; to enhance navigation in featureless terrain; and to aid in the location of both friendly and hostile forces.50 General Lord testified to Congress: “Space capabilities are no longer nice to have, but are now indispensable to how we fight and win our nation’s wars.”51 The failure to develop a credible space threat warning system increases the likelihood that a foreign nation would attack US space assets.

The inability to detect and provide timely warning of a space attack could result in the preventable loss of critical high-value satellites, facilities or services. There are a number of scenarios where the timely detection of a threat would allow space operators to intervene, thwarting the attack. In many instances, the ability to find, fix, target and destroy the threat is currently a viable way to counter the attack. However, this is not always possible. In the case of a co-orbital ASAT attack, which involves the launch and maneuver of a satellite into a closing orbit of another satellite to destroy or disrupt it, the countermeasure require a pre-intercept maneuver of the target satellite. The support countermeasures for an attack on space ground facilities include increased physical and information security. Countermeasures for electronic warfare attacks or jamming of the space link segment exist but there is often a significant bandwidth cost when these measures are in effect.52

Degradations to space assets could also occur as a result of unintentional sources such as radio frequency interference or from scientific research such as laser research. In these situations, it is important to locate the source and terminate the activity to prevent loss of the space asset or service. The loss of these capabilities during critical operations could result in operational failure, loss of equipment, resources, and lives.

The inability to rapidly neutralize sources of satellite communication (SATCOM) interference also has national security implications. In the area of airpower employment, successful SATCOM jamming could disrupt the US ability to command and control air assets in theater from geographically separated air operations centers. A delay of even one to two days might jeopardize US ability to support deployed forces. Satellite communication links to worldwide deployed forces are critical capabilities in protecting US security, sovereignty, and military combat capability.

The inability to detect and assess space threats might allow adversaries to develop new weapon systems or conduct probing attacks on US space systems without our knowledge. Although US surveillance technology and systems are more sophisticated today, the US should not assume it will always be able to detect the development of a new weapon. Our experience in post-WW II with the Germans is one example. After the defeat of Nazi Germany, the US and Russia engaged in a race to uncover Germany’s scientific secrets. Major General Hugh-Knerr, deputy commander of the US Air Forces in Europe wrote: “The occupation of German scientific and industrial establishments has revealed the fact that we have been alarmingly backward in many fields of research.”53 Supersonic rockets, nerve gas, jet aircraft, guided missiles, stealth technology and hardened armor were just some of the technologies developed in WWII German laboratories.54 The Soviet Sputnik launches and the deployment of the FOB system are modern examples of technological surprise.55

Today, other nations are working to develop new weapons to counter US dominance and to take the lead in what is termed Fourth Generation Warfare—information war. The current coverage gaps in our space surveillance network, a fragmented intelligence network, a lack of discipline in anomaly reporting, the current inability to rapidly detect an attack on on-orbit systems, and overall erosion over the last decade of the space defense mindset makes it more likely an adversary could develop anti-satellite weapons without our knowledge.

Finally, without a credible space threat warning capability the US will not have the ability to execute stated US policy to counter an attack against US space assets. In 1999, President Clinton signed into law DoD Directive 3100.10, US Space Policy, which specifically declared an attack on US space systems, to include commercial space systems, an attack on US sovereignty.56 One purposes of this policy is to deter an attack on US space assets. However, the lack of a credible space threat warning system undermines this policy. A senior officer in US Strategic Command recently stated that a nation or group could likely interfere with US satellites without fear of retribution.57

**Global nuclear war**

**Hunkovic, American Military University, 9** – American Military University [Lee J, 2009, “The Chinese-Taiwanese Conflict Possible Futures of a Confrontation between China, Taiwan and the United States of America”, http://www.lamp-method.org/eCommons/Hunkovic.pdf]

A war between China, Taiwan and the United States has the potential to escalate into a nuclear conflict and a third world war, therefore, many countries other than the primary actors could be affected by such a conflict, including Japan, both Koreas, Russia, Australia, India and Great Britain, if they were drawn into the war, as well as all other countries in the world that participate in the global economy, in which the United States and China are the two most dominant members. If China were able to successfully annex Taiwan, the possibility exists that they could then plan to attack Japan and begin a policy of aggressive expansionism in East and Southeast Asia, as well as the Pacific and even into India, which could in turn create an international standoff and deployment of military forces to contain the threat. In any case, if China and the United States engage in a full-scale conflict, there are few countries in the world that will not be economically and/or militarily affected by it. However, China, Taiwan and United States are the primary actors in this scenario, whose actions will determine its eventual outcome, therefore, other countries will not be considered in this study.

**Independently, perceived vulnerability causes the US to preemptively strike China—that escalates**

**Tellis, Ph.D., 7** (Ashley, Senior Associate @ Carnegie, Ph.D. from U Chicago, Survival, Autumn, “China’s Military Space Strategy”, ingenta)

Finally, the growing Chinese capability for space warfare implies that a future conflict in the Taiwan Strait would entail serious deterrence and crisis instabilities. If such a clash were to compel Beijing to attack US space systems at the beginning of a war, the very prospect of such a ‘space Pearl Harbor’94 could, in turn, provoke the United States to contemplate pre-emptive attacks or horizontal escalation on the Chinese mainland. Such outcomes would be particularly likely in a conflict in the next decade, before Washington has the opportunity to invest fully in redundant space capabilities. Already, US Strategic Command officials have publicly signalled that conventionally armed Trident submarine- launched ballistic missiles would be appropriate weapons for executing the prompt strikes that might become necessary in such a contingency.95 Such attacks, even if employing only conventional warheads, on space launch sites, sensor nodes and command and control installations on the Chinese mainland could well be perceived as a precursor to an all-out war. It would be difficult for all sides to limit the intensification of such a conflict, even without the added complications of accidents and further misperception.96

## 1AC Hegemony

**Satellite control is impossible and dooms current approaches to space power**

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Security and South Asia Projects (Michael, Toward a Theory of Space Power: Selected Essays, February, <http://www.ndu.edu/press/lib/pdf/spacepower/spacepower.pdf>)

While some have compared space to another "global commons," the high seas, we believe this analogy to be deeply flawed. Warships provide backup for sea-based commerce, but they are essentially instruments of warfighting. Satellites, on the other hand, usually serve multiple purposes in both military and nonmilitary domains. A ship damaged in combat can seek safety and repairs at a friendly port. The debris from combat at sea sinks and rarely constitutes a lingering hazard. Defensive measures are easier to undertake at sea than in space. If space weapons are deployed and used, no nation can expect there to be safe havens in space. And if the most indiscriminate means of space warfare are employed, debris will become a long-lasting hazard to military and nonmilitary satellite operations.

All countries would be victimized if a new precedent is set and satellites are attacked in a crisis or in warfare. As the preeminent space power, the United States has the most to lose if space were to become a shooting gallery. The best offense can serve as an effective defense in combat at sea, but this nostrum does not apply in space, since essential satellites remain extremely vulnerable to rudimentary forms of attack. The introduction of dedicated and deployed weapons in space by one nation would be followed by others that feel threatened by such actions. The first attack against a satellite in crisis or warfare is therefore unlikely to be a stand-alone event, and nations may choose different rules of engagement for space warfare and different means of attack once this threshold has been crossed.

Our analysis thus leads to the conclusion that the introduction and repeated flight-testing of dedicated ASAT weapons would greatly subtract from U.S. spacepower, placing at greater risk the military, commercial, civil, and lifesaving benefits that satellites provide. Instead, we propose that the United States seek to avoid further flight testing of ASATs while hedging against hostile acts by other spacefaring nations.

We argue that realizing the benefits of spacepower requires acknowledgment of four related and unavoidable dilemmas. First, the satellites upon which spacepower depends are extremely vulnerable. To be sure, advanced spacefaring nations can take various steps to reduce satellite vulnerability, but the limits of protection will surely pale beside available means of disruption and destruction, especially in low Earth orbit (LEO). Vulnerabilities can be mitigated, but not eliminated.

Second, the dilemma of the profound vulnerability of essential satellites has been reinforced by another dilemma of the space age: satellites have been linked with the nuclear forces of major powers. Nuclear deterrence has long depended on satellites that provide early warning, communications, and targeting information to national command authorities. Even nuclear powers that do not rely on satellites for ballistic missile warning may still rely on them for communications, forecasting, and targeting. To interfere with the satellites of major powers has meant—and continues to mean—the possible use of nuclear weapons, since major powers could view attacks on satellites as precursors to attacks on their nuclear forces.

The third dilemma of spacepower is that space disruption is far more achievable than space control. A strong offense might constitute the best defense on the ground, in the air, and at sea, but this principle holds little promise in space since a strong offense in this domain could still be negated by asymmetric means. Space control requires exquisitely correct, timely, and publicly compelling intelligence; the readiness to initiate war and to prevent another nation from shooting back; as well as the ability to dictate the choice of strategy and tactics in space. It takes great hubris to believe that even the world's sole superpower would be able to fulfill the requirements of space control when a $1 bag of marbles, properly inserted into LEO, could destroy a $1 billion satellite. The ability of the United States to dictate military strategy and tactics in asymmetric, gravity-bound warfare has proven to be challenging; it is likely to be even more challenging in space, where there is less margin for error.

The fourth overarching dilemma relating to spacepower therefore rests on the realization that hard military power does not ensure space control, particularly if other nations make unwise choices and if these choices are then emulated by others. The United States has unparalleled agenda-setting powers, but Washington does not have the power to dictate or control the choices of other nations.

These dilemmas are widely, but not universally, recognized. Together with the widespread public antipathy to elevating humankind's worst practices into space, they help explain why the flight-testing and deployment of dedicated space weapons have not become commonplace. These capabilities are certainly not difficult to acquire, as they are decades old. Indeed, tests of dedicated ASAT weapons have periodically occurred, and such systems were deployed for short periods during the Cold War. If the weaponization of space were inevitable, it surely would have occurred when the United States and the Soviet Union went to extraordinary lengths to compete in so many other realms. The weaponization of space has not occurred to date and is not inevitable in the future because of strong public resistence to the idea of weapons in space, and because most national leaders have long recognized that this would open a Pandora's box that would be difficult to close.

Much has changed since the end of the Cold War, but the fundamental dilemmas of space control, including the linkage of satellites to nuclear deterrence among major powers, have not changed. The increased post– Cold War U.S. dependence on satellites makes the introduction of dedicated space weapons even more hazardous for national and economic security. Advocates of muscular space control must therefore take refuge in the fallacy of the last move, since warfighting plans in space make sense only in the absence of successful countermoves. Offensive counterforce operations in space do not come to grips with the dilemmas of spacepower, since proposed remedies are far more likely to accentuate than reduce satellite vulnerability.

This analysis leads inexorably to a deeply unsatisfactory and yet inescapable conclusion: Realizing the enormous benefits of spacepower depends on recognizing the limits of power. The United States now enjoys unparalleled benefits from the use of space to advance national and economic security. These benefits would be placed at risk if essential zones in space become unusable as a result of warfare. Spacepower depends on the preservation and growth of U.S. capabilities in space. Paradoxically, the preservation and growth of U.S. spacepower will be undercut by the use of force in space.

**Loss of space effects kills hegemony**

**Marshall, Ph.D., 8** – Science and Security Fellow at the Space Policy Institute of the George Washington University, Ph.D. in physics, non-resident fellow at the Harvard Kennedy School of Government (Will, Astropolitics, 6:154–199, “REDUCING THE VULNERABILITY OF SPACE ASSETS: A MULTITIERED MICROSATELLITE CONSTELLATION ARCHITECTURE,” Ebsco Political Science)

Space assets are one of the most critical ‘‘Achilles’ heels’’ of the current military capability of the United States (U.S.). This is for two reasons: (1) the U.S. military space systems—in particular reconnaissance, navigation, signals intelligence, early warning, and communications systems—are critical to modern military warfare and intelligence; and (2) space systems are inherently vulnerable to attack. This combination is understood at the highest levels and was espoused in the ‘‘Rumsfeld Space Commission’’ with talk of a ‘‘Space Pearl Harbor.’’1 Whether one agrees with the tone, this is a genuine security problem for the U.S. in need of a near-term solution. While there have been numerous papers, and much media and academic attention, in the space security discussion focused on promoting or criticizing space-based weapons,2 there have been far fewer papers and studies offering constructive ways forward that deal with these genuine security concerns in a broader sense.3

The central motivation for this paper is to put forward one key element—the satellite architecture—in an effort to reduce the vulnerability of U.S. space assets. It is hoped that this idea, together with others like it, should stimulate and contribute to a debate on more constructive ways forward for how to achieve space security in the post-Cold war world.

Importance of Space Assets

For better or worse, it is clear that the U.S. military is to some significant extent dependent on its key satellites, which number about 86–105 operational satellites at present. These satellites constitute a significant part of the eyes, ears, and central nervous system of the modern military.4 A practical example that helps to illustrate this is the case of the U.S.-led invasion of Iraq in 2003. First, the decision to go was based in part on satellite imagery and signals intelligence from satellites; whether or not it was interpreted or used correctly is a separate issue. Second, the planning and operation were facilitated by satellite imagery. Third, many planes, ships, tanks, and units’ positions were known through Global Positioning System (GPS) satellites, and even most munitions were guided by GPS. Fourth, the operation was commanded from the U.S. in large part through the use of communications satellites. Perhaps more importantly than any of the functions in the Iraq example, early warning (EW) satellites are the U.S.’s and Russia’s first warning of nuclear missile attack. As Gray classified, space assets have moved from being ‘‘useful and important’’ to an ‘‘indispensable adjunct’’ in the military over the last decade.5

Space assets are definitely used a great deal by the U.S. military, but that does not mean necessarily as strong a dependence as Gray implies. The loss of U.S. space assets could range in its effect anywhere from a loss to the U.S. military in practical operations, to being catastrophic to U.S. security. The former would entail a reduction in operational effectiveness or speed, but fundamentally supposes that back-up systems and/or redundancy allow a near continuation of military capability. The latter scenario would entail an effective disablement of the U.S. military capability from normal operations. In reality, the significance lies between these boundaries, but this is a topic that could benefit from further research.

**The impact is nuclear war**

**Kagan, history prof, 7** (Robert, senior fellow at the Carnegie Endowment for International Peace, *Policy Review,* August/Sept, “End of Dreams, Return of History”)

If the world is marked by the persistence of unipolarity, it is nevertheless also being shaped by the reemergence of competitive national ambitions of the kind that have shaped human affairs from time immemorial. During the Cold War, this historical tendency of great powers to jostle with one another for status and influence as well as for wealth and power was largely suppressed by the two superpowers and their rigid bipolar order. Since the end of the Cold War, the United States has not been powerful enough, and probably could never be powerful enough, to suppress by itself the normal ambitions of nations. This does not mean the world has returned to multipolarity, since none of the large powers is in range of competing with the superpower for global influence. Nevertheless, several large powers are now competing for regional predominance, both with the United States and with each other. [..[. The jostling for status and influence among these ambitious nations and would-be nations is a second defining feature of the new post-Cold War international system. Nationalism in all its forms is back, if it ever went away, and so is international competition for power, influence, honor, and status. American predominance prevents these rivalries from intensifying —  its regional as well as its global predominance. Were the United States to diminish its influence in the regions where it is currently the strongest power, the other nations would settle disputes as great and lesser powers have done in the past: sometimes through diplomacy and accommodation but often through confrontation and wars of varying scope, intensity, and destructiveness. One novel aspect of such a multipolar world is that most of these powers would possess nuclear weapons. That could make wars between them less likely, or it could simply make them more catastrophic. It is easy but also dangerous to underestimate the role the United States plays in providing a measure of stability in the world even as it also disrupts stability. For instance, the United States is the dominant naval power everywhere, such that other nations cannot compete with it even in their home waters. They either happily or grudgingly allow the United States Navy to be the guarantor of international waterways and trade routes, of international access to markets and raw materials such as oil. Even when the United States engages in a war, it is able to play its role as guardian of the waterways. In a more genuinely multipolar world, however, it would not. Nations would compete for naval dominance at least in their own regions and possibly beyond. Conflict between nations would involve struggles on the oceans as well as on land. Armed embargos, of the kind used in World War i and other major conflicts, would disrupt trade flows in a way that is now impossible. Such order as exists in the world rests not merely on the goodwill of peoples but on a foundation provided by American power. Even the European Union, that great geopolitical miracle, owes its founding to American power, for without it the European nations after World War ii would never have felt secure enough to reintegrate Germany. Most Europeans recoil at the thought, but even today Europe ’s stability depends on the guarantee, however distant and one hopes unnecessary, that the United States could step in to check any dangerous development on the continent. In a genuinely multipolar world, that would not be possible without renewing the danger of world war. People who believe greater equality among nations would be preferable to the present American predominance often succumb to a basic logical fallacy. They believe the order the world enjoys today exists independently of American power. They imagine that in a world where American power was diminished, the aspects of international order that they like would remain in place. But that ’s not the way it works. International order does not rest on ideas and institutions. It is shaped by configurations of power. The international order we know today reflects the distribution of power in the world since World War ii, and especially since the end of the Cold War. A different configuration of power, a multipolar world in which the poles were Russia, China, the United States, India, and Europe, would produce its own kind of order, with different rules and norms reflecting the interests of the powerful states that would have a hand in shaping it. Would that international order be an improvement? Perhaps for Beijing and Moscow it would. But it is doubtful that it would suit the tastes of enlightenment liberals in the United States and Europe. The current order, of course, is not only far from perfect but also offers no guarantee against major conflict among the world ’s great powers. Even under the umbrella of unipolarity, regional conflicts involving the large powers may erupt. War could erupt between China and Taiwan and draw in both the United States and Japan. War could erupt between Russia and Georgia, forcing the United States and its European allies to decide whether to intervene or suffer the consequences of a Russian victory. Conflict between India and Pakistan remains possible, as does conflict between Iran and Israel or other Middle Eastern states. These, too, could draw in other great powers, including the United States. Such conflicts may be unavoidable no matter what policies the United States pursues. But they are more likely to erupt if the United States weakens or withdraws from its positions of regional dominance. This is especially true in East Asia, where most nations agree that a reliable American power has a stabilizing and pacific effect on the region. That is certainly the view of most of China ’s neighbors. But even China, which seeks gradually to supplant the United States as the dominant power in the region, faces the dilemma that an American withdrawal could unleash an ambitious, independent, nationalist Japan. In Europe, too, the departure of the United States from the scene — even if it remained the world’s most powerful nation — could be destabilizing. It could tempt Russia to an even more overbearing and potentially forceful approach to unruly nations on its periphery. Although some realist theorists seem to imagine that the disappearance of the Soviet Union put an end to the possibility of confrontation between Russia and the West, and therefore to the need for a permanent American role in Europe, history suggests that conflicts in Europe involving Russia are possible even without Soviet communism. If the United States withdrew from Europe — if it adopted what some call a strategy of “offshore balancing” — this could in time increase the likelihood of conflict involving Russia and its near neighbors, which could in turn draw the United States back in under unfavorable circumstances. It is also optimistic to imagine that a retrenchment of the American position in the Middle East and the assumption of a more passive, “offshore” role would lead to greater stability there. The vital interest the United States has in access to oil and the role it plays in keeping access open to other nations in Europe and Asia make it unlikely that American leaders could or would stand back and hope for the best while the powers in the region battle it out. Nor would a more “even-handed” policy toward Israel, which some see as the magic key to unlocking peace, stability, and comity in the Middle East, obviate the need to come to Israel ’s aid if its security became threatened. That commitment, paired with the American commitment to protect strategic oil supplies for most of the world, practically ensures a heavy American military presence in the region, both on the seas and on the ground. The subtraction of American power from any region would not end conflict but would simply change the equation. In the Middle East, competition for influence among powers both inside and outside the region has raged for at least two centuries. The rise of Islamic fundamentalism doesn ’t change this. It only adds a new and more threatening dimension to the competition, which neither a sudden end to the conflict between Israel and the Palestinians nor an immediate American withdrawal from Iraq would change. The alternative to American predominance in the region is not balance and peace. It is further competition. The region and the states within it remain relatively weak. A diminution of American influence would not be followed by a diminution of other external influences. One could expect deeper involvement by both China and Russia, if only to secure their interests. 18 And one could also expect the more powerful states of the region, particularly Iran, to expand and fill the vacuum. It is doubtful that any American administration would voluntarily take actions that could shift the balance of power in the Middle East further toward Russia, China, or Iran. The world hasn ’t changed that much. An American withdrawal from Iraq will not return things to “normal” or to a new kind of stability in the region. It will produce a new instability, one likely to draw the United States back in again. The alternative to American regional predominance in the Middle East and elsewhere is not a new regional stability. In an era of burgeoning nationalism, the future is likely to be one of intensified competition among nations and nationalist movements. Difficult as it may be to extend American predominance into the future, no one should imagine that a reduction of American power or a retraction of American influence and global involvement will provide an easier path.

**Only a risk of solvency- a space war stops all use of space**

**Forden, 8** - Massachusetts Institute of Technology (Geoffrey, Astropolitics, 6:138–153, “VIEWPOINT: CHINA AND SPACE WAR,” Ebsco Political Science)

If the short-term military consequences to the U.S. were not that bad, the long term consequences to all spacefaring nations would be devastating. The destruction of the nine satellites hit during the first hour of the attack considered here could put approximately 19,000 new pieces of debris over 10 cm in diameter into the most populated belt of satellites in LEO. Even more debris would be put into GEO, if China launched an attack against communications satellites. In the immediate aftermath of the attack, the debris from each satellite would continue to clump together, much as the debris from China’s 2007 test. Over the next year or so, and assuming the space war with China was resolved well before that, the debris fields would fan out and eventually strike other satellites. These debris fields could cause a run-away chain of collisions that renders space unusable from hundreds to thousands of years.14

**Non-satellite assets are more effective than satellites**

**Tomme, 5** (Edward B., 1/2005, Airpower Research Institute, “The Paradigm Shift to Effects-Based Space,” <http://www.au.af.mil/au/awc/awcgate/cadre/ari_2005-01.pdf>, mat)

For peacetime strategic missions, the overflight freedom enjoyed by satellites is of paramount importance, enabling many C4ISR effects that no other platform can perform. However, once war is declared or hostilities commence, near-space becomes the clear choice to achieve the space effects required for many operational and tactical missions; near-space platforms become even more effective once the balloon has gone up, so to speak. During hostilities, airspace sovereignty over enemy territory is no longer a consideration; near-space assets can operate above the same locations that air-breathers can, subject to similar enemy threats. Near-space assets can then provide organic C4ISR. Battlefield commanders desire organic communications and ISR primarily due to the necessity for responsiveness; they require communications and imagery when and where they need it. When a battle is raging, they do not want to have to ask to task assets controlled by other commanders, never knowing for sure if the effects they require will be delivered. 129 They want direct control of the assets so they are guaranteed access when and where they need it. UAVs provide exactly this sort of local control, but the footprint of a UAV can be much smaller than that of a higher-flying near-space asset, and the nearspace platform has the persistence advantage. Satellites are typically so expensive; are procured in such limited quantities; take significant lead times to plan, build and launch; and generally possess such highly classified capabilities that they are centrally controlled by doctrine. 130 “Tactical” control of satellites, while a proposal receiving serious Air Force attention at the present time, 131 appears to be problematic. The largest difficulty seems to be that it is difficult for a satellite to have a tactical mission. A recent RAND Corporation study supports this statement by arguing, “[A]irpower can be global in its reach and ability to impose effects on an opponent, whereas space power, by its very nature, can only be global.” 132 Global effects imply strategic missions. Due to the unavoidable consequences of orbital mechanics, a satellite at other than GEO altitudes cannot remain within view of a single commander indefinitely. Even if one were able to launch a satellite on demand for a particular mission, it would only be in view of that commander for very short bursts of time a few times a day. The accompanying table shows just how short these times would be for selected LEO orbits. 133 No reasonable person would suggest turning off that expensive satellite and only activating it while it is over the theater controlled by the tactical commander who authorized its launch. If it is operating even when not over the particular theater, then someone else might as well be using it. If multiple users can task the satellite, which one is responsible for overall coordination and control? Will a battlefield commander be willing to devote resources to this coordination in the midst of a war? These orbital and mission realities seem to point away from theater control of any asset delivering global effects. On the other hand, near-space assets and UAVs are ideally suited for local control. They are exactly the organic, responsive, and persistent C4ISR platforms battlefield commanders have lacked. Instead of having forward-deployed satellite operating squadrons backed up by CONUS-based satellite launch squadrons, the somewhat convoluted structure envisioned with the original version of Joint Warfighting Space, 134 a theater commander would directly control all of the parts of his near-space assets, including launch, recovery, and the entire duration of flight operations. His ownership would thus extend to the entire mission of the asset. As there would be no stroboscopic pass times, no sharing would be required and no permission for control need be granted. Near-space assets are inexpensive enough for him to own numerous platforms and their associated sensor packages, flying exactly the kinds of packages he requires and giving him the flexibility to tailor his C4ISR effects to his needs at the time. The logistics of such deployments approach those of satellite-centric JWS plans. Squadrons of operators will still need to be deployed. The cost of the flexibility of organic ownership to the theater commander comes with the additional logistics tail associated with taking the near-space equipment with him and with the additional personnel required for planning, launch, exploitation, recovery, and maintenance. However, due to the low weight and small volumes of near-space assets, these costs are expected to be low compared with the additional benefits provided in the way of organically delivered, persistent space effects. Near-space is forward deployed space once the commander realizes that it is space effects, not platforms, which enable his victory. When one looks at the desired tactical and operational space effects, it is evident that there are large niches where near-space assets perform much better than orbital and airbreathing assets. When one understands that it is effects that matter on the battlefield instead of the platform or medium from which the effects are delivered, near-space makes much more sense for many applications. There are also missions that satellites do extremely well, and for which near-space is not competitive. The point is that a layered approach whose goal is to enable space effects in the most economical, effective way will direct the acquisition of the appropriate platform using the appropriate medium, turning the current acquisitions methodology of medium-then-platform-then-effect on its head.

## 1AC Solvency

**No links to generics- ORS is increasing now**

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(John, “Operationally Responsive Space and the National Security Space Architecture”, May, <http://www.afspc.af.mil/shared/media/document/AFD-101019-072.pdf>, ZBurdette)

The Department of Defense (DoD) defines operationally responsive space (ORS) as assured space power focused on timely satisfaction of joint force commanders’ needs. 2 The warfighting effects that are desired include reconstitution of lost capabilities, augmentation of existing capabilities, filling unanticipated gaps in capabilities, exploiting new technical or operational innovations, and enhancing survivability of space systems. In this context, two essential tasks must be accomplished to achieve ORS. First, we must develop and mature end-to-end ORS enablers that will be required to deliver highly responsive capabilities. The second essential task is to execute rapid end-to-end capability efforts to meet urgent operational needs.

We are off to a great start! The Space and Missile Systems Center is successfully applying our “small space” capabilities as enablers in meeting emerging responsive space needs. Consider for a moment our “small space” efforts in the context of the three tiers of ORS. 3

For the first tier, we “employ” ORS capability to meet demand with existing assets in a timeframe of minutes to hours. Options range from re-utilizing current space assets on orbit to partnering with commercial entities to meet warfighter needs. We have seen several successful examples of Tier 1 “employment.” We are finding better ways to exploit data from existing sources. After we launched Space Based Infrared Systems Highly Elliptical Orbit, also known as SBIRS HEO, we realized the sensors on orbit were performing better than expected. We received funding from Congress for a series of independent projects to exploit the data for operational use, with each project not to exceed 24 months. These are small, one to three million dollar targeted efforts. Through better data exploitation, we find that we’re able to get key information to a greater number of operational users more quickly, resulting in earlier missile warning data and enhanced technical intelligence. Additionally, we are seeking partnerships with commercial entities on programs such as Commercially Hosted Infrared Payload (CHIRP) to take advantage of excess payload capacity to attach responsive military sensor packages.

If Tier 1 does not meet the need, we would seek a Tier 2 solution, with “launch or deployment” of on-call assets in a timeframe of days to weeks. Our “small space” efforts already include or have in work a number of enablers that support Tier 2 launch and deployment. Rockets such as Minotaur I and Minotaur IV, built with re-purposed intercontinental ballistic missile components, can be readied for launch relatively quickly and cheaply. A number of commercial entities are working toward faster, less expensive launch services that may provide a viable option for on-call responsive launches. For on-call launch to work, standardized services are becoming available, such as standard interface vehicle, evolved expendable launch vehicle secondary payload adapter, multi-payload adapters, and Hydrazine Auxiliary Propulsion System (HAPS) which can accommodate a variety of multiple payloads.

If an operational need cannot be met with employment of existing systems or launch and deployment of on-call assets, then we must move to Tier 3 “development” of a new or modified capability within a timeframe of months, not years. Operationally Responsive Space Satellite 1 (ORS-1) is a two year developmental effort to meet a central command urgent operational need for an intelligence, surveillance, and reconnaissance (ISR) system capable of direct tasking by DoD. ORS-1 did not come out of a vacuum; again we benefit from previous “small space” efforts. The vehicle is based on our successful Tactical Satellite-3 (TacSat-3) bus mated with an existing airborne ISR sensor, and will be launched on a Minotaur I rocket late this year.

As we work toward development of a robust ORS architecture, we are finding additional value along the way, and have gained a number of key insights in the design and build process. We need to focus on operational capabilities, not single experiments, and consider the transition to operations and sustainment up front. At present, we do not have an operations and maintenance pipeline for these capabilities. An ORS architecture must account for it.

**Non-satellite assets are untrackable and indestructible- even missiles aren’t cost effective**

**Tomme 5** (Edward B., 1/2005, Airpower Research Institute, “The Paradigm Shift to Effects-Based Space,” <http://www.au.af.mil/au/awc/awcgate/cadre/ari_2005-01.pdf>, mat)

Near-space platforms are inherently survivable. They have extremely small radar and thermal cross sections, making them relatively invulnerable to most traditional tracking and targeting methods. Estimates of their radar cross sections are on the order of hundredths of a square meter, about the same as a small bird. They also tend to move very slowly compared to traditional airborne targets, almost drifting on the wind similar to the chaff that modern Doppler radars are designed to ignore. Documented examples exist of sophisticated military airborne radar platforms being unable to find high-altitude balloons. At these altitudes, they are very small optical targets as well, only showing up well when the background is much darker than they are—dawn and dusk. Thus, the acquisition and tracking problem is very difficult even without considering what sort of weapon could possibly reach them at their operating altitudes. Manned aircraft and surface-to-air missiles (SAMs) could be a threat at the lower end of near-space, but even if they were able to acquire, track, and guide on a near-space platform, their probability of kill would likely be low, as will be discussed below. As platform altitudes get higher, the difficulty in delivering a weapon to the target only increases. Very few SAMs are designed to reach above about 80,000 ft, and those that do are most likely not designed to engage a very low cross section, slow, non-maneuvering target at those altitudes. Economics also discourages such an exchange, as the trade between an inexpensive, quickly replaceable near-space platform and even a relatively cheap SA-2 would rapidly become cost-prohibitive. Even if the acquisition, tracking, targeting, and munitions delivery problems are overcome, near-space assets are notoriously difficult to destroy. The way they are manufactured and inflated has a lot to do with their relative invulnerability. Unlike the Hindenburg, which was filled with extremely flammable hydrogen gas, modern balloons are filled with inert helium that does not burn. Balloons are normally manufactured in two basic types: zero-pressure and super-pressure. Zero-pressure balloons are similar to familiar hot air balloons, having a venting system that ensures the pressure inside the balloon is the same as the surrounding atmosphere. The zero in their name refers to the 13amount of overpressure inside of them—being at the same pressure implies no overpressure. Super-pressure balloons are inflated and sealed, much like a child’s toy helium balloon. However, most are generally constructed of strong, rip-stop material and do not catastrophically deflate after puncture as rubber balloons do. Most super-pressure balloons have overpressures of less than a pound per square inch, making them relatively insensitive to puncture damage. Zero-pressure balloons are less vulnerable to puncture, as significant amounts of the lifting gas must diffuse out through the holes before lift is lost. Imagine an inflated, lightweight plastic garment bag used by dry-cleaners floating on the wind. Put even a large number of small holes in such a bag and the bag would most likely continue to float. A recent flight mishap delivered a powerful example of how invulnerable to puncture these balloons are. Canadian scientists lost control of a 100-meter-diameter weather balloon in August 1998. Fighter jets from three nations were scrambled to shoot it down as it first flew across Canada, then the North Atlantic, Norway, Russia, and into the Arctic Ocean. Canadian F-18 fighters put an estimated 1000 20-mm cannon shells into the balloon, which obstinately continued flying for another six days.

**Deterrence is the best theory for war – discard their non-empirical ‘root causes’**

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If major interstate war is predominantly a product of a synergy between a potential nondemocratic aggressor and an absence of effective deterrence, what is the role of the many traditional "causes" of war? Past, and many contemporary, theories of war have focused on the role of specific disputes between nations, ethnic and religious differences, arms races, poverty and social injustice, competition for resources, incidents and accidents, greed, fear, perceptions of "honor," and many other factors. Such factors may well play a role in motivating aggression or generating fear and manipulating public opinion. The reality, however, is that while some of these factors may have more potential to contribute to war than others, there may well be an infinite set of motivating factors, or human wants, motivating aggression. It is not the independent existence of such motivating factors for war but rather the circumstances permitting or encouraging high-risk decisions leading to war that is the key to more effectively controlling armed conflict. And the same may also be true of democide. The early focus in the Rwanda slaughter on "ethnic conflict," as though Hutus and Tutsis had begun to slaughter each other through spontaneous combustion, distracted our attention from the reality that a nondemocratic Hutu regime had carefully planned and orchestrated a genocide against Rwandan Tutsis as well as its Hutu opponents. 158 Certainly if we were able to press a button and end poverty, racism, religious intolerance, injustice, and endless disputes, we would want to do so. Indeed, democratic governments must remain committed to policies that will produce a better world by all measures of human progress. The broader achievement of democracy and the rule of law will itself assist in this progress. No one, however, has yet been able to demonstrate the kind of robust correlation with any of these "traditional" causes of war that is reflected in the "democratic peace." Further, given the difficulties in overcoming many of these social problems, an approach to war exclusively dependent on their solution may doom us to war for generations to come. [\*394] A useful framework for thinking about the war puzzle is provided in the Kenneth Waltz classic Man, the State and War, 159 first published in 1954 for the Institute of War and Peace Studies, in which he notes that previous thinkers about the causes of war have tended to assign responsibility at one of the three levels of individual psychology, the nature of the state, or the nature of the international system. This tripartite level of analysis has subsequently been widely copied in the study of international relations. We might summarize my analysis in this classical construct by suggesting that the most critical variables are the second and third levels, or "images," of analysis. Government structures, at the second level, seem to play a central role in levels of aggressiveness in high-risk behavior leading to major war. In this, the "democratic peace" is an essential insight. The third level of analysis, the international system, or totality of external incentives influencing the decision to go to war, is also critical when government structures do not restrain such high-risk behavior on their own. Indeed, nondemocratic systems may not only fail to constrain inappropriate aggressive behavior, they may even massively enable it by placing the resources of the state at the disposal of a ruthless regime elite. It is not that the first level of analysis, the individual, is unimportant - I have already argued that it is important in elite perceptions about the permissibility and feasibility of force and resultant necessary levels of deterrence. It is, instead, that the second level of analysis, government structures, may be a powerful proxy for settings bringing to power those who are disposed to aggressive military adventures and in creating incentive structures predisposed to high-risk behavior. We might also want to keep open the possibility that a war/peace model focused on democracy and deterrence might be further usefully refined by adding psychological profiles of particular leaders as we assess the likelihood of aggression and levels of necessary deterrence. Nondemocracies' leaders can have different perceptions of the necessity or usefulness of force and, as Marcus Aurelius should remind us, not all absolute leaders are Caligulas or Neros. Further, the history of ancient Egypt reminds us that not all Pharaohs were disposed to make war on their neighbors. Despite the importance of individual leaders, however, the key to war avoidance is understanding that major international war is critically an interaction, or synergy, of certain characteristics at levels two and three - specifically an absence of [\*395] democracy and an absence of effective deterrence. Yet another way to conceptualize the importance of democracy and deterrence in war avoidance is to note that each in its own way internalizes the costs to decision elites of engaging in high-risk aggressive behavior. Democracy internalizes these costs in a variety of ways including displeasure of the electorate at having war imposed upon it by its own government. And deterrence either prevents achievement of the objective altogether or imposes punishing costs making the gamble not worth the risk. 160 III. Testing the Hypothesis Hypotheses, or paradigms, are useful if they reflect the real world better than previously held paradigms. In the complex world of foreign affairs and the war puzzle, perfection is unlikely. No general construct will fit all cases even in the restricted category of "major interstate war;" there are simply too many variables. We should insist, however, on testing against the real world and on results that suggest enhanced usefulness over other constructs. In testing the hypothesis, we can test it for consistency with major wars. That is, in looking, for example, at the principal interstate wars in the twentieth century, did they present both a nondemocratic aggressor and an absence of effective deterrence? 161 And although it, by itself, does not prove causation, we might also want to test the hypothesis against settings of potential wars that did not occur. That is, in non-war settings, was there an absence of at least one element of the synergy? We might also ask questions about the effect of changes on the international system in either element of the synergy. That is, what, in general, happens when a totalitarian state makes a transition to stable democracy or vice versa? And what, in general, happens when levels of deterrence are dramatically increased or decreased?

**Non-satellite assets solve asset modernization and cost**

**Tomme, 5** (Edward B., 1/2005, Airpower Research Institute, “The Paradigm Shift to Effects-Based Space,” <http://www.au.af.mil/au/awc/awcgate/cadre/ari_2005-01.pdf>, mat)

When the cost variable is examined in isolation, near-space has no peer. Their inherent simplicity, recoverability, relative lack of requirement for complex infrastructure, and lack of space-hardening requirements all contribute to this strong advantage for nearspace assets. Requiring only helium for lift, near-space platforms do not require expensive space launch to reach altitude. Over and above the obvious cost savings when the approximately $10,000–$40,000 per payload-kilogram 84 current cost 85 of a space launch is unnecessary, near-space platforms offer other inherent cost advantages compared to satellites.

86If the payloads they carry malfunction, they can be brought back down and repaired; should they become obsolete, they can be easily replaced. Neither of these actions are possibilities for satellite platforms, many of which had their designs frozen ten or more years before launch and are designed to last for another decade. 87 Imagine what capabilities satellites could have if we replaced their twenty-year-old electronics with modern processors.

Imagine the savings when every component does not require thorough testing to ensure perfect functionality the first time in space. 88Imagine the related insurance savings. 89Not being exposed to the high levels of radiation common to the space environment, payloads flown in near-space do not require the costly spacehardening manufacturing steps required of orbital assets. Near-space payloads also are not exposed to high-G forces during launch, as are satellites. Operating in near-space obviously eliminates a great deal of expense involved in space sensor construction. Additionally, the infrastructure cost savings involved with near-space are huge. Nearspace assets require extremely minimal launch infrastructure. Compare the cost of a simple tie-down and an empty field or of an inflatable hangar to building a space launch complex or even to building a hard-surface runway. The elimination of space-hardening 22and space-launch costs enhanced by the ability to repair and upgrade payloads is a powerful incentive to obtain tactical and operational space effects from near-space platforms The low price of near-space assets enables operational commanders to own and control fleets of them for the price of a single national asset. For example, at the low-cost end, free floaters cost much less than $1,000 per platform, excluding payload. The high-end near-space platforms envisioned for tactical/operational use are on the order of a million dollars each, also excluding payloads. These costs are on the order of many individual weapons, not on the order of competitor satellite or UAV systems. Even for a near-space system with primarily a strategic mission, HAA, the $50 million price tag for a production version is less than our current “cheap” TacSat satellites. 90 For example, compare these near-space costs with a typical commercial imaging satellite, Quickbird-1, which cost $60 million in 2000 dollars, 91 and with the military-procured GPS-2 and DSP satellites that cost $60 million and $330 million per unit, respectively, in 2000 dollars. 92, 93 The near-space platform price estimates admittedly do not include the substantial costs of their payloads. However, the quoted satellite costs do not include the substantial costs of space launch for these platforms, currently estimated to be at least $12 million each just to get 1,000 pounds to LEO. 94, 95 Even the highly optimistic 96 Air Force Research Laboratory (AFRL) TacSat goal of designing, building, and launching a satellite in the near future for under $15 million substantially exceeds the cost of obtaining comparable near-space capabilities, especially if you consider the number of satellites that would be required to obtain similar persistence and the fact that the stated mission duration goal for such systems is only one year. 97

**Criticizing Western “imperialism” obscures more insidious practices by regional powers**

**Shaw 2 –** Sussex IR Professor (Martin, The Problem of the Quasi-Imperial State, www.martinshaw.org/empire.htm)

Nor have many considered the possibility that if the concept of imperialism has a relevance today, it applies to certain aggressive, authoritarian regimes of the non-Western world rather than to the contemporary West. In this paper I fully accept that there is a concentration of much world power - economic, cultural, political and military - in the hands of Western elites. In my recent book, Theory of the Global State, I discuss the development of a 'global-Western state conglomerate' (Shaw 2000). I argue that 'global' ideas and institutions, whose significance characterizes the new political era that has opened with the end of the Cold War, depend largely - but not solely - on Western power. I hold no brief and intend no apology for official Western ideas and behaviour. And yet I propose that the idea of a new imperialism is a profoundly misleading, indeed ideological concept that obscures the realities of power and especially of empire in the twenty-first century. This notion is an obstacle to understanding the significance, extent and limits of contemporary Western power. It simultaneously serves to obscure many real causes of oppression, suffering and struggle for transformation against the quasi-imperial power of many regional states. I argue that in the global era, this separation has finally become critical. This is for two related reasons. On the one hand, Western power has moved into new territory, largely uncharted -- and I argue unchartable -- with the critical tools of anti-imperialism. On the other hand, the politics of empire remain all too real, in classic forms that recall both modern imperialism and earlier empires, in many non-Western states, and they are revived in many political struggles today. Thus the concept of a 'new imperialism' fails to deal with both key post-imperial features of Western power and the quasi-imperial character of many non-Western states. The concept overstates Western power and understates the dangers posed by other, more authoritarian and imperial centres of power. Politically it identifies the West as the principal enemy of the world's people, when for many of them there are far more real and dangerous enemies closer to.