

SPACE WEAPONIZATION

***SUBMITTED TO COL D. PEELER AND COL M. PIZZO IN
FULFILLMENT OF US MILITARY STRATEGY AND JOINT OPERATIONS
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SEMINAR O

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It's politically sensitive, but it's going to happen. Some people don't want to hear this, and it sure isn't in vogue ... but—absolutely—we're going to fight in space. We're going to fight from space and we're going to fight into space...

*General Joseph W. Ashy
Former COMMANDER IN CHIEF U.S. Space Command*

The world may be on the verge of a new era of warfare, one where battles are not fought only within the biosphere of the Earth, but also in the space surrounding it. Recent conflicts have shown the tremendous advantages conferred upon those who have the advantage of space-based assets, helping forces navigate, communicate and spy upon their enemies. Some argue that fighting in space itself is inevitable, while others hold that space should be maintained as a sanctuary, free of weapons.

In discussing the expanding role of the military in space, the term weaponization implies an increase in the capability to conduct warfare in, from, or through space. It is appropriate to use the term weaponization, rather than militarization, because both the United States and Russia have already militarized space. Since man's earliest days

in space, intelligence and communications satellites have had military missions. What space has not been, at least to this point, is weaponized.

The purpose of this paper is to explore the arguments for and against the weaponization of space, and the political implications involved. The methodology of this paper will be to summarize both sides of this argument and present the key political challenges at the strategic level. *I hope to convince the reader that after consideration of both arguments, it seems to be in the best interest of the United States to advocate a treaty banning space-based weapons entirely. Given the current international climate of antipathy toward weaponizing space, such a treaty is entirely plausible. Admittedly, space-based weapons are probably inevitable in the long term, however their eventual deployment can probably be delayed for decades, if not longer, with a carefully written treaty.*

POLICY

The United States currently enjoys an overwhelming advantage in space-based surveillance, communications and navigation aids. Protecting these assets and maintaining U.S. dominance in space is potentially critical to the defense of U.S. national interests. As U.S. national space policy indicates, leaders at the highest levels of government recognize this potential vulnerability. The policy explicitly states that national security space activities must deter, warn, and if necessary, defend against enemy attack. It also states “DOD shall maintain the capability to execute the mission areas of ... space control, and force application.” Finally, current policy stipulates that “the United States will develop, operate and maintain space control capabilities to ensure freedom of action in space and, if directed, deny such freedom of action to adversaries”¹.

The leadership of the United States Air Force (USAF) supports this policy and believes that implementing it will almost inevitably require deploying weapons in space. This outlook is evident in numerous speeches and official statements. Even before General Ashy made the statement quoted above, USAF Vice Chief of Staff General Thomas S. Moorman Jr. said in a June 1996 speech: “Undoubtedly the most provocative subject in any discussion of the future of space is the subject of space weapons and the likelihood of their use. Here I am referring to the broadest categories: Space-based lasers to shoot down hostile ICBMs, space weapons that attack other satellites, or weapons

¹ “Fact Sheet: National Space Policy,” (Washington D.C.: The White House National Science and Technology Council, 1996), 1-6.

released from space platforms that destroy terrestrial targets. Today, these kinds of systems clearly break the current thresholds of acceptability ... But the 21st century could well see a change”².

This sentiment was echoed again by the commander in chief of U.S. Space Command, General Howell M. Estes III, in his comments to Congress: “Space remains on the cutting edge—support to our warfighter, even the potential for war itself, is moving from Earth into space”³. This outlook will likely shape U.S. space initiatives in the immediate future.

The pressure toward weaponizing space received additional impetus in response to President Clinton’s recent line-item veto of three space weapon-related programs: Clementine II, the Army Kinetic-Kill Anti-Satellite (ASAT) program, and the Military Space Plane. These cancellations prompted forty-three high-ranking retired military leaders to issue an open letter to the president urging him to change his decision. This letter refers to space-based missile defense and neutralizing enemy satellites as “missions the United States military must be prepared to perform”⁴.

ARGUMENTS FOR WEAPONIZING SPACE

The arguments in favor of weaponizing space center around the fact that the United States relies heavily on space-based assets for both military and commercial needs. Protecting these assets will become increasingly important as access to space becomes cheaper and the technology needed for this access becomes more available. As General Estes said before Congress: “Increased reliance on space systems means improved capabilities, but also new vulnerabilities... The U.S. must be able to control the medium of space to assure our access and deny the same to any adversary”⁵. Retired General “Mike” Loh, former commander of U.S. Air Combat Command, echoed this concern at a recent Center for Security Policy roundtable discussion titled “The Need for American Space Dominance.” In outlining the U.S. dependence on space-based assets, General Loh noted that “It is almost

² General Thomas S. Moorman Jr., Vice Chief Of Staff, USAF, “The Challenges of Space Beyond 2000,” Remarks to the 75th Royal Australian Air Force Anniversary Airpower Conference, Canberra, Australia, 14 June 1996.

³ Air Force General Howell M. Estes III, Commander-In-Chief, North American Aerospace Defense Command and U.S. Space Command; Prepared statement before the Senate Armed Services Committee, Washington D.C., 13 March 1997.

⁴ James A. Abrahamson et al., open letter to President Clinton, dated 15 January 1998, included in The Center For Security Policy press release No. 98-P7, 15 January 1998.

⁵ Ibid.

frightening when you...look at how little we have allowed for the protection...of those assets”⁶. While these statements do not explicitly call for space-based weapons to affect this control, a key underlying assumption of this argument is that space-based weapons are needed to do the job. As a consequence no restrictions should be placed on their development, testing, and eventual deployment.

Another line of argument in favor of space-based weapons, or at least an argument for why they are inevitable, devolves from the fact that every environment accessible to man has eventually become an arena for combat. This line of reasoning was noticeable in then-Secretary of the Air Force Sheila Widnall’s address to the National Security Forum in May 1997: “You have, first off, a fundamental question of whether we will place weapons in space. We have a lot of history that tells us that warfare migrates where it can—that nations engaged in a conflict do what they can, wherever they must. At a very tender age, aviation went from a peaceful sport, to a supporting function, very analogous to what we do today in space—to a combat arm. Our space forces may well follow that same path”⁷. This argument holds that the evolution of warfare will inevitably require placing weapons in space in order to fulfill a multitude of military roles. These roles include defending against ballistic missile attack, defending space-based assets (the space control mission), and attacking terrestrial targets (the force application mission).

Some take the argument a step further, believing that it is probably too late to head off the weaponization of space. Major General Dickman, the DOD Space Architect, made this argument in a 1997 Huntsville address: “To hope that there will never be conflict in space is to ignore the past. As space access becomes routine, ... as national security becomes a matter of information dominance as well as other military strength, the risk-benefit assessment for interfering with space capabilities will change. Tomorrow, space won’t provide a sanctuary for systems that can provide a decisive edge in combat, any more than the air or the ocean depths do today.

⁶ “Summary of The Center for Security Policy High-Level Roundtable Discussion of ‘The Need for American Space Dominance’,” attachment to The Center for Security Policy press release No. 98-16P, 23 January 1998.

⁷ The Honorable Sheila E. Widnall, Secretary Of The Air Force, “The Space and Air Force of the Next Century,” address to the National Security Forum, Maxwell Air Force Base, Ala., May 29, 1997.

Tomorrow, commercial endeavors will look to the government for protection, as they have on land and at sea for over 200 years”⁸.

The main contention of the argument is that space today is analogous to aviation prior to World War I. The transition of aviation from being a support service to being a combat arm will soon be emulated by space systems. Any attempt to thwart this process is not only doomed to fail; it will leave the United States vulnerable to attack from nations that aggressively pursue space weaponization.

ARGUMENTS AGAINST WEAPONIZING SPACE

Today the United States is in an enviable position: it is the only nation on earth that can project non-nuclear combat power to anywhere on the globe. Never before has a single nation had such an uncontested ability to intervene in events around the world. However this capability comes at great expense. From long-endurance submarines to fleets of combat aircraft and their supporting tankers, the physical assets necessary to provide this capability are extensive and were only made possible by a sustained effort during the long years of the Cold War. In addition to the equipment, large numbers of military personnel require years of intensive training and continual practice in order to make the system work. With the demise of the Soviet Union, the United States is free to intervene anywhere that it chooses, so it would appear to be in the best interests of the United States to maintain the status quo.

In developing this world-spanning power projection capability, the United States has come to rely heavily on space-based assets for communication, navigation and surveillance. Protecting these capabilities, and denying an enemy similar ones, is essential if U.S. armed forces are to remain dominant on the battlefield. That doing this requires the development and deployment of space-based weapons does not necessarily follow; in fact, deploying space-based weapons is just as likely to place other space-based assets in jeopardy. Indeed, the proliferation of space-based weapons may even give potential adversaries the ability to strike at the United States without incurring the enormous costs of U.S.-style armed forces. If the United States develops and deploys space-based weapons for controlling space, self-interest dictates that other countries will follow suit. As with other technology, the greatest costs are normally incurred in the initial research and development required to evolve a concept into a weapon. Once a new weapon has been deployed it is much easier, and less expensive, to observe the operational system, determine

⁸ Major General Robert Dickman, “The Evolution of Space Operations and Warfare,” address to AIAA Symposium, Huntsville, Ala., September 23, 1997.

how it must operate, and then duplicate it. By doing this initial research and development, the United States will be paving the way for other nations to follow. The result may well be that assets which are now safe, because no other nation has a pressing need to develop weapons to attack them, will become vulnerable to attack because other nations will feel compelled to emulate the United States and deploy space-based weapons of their own.

The argument against space-based weapons for attacking airborne or surface targets is very similar. If the United States deploys such weapons, other nations may feel compelled to do likewise. In this case, the United States would not only be making a segment of its defense system vulnerable to attack, we could very well make U.S. cities vulnerable. Unfriendly nations with orbital weapons capable of attacking terrestrial targets would be able to strike the United States, or anywhere else on the globe, without investing the tremendous resources necessary to field a U.S.-style military. This would, in effect, negate our present ability to intervene wherever it is in our interest to do so, since a country possessing these orbital weapons would be able to strike back. With the technology necessary to launch satellites even now becoming widely available, the number of countries capable of deploying space-based weapons is growing. This proliferation of technology makes U.S. development of space-based weapons fraught with peril.

In consideration of the arguments outlined above, it seems to be in the best interest of the United States to advocate a treaty banning space-based weapons entirely. Given the current international climate of antipathy toward weaponizing space, such a treaty is entirely plausible. Admittedly, space-based weapons are probably inevitable in the long term, however their eventual deployment can probably be delayed for decades, if not longer, with a carefully written treaty.

POLITICAL IMPLICATIONS

By trying too quickly to arm itself for the future space battlefields, the United States could lose the very peaceful means of getting rid of a few thousands of enemy nuclear warheads without firing a single shot.

Pierre LefevreLe Soir, 22 October 1997:

Deploying weapons in space could usher in a new era in warfare. While some say that this is inevitable, others maintain that space can and should be maintained as a weapon-free sanctuary. As suggested by the passage above, even a limited test against an orbiting satellite can spark international censure. The political repercussions of actually deploying weapons in space are likely to be much greater. If a decision to deploy orbital weapons is to be consciously made, and not merely the unthinking result of technical feasibility, then the political implications must

be carefully weighed. While a thorough discussion of these implications is beyond the scope of this paper, the following overview should familiarize the reader with the most significant points.

Treaty Implications

Any deployment of orbital weapons would have to take into account current treaties regarding the use of space. “The treaties of primary concern are the Charter of the United Nations (1945), the Partial Test-Ban Treaty (1963), the Outer Space Treaty (1967), the ABM Treaty (1972), the Environmental Modification Convention (1977), and the Moon Agreement (1979)”⁹. Taken together, these treaties and conventions prohibit placing nuclear or other weapons of mass destruction in orbit around the earth or the moon, prohibit placing military installations or weapons on the moon or other celestial bodies, and declare that space is to be used exclusively for “peaceful purposes”¹⁰.

Aside from weapons of mass destruction, the treaty implications of deploying orbital weapons are somewhat vague. The preamble to the Outer Space Treaty of 1967 stipulates that space will only be used for “peaceful purposes.” While peaceful purposes are never clearly defined in the treaty itself, the treaty references the Charter of the United Nations (UN), which defines “peaceful purposes to include the inherent right of self-defense”¹¹. The vagueness with which “peaceful purposes” is defined has prompted considerable discussion of its meaning. Interpretations range from banning any type of weapon whatsoever, to permitting purely defensive weapons to be deployed. “None of the proposed interpretations would permit the deployment of offensive weapons in space”¹².

The problem with attempts to limit space-based weapons to those that are defensive is that most space-based weapons—like most other weapons—are difficult to categorize. This fact has been noted by the UN

⁹ For a more thorough discussion of international and treaty issues relating to the military use of space, see Glen H. Reynolds and Robert P. Merges, *Outer Space: Problems of Law and Policy*, 2 nd ed. (Boulder: Westview, 1997), 48-134; or Philip D. O’Niell Jr., “The Development of International Law Governing the Military Use of Outer Space,” in Durch, ed., *National Interests and the Military Use of Space* (Cambridge, MA.: Ballinger Publishing Co., 1984), 169-200.

¹⁰ Pericles Gasparini Alves, *Prevention of an Arms Race in Outer Space: A Guide to the Discussions in the Conference on Disarmament, UNIDIR/91/79, Annex A* (United Nations, N.Y., United Nations Institute for Disarmament Research: 1991), 56-80 and Annexes A and C.

¹¹ Alves, 143.

¹² The UNIDIR publication cited above discusses the concept of “peaceful purposes” through out its length, but the primary arguments are laid out on pages 12 - 13. Alves, 12-13.

Conference on Disarmament, which cites “the dual ASAT/ABM capability of many defensive ABM concepts as making the systems potentially offensive”¹³. This is mirrored by the potential dual capability of many ASAT concepts which, given their potential ABM capability, would be in violation of the 1972 ABM treaty. “While some argue that the ABM treaty has outlived its usefulness and is in fact no longer even valid, the lack of a clear distinction between offensive and defensive orbital weapons makes any deployment controversial”¹⁴.

The ABM Treaty is the most restrictive treaty currently in force that bears on weaponizing space. This treaty limits “the United States and the Soviet Union each to a single ground-based ABM site”¹⁵. The treaty is unusual since it does not specify each type of system that is prohibited; instead it is written to prohibit everything and then lists exceptions, the one ground-based system permitted for each signatory. The effect of this structure is that new technologies that could be used as ABM weapons are automatically excluded. Interpreting the treaty has led to considerable controversy, such as; whether orbital mirrors used to aim ground-based lasers at satellites would be components of an ABM system. “Since these mirrors could be used to aim the laser at a ballistic missile, many nations hold that they would be proscribed, regardless of the mission for which they were intended”¹⁶. As long as it remains in force, the 1972 ABM Treaty will greatly complicate any attempt to place weapons in orbit.

International Reaction

The international political implications of space-based weapons are already evident. Speaking through the UN Secretariat of the Conference on Disarmament, many nations have raised concerns about the destabilizing effects of placing weapons in orbit. The main concern centers on “the possibility of an arms race in space”¹⁷. Not only is the deployment of U.S. ASAT weapons likely to prompt other nations to try to match this capability, the deployment of even a limited BMD system could spark such a race, since most BMD concepts will also be able to

¹³ Alves, 35.

¹⁴ Senator Jon Kyl argues that since the Soviet Union dissolved, there is no longer a treaty. He led a Senate movement to block a memorandum of understanding designating Russia, Ukraine, Kazakhstan and Belarus as successors to the USSR and keep the treaty in force. Jon Kyl, “An Effective Antimissile Strategy,” *The Wall Street Journal*, May 22 1997.

¹⁵ Under current interpretation this is now Russia, Ukraine, Kazakhstan and Belarus

¹⁶ Duncan Lennox, ed., *Jane’s Strategic Weapon Systems*, (Jane’s Information Group Limited, Sentinel House, Coulsdon, England: 1997), Issue 26 January 1998.

¹⁷ Alves, Part II.

perform the ASAT role. Had it been made to work, the most notable BMD concept, the “Brilliant Pebbles” portion of the former Strategic Defense Initiative (SDI), would not only have provided defense against a ballistic missile attack, it would have enabled the United States to virtually close off space access to the rest of the world. This would have been possible because the capability needed to stop even a limited missile attack is enough to prevent other nations from launching any satellites at all. While some might desire this kind of control, it is unlikely that the international community would willingly acquiesce to such a move.

Today, the United States is in the enviable position of being the only superpower to survive the Cold War. Many models of political interaction would predict, “that a nation with so much power would prompt other nations to form alliances against it”¹⁸. The fact that this has not happened is arguably a result of past U.S. restraint in exercising power. For instance, during the Cold War “the United States allowed the other North Atlantic Treaty Organization members much more say in the structure of the organization and its decision-making processes than was necessary given their dependence on the U.S. nuclear umbrella”¹⁹. This reluctance to aggressively use military power to further U.S. interests has prompted other nations to trust that the United States will not abuse its military superiority. A unilateral move to put weapons in space could undermine this trust. One example of options open to other nations responding to a unilateral weaponization of space on the part of the United States is especially worthy of note. This response would be for another nation to deploy non-stealth space mines near each orbiting U.S. weapon. Once these weapons were in place, the nation launching them would need only to explain what they were and the conditions under which they would be used. These weapons would be relatively inexpensive to design and produce, and if parked next to a multi-billion-dollar space-based laser, “could negate the utility of the laser”²⁰.

¹⁸ For thorough discussion of international alliances and “balancing” among nations see Stephen M. Walt, *Origins of Alliances*, (Ithaca New York: Cornell University Press, 1987). Chapter 5 of Michael W. Doyle’s *Ways of War and Peace* also discusses the concept of “balancing” (New York: W.W. Norton & Company, 1997), 161-194

¹⁹ John Lewis Gaddis, *We Now Know: Rethinking Cold War History*, (Oxford: Camden Press, 1997), 288-9.

²⁰ A non-stealth space mine would avoid the most problematic difficulties associated with one which must remain undetected. Specifically, two of the biggest constraints, size and power source, would be eliminated. Since a non-stealth space mine could be as big as necessary, it could carry ample propellant to carry out its mission and electrical power could be supplied by solar cells. Building such a space mine would present few, if any, significant technological challenges. All that would really be needed would be a moderately maneuverable spacecraft packed with explosives. The guidance and control system would be no more complex than that needed to rendezvous with another spacecraft, so such a weapon would be a relatively inexpensive to build and deploy.

Furthermore, if overt space mines were deployed in response to space-based weapons, it is almost certain that they would be placed near other U.S. military satellites as well.

In light of international opposition, unilaterally deploying weapons in space has little to recommend it. Such an offensive attitude (in both senses of the word) would do little to generate international support for actions such as the 1991 Gulf War. Some may argue that the United States' current position of power makes international support irrelevant and that the United States did not need a coalition to defeat Iraq, but the costs of acting unilaterally would undoubtedly have been much higher. It seems unwise to alienate potential allies at the same time that force reductions may make acting unilaterally difficult or impossible.

Domestic Resistance

As the first openly proposed plan for putting weapons in space, the Strategic Defense Initiative generated more controversy than any previous space weapon system. The arguments against SDI centered on three general areas: the strategic instability that would be generated by pursuing a nuclear advantage; the inherent infeasibility of the concepts being explored; and the projected expense of the programs. Taken together, these problems spelled the end of SDI. Those who thought that the program was technologically unfeasible and a waste of money were able to garner support from those who deemed a successful program to be politically destabilizing and likely to lead to nuclear holocaust. "Regardless of the merits of the arguments, the domestic political resistance became such that SDI was eventually terminated"²¹.

Tests of the F-15 ASAT system also generated domestic controversy. "Some of the concerns verged on paranoia, such as using the weapons to destroy Soviets early warning satellites so that the United States could launch a preemptive nuclear strike"²². Others thought ASATs should never be developed because using weapons in space

²¹ For a detailed discussion of the costs and implications of SDI, see Crockett L. Grabbe, *Space Weapons and the Strategic Defense Initiative*, (Ames, Iowa: Iowa State University Press, 1991), Charles L. Glaser, *Analyzing Strategic Nuclear Policy*, (Princeton, New Jersey: Princeton University Press, 1990), and Steven E. Miller and Stephen Van Evera, eds., *The Star Wars Controversy*, (Princeton, New Jersey: Princeton University Press, 1986).

²² A commentary in *Science* opened with: "The United States is about to test an ASAT that has no obvious target except Soviet early-warning satellites." The article stipulates that the real reason the United States was developing the F-15 ASAT was not to target the low-altitude satellites as was advertised, but so that it could be upgraded to eliminate Soviet early warning satellites allowing the U.S. to conduct a pre-emptive nuclear strike. Coming from an ostensibly reputable magazine, this type of speculation was surprising, even for a commentary. R. Jeffrey Smith, "Antisatellite Weapon Sets Dangerous Course," *Science* 222, October 14 1983, 140-2.

is an “intrinsically bad idea”²³. While neither of these arguments was decisive, they added to the political resistance against the program. The final demise of the successful F-15 ASAT system has been attributed to cost overruns and a Congressional ban on further testing against targets in space. “The U.S. Air Force cancelled the program in March 1988, and turned over ground-based ASAT development to the Army”²⁴. If the controversy surrounding a recent U.S. test-firing of a ground-based laser at a satellite is any indication, opposition to using weapons in space remains strong today. This opposition continues to be directed against all weapons intended to engage targets in space, regardless of where they are based. The test firing of the MIRACL laser against an orbiting satellite prompted at least three articles in the New York Times alone, much more than would normally be expected for feasibility tests of a potential future weapon. “This time the arguments centered on the even more relevant point of exactly who had the most to lose were a space weapons race to start”²⁵. The fact remains that using weapons in space is still extremely controversial, and actually placing weapons in space is certain to be more so.

Space as Sanctuary

Space has long been treated as something of a sanctuary and kept free of weapons, a situation that is somewhat curious given the intense competition in technology and arms between the United States and the Soviet Union during the Cold War. “The reasons for this traditional sanctuary status are somewhat ambiguous, beginning with an initial inability to build practical weapons, and gradually becoming a situation in which both sides had more to lose from space-based weapons than they had to gain”²⁶.

²³ Charles A. Monfort, “ASATs: Star Wars on the Cheap,” Bulletin of the Atomic Scientists, v. 45, Issue 3, April 1989, 10-13.

²⁴ Phillip Clark, ed., Jane’s Space Directory, (Jane’s Information Group Limited, Sentinel House, Coulsdon, England: 1997), 164.

²⁵ William J. Broad, “Military is Hoping to Test-Fire Laser Against Satellite,” New York Times, Monday, 1 September 1997, A-1. John E. Pike, the director of space policy for the Federation of American Scientists, a group opposed to anti-satellite weapons, is quoted as saying that “Shooting a satellite is shooting ourselves in the foot,” presumably because showing the world how to disable our own satellites would be counterproductive. Follow-up articles and editorials also condemned the test: Letter to the Editor by Eugene J. Carroll Jr., Deputy Director, Center for Defense Information, Washington, “Space Laser Test Sows Military Hubris,” New York Times, Friday, 5 September 1997, A-34. William J. Broad, “The Air Force Aims to Test Its Space Destroyer,” New York Times, Sunday, 7 September 1997, IV-2.

²⁶ A thorough discussion the space sanctuary argument may be found in David W. Ziegler, Safe Heavens: Military Strategy and Space Sanctuary Thought, (Maxwell AFB, Ala.: School of Advanced Airpower Studies, 1997) and Paul B. Stares, The Militarization of Space, U.S. Policy, 1945-1984, (Ithaca, New York: Cornell University Press, 1985). The impact of political decisions on the development of space weapons may be found in Walter A. McDougall, ...The Heavens and the Earth: A Political History of the Space Age, (Baltimore: Johns Hopkins University Press,

As soon as the United States began using reconnaissance satellites to determine Soviet military strength, the Soviets used the UN to try to get them banned. Once the Soviets attained a similar capability, these initiatives tapered off. At that point, the early 1960s, both nations were actively developing antisatellite capabilities and focused their efforts on ground-based weapons using nuclear warheads. “The choice of nuclear weapons was based mainly on the fact that the technology for non-nuclear antisatellite weapons was too immature to make them viable in the near-term”²⁷.

The latter stages of the Cold War brought about an apparent re-evaluation of the need for antisatellite weapons. “The last Soviet ASAT test was on June 18, 1982, and during the early 1980’s the Soviet Union submitted to the UN a number of draft treaties for controlling weapons in space”²⁸. Congress made the U.S. response to this initiative in September 1985, shortly after the successful test of the F-15 ASAT. This response was in the form of moratorium on ASAT testing for one year, that would be renewed as long as the Soviets did not test any more ASATs of their own. “The moratorium, which prohibited tests against objects in space, was allowed to lapse by a Republican-led congress in 1995”²⁹. “The tacit agreement not to pursue further ASAT capability seems to have been the result of both nations’ growing reliance on space-based assets combined with the difficulty inherent in fully protecting them”³⁰.

CONCLUSION

While the post-Cold War environment does not present the United States with potential opponents as powerful as the Soviet Union, U.S. dependence on space-based assets is greater than ever. “Even in relatively small-scale contingencies, U.S. forces rely heavily on space-based intelligence, navigation and communications. Current initiatives promise to increase our reliance on them even further, and include building satellites to gather real-time targeting information about ground targets, much like the airborne Joint Surveillance Target Attack and Radar

1985), and R. Cargill Hall, “Origins of U.S. Space Policy: Eisenhower, Open Skies, and Freedom of Space,” John M. Logsdon, ed., *Exploring the Unknown*, (Washington D.C.: Government Printing Office, 1995), Chapter 2

²⁷ In the early 1960s it was more technologically feasible, and cheaper, to build a direct ascent ASAT with a nuclear warhead than it was to develop a more sophisticated orbital rendezvous system. Curtis Peebles, *Battle for Space*, (New York, N.Y., Beaufort Books Inc.: 1983), 77.

²⁸ Richard L. Garwin, et al., “Antisatellite Weapons,” *Scientific American*, 250 no. 6, June 1984, 45, 47.

²⁹ Broad, A-12.

System (JSTARS) provides today”³¹. As the search for invulnerability continues to move from aircraft to satellites, a space sanctuary strategy would benefit the United States now more than ever. Regardless of whether a space sanctuary is a feasible goal, placing weapons in space will generate both domestic and international opposition. “It is even possible that a unilateral move by the United States would generate so much ill will, that other nations would band together in opposition”³². Even if this did not happen, the political implications of placing weapons in space would be high, and would have to be factored into any such decision. Given the limited advantages offered by space-based weapons, adverse political implications make developing them truly questionable.

It is often assumed that defending space-based assets, and neutralizing weapons that make use of space, require the deployment of weapons in space. While space-based weapons should not be dismissed from consideration without a thorough evaluation, this evaluation appears to have been skipped in the technological push to develop space-based weapons. Major questions that have yet to be adequately addressed are: What do space-based weapons have to offer that other forms of military power lack? What are space-based weapons likely to cost, both in terms of dollars and in lost opportunities for pursuing other systems? A related concern is what capabilities these weapons will confer upon other nations if they eventually emulate a U.S. deployment. A thorough discussion of these questions is beyond the scope of this paper but must be addressed before a decision is made.

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³⁰ Related concerns have been voiced by many other nations and are discussed in detail in Alves

³¹ Barbara Starr, “U.S. team to work on new target-tracking satellite,” *Jane’s Defense Week* 29, issue 12, 7.

³² Again, for thorough discussion of international alliances and “balancing” among nations see Walt’s, *Origins of Alliances*, or Doyle’s *Ways of War and Peace*.

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