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## 1NC Space Control Frontline

### **1. The Rumsfeld commission report on space Pearl Harbors was biased and isn't credible**

**Hartung, 05** (William, senior research fellow at the World Policy Institute at the New School, "Weapons in space put the world at risk", 7/13, Seattle Post Intelligencer, [http://seattlepi.nwsourc.com/opinion/232239\\_spaceweapons13.html](http://seattlepi.nwsourc.com/opinion/232239_spaceweapons13.html))

Within the next few weeks, President Bush is expected to release his administration's new national space policy. The most crucial aspect of the plan will be whether it endorses placing weapons in space. There have been a series of reports since 2001 that essentially advocate deploying space weapons. The Commission to Assess United States National Security Space Management and Organization, initially chaired by Donald Rumsfeld, argued that the United States must take steps to avoid a "space Pearl Harbor." The Rumsfeld report said there is no current bar to "placing or using weapons in space, applying force from space to Earth, or conducting military operations in and through space." Not so coincidentally, seven of the 13 members of the Rumsfeld space commission had ties to aerospace companies that could stand to gain from the launching of a major space weapons program.

### **2. The threat is exaggerated – the impact would be minimal**

**Perera, 08** (David, "Space Pearl Harbor' overstated," Government Computer News, 2/22, [http://www.gcn.com/online/vol1\\_no1/45866-1.html?topic=geospatial#](http://www.gcn.com/online/vol1_no1/45866-1.html?topic=geospatial#))

the Navy's use of an anti-ballistic missile to shoot down a falling U.S. satellite Feb. 20 did not inaugurate a new era of vulnerability for high-bandwidth military communications, said David Mosher, a Rand Corp. senior policy analyst specializing in issues related to the militarization of space and ballistic missile defense. **Any concern "about a space Pearl Harbor is way overstated,"** Mosher told Defense Systems in an interview Feb. 21. As the military edges closer to achieving its network-centric vision of warfare, it is becoming more dependent on high-bandwidth communications routed through satellites. That makes satellites an increasingly attractive target despite a near-universal condemnation of the militarization of space. Defense Department officials said this week's satellite operation was not a show of force or a response to China's destruction of one of its own weather satellites in January 2007. However, even if the United States should find itself fighting an enemy with the will and capacity to destroy U.S. satellites, high-bandwidth communications would continue to operate, Mosher said. "The key here is not to protect satellites. The key is to protect the function," he added. That could be accomplished many ways, including ensuring that satellite systems are robust enough to survive the loss of some of their units. A prime example is the Global Positioning System, which consists of at least 24 satellites in medium Earth orbit. **"It would take a whole lot to significantly degrade GPS," Mosher said. "You'd have to shoot a lot of satellites."** Increased use of transoceanic fiber-optic cables could also make the military less dependent on satellites. Such cabling has already proven to be reliable and has done a great deal to reduce satellite use in the private sector, Mosher said. In any event, if a satellite-shooting war occurs, air vehicles with sensors and routers located lower in the atmosphere than satellites would already be active. "That just makes sense in regional warfare anyway," he said. **A shot-down satellite would be a loss because alternatives would not perfectly compensate for the missing capacity, "but it's not the end of the world," Mosher said.**

**-- XT 1 – Threat exaggerated**

**The space Pearl Harbor threat is hyped nonsense**

**Moore 06** - contributing editor of The Bulletin of the Atomic Scientists (Mike, SAIS Review, “A New Cold War?”, Winter Spring, projectmuse)

But even if a military and economic rivalry develops, would that necessarily lead to one of the many Pearl Harbor scenarios spun out by space warriors?12 The answer is almost surely no. Any substantive antisatellite threat to U.S. space assets would have to be preceded by extensive testing, including tests in space. The United States would quickly detect any such tests. The kindest thing that can be said about space Pearl Harbor scenarios is that they are classic scare tactics, the latest installment in a string of scenarios trotted out by hardliners throughout the Cold War.13 Pearl Harbor allusions trigger potent images for Americans, visions of a sleepy Sunday morning that turn into a nightmare of roaring aircraft and staccato gunfire, of exploding bombs and torpedoes, of roiling smoke and foundering ships, of death in a fire-flooded bay. They also bring to mind a nation that was woefully unprepared for global war despite the Roosevelt administration's desperate attempts to get the country into some sort of fighting trim. Yet on closer inspection Pearl Harbor analogies seem to be little more than dramatic devices chosen for their emotional impact rather than for their correspondence to actual probability.

## 1NC Space Development Frontline (1/2)

### **1. Commercial space tourism is revitalizing the U.S. launch sector**

**Ashworth, 08** - Fellow of the British Interplanetary Society (Stephen, The Space Review, "In defense of the knights", 6/23, <http://www.thespacereview.com/article/1153/1>)

In fact, rather than wait some decades, the Executive Summary goes so far as to conclude: "Considering the development timescales that are involved, and the exponential growth of population and resource pressures within that same strategic period, it is imperative that this work for 'drilling up' vs. drilling down for energy security begins immediately." (p.4) Is there any specific technology that could have caused Day to be so dismissive of the concept? Indeed there is, for he writes: "the report makes clear that the key technology requirement is cheap access to space, which no longer seems as achievable as it did three decades ago (perhaps why SSP advocates tend to skip this part of the discussion and hope others solve it for them)." Cheap access to space no longer as achievable as it seemed in 1978? This is a clear reference to the Space Shuttle. But a government shuttle is no longer where cheap space access is at. In 2004 we saw the first space access by a privately-developed reusable spaceplane, and its successor is due to begin test flights later this year in the run-up to commercial service. Sure, it's only suborbital. But people are queueing up to ride on the thing. Here's the key fact: SpaceShipTwo represents a completely different economic paradigm from the Space Shuttle because, for the first time ever, manned spaceflight is about to become a profitable enterprise. All hopes that humanity will create a spacefaring civilization rest on this paradigm change. In ten or twenty years time a successful suborbital industry will surely develop a reusable spaceplane for large-scale economic orbital access. The demand for orbital tourist flights exists, and the suborbital service will demonstrate that a spaceline can be run in the same way as an airline. Virgin Galactic may fail. It has plenty of competitors. One day, somebody will succeed. It's only a matter of time.

### **2. Solaren has already committed to producing space solar power by 2016**

**Leatherwood, 11** (GB, "Space-based Solar Power by 2016?," Space Future Journal, 5/22, [http://www.spacefuture.com/journal/journal.cgi?art=2011.05.22.solaren\\_plans\\_SSP\\_by\\_2016](http://www.spacefuture.com/journal/journal.cgi?art=2011.05.22.solaren_plans_SSP_by_2016))

In 2009, Manhattan Beach, CA-based company Solaren, Inc. signed a contract with Pacific Gas & Electric (PG&E) to provide 200 megawatts (MW) of clean, reliable electrical power to customers at a rate comparable with existing power generation facilities. But unlike hydroelectric, coal, fossil fuel, and nuclear production, this power will come from that constant, inexhaustible source, the Sun. This is known as "Space Based Solar Power," and until recently, it was also known as "science fiction." But in the here and now, Solaren designers have developed a system involving multiple satellites to be delivered into geosynchronous orbit (GEO) on heavy lift launch vehicles similar to the Falcon 9 being tested successfully by the US firm SpaceX. A number of specially designed and built satellites will capture the Sun's rays, transform them into radio frequency (RF) or microwave energy, and send beams of energy down to receiving antennas (rectennas): unused land in the California heartland close to existing PG&E substations, tied into the existing electrical power grid. Solaren plans this for 2016—and as of now, the company is on schedule. To learn more about the current status of the project, Space Future Journal interviewed Mr. Cal Boerman, vice president of electricity sales and delivery, of Solaren Corp. Space Future Journal: We understand that you have been issued a US patent for your proposed system. Can you tell us a bit about it? Cal Boerman: Solaren was issued our US patent No. 2006/185726-A1 on August 24, 2006. It is a broad system patent, which means that we have protection if another tries to use our concept of using more than one satellite to implement the SSP system. We feel it is considerably cheaper to implement with multiple satellites. SFJ: We know this is a very costly endeavor. What is your cost estimate and how are you financing it? CB: Solaren has always been careful to always just say it will take a few billion dollars to build our first 200 Megawatt (MW) SSP pilot plant for PG&E. We have been able to find wealthy investors who want to do something important by supporting new innovative developments like SSP—that has the potential for changing the future of our world/planet. SFJ: How are you dealing with the US government regulations? CB: Solaren has had very good working relationships with and support from the California regulators such as the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC.) Solaren's Power Purchase Agreement with PG&E has received full approval from the CPUC and the CEC. The CEC has said that they have experience and a good working relationships with the corresponding Federal government regulators and will work jointly with the appropriate US agencies to insure that Solaren receives both California and Federal approvals without having to do redundant applications. We are on schedule with all of the Federal regulatory agencies that will have authority over our SSP system.

## 1NC Space Development Frontline (2/2)

### 3. Commercial space development increasing now

**Foust, 11** – editor of the Space Review (Jeff, “Space challenges for 2011,” The Space Review, 1/3, <http://www.thespacereview.com/article/1752/1>)

Developing commercial human spaceflight Last year was, in some respects, something of a breakthrough year for commercial human spaceflight. While there were no commercial human missions in 2010—not even a space tourist flying on a Soyuz mission to the ISS—much of the policy and technical groundwork was laid to enable such missions, most visibly with the successful flight of SpaceX’s Falcon 9 launch vehicle and Dragon spacecraft. By the end of 2010 several companies, including established firms like Boeing, Orbital Sciences, and United Launch Alliance, had formally expressed their interest in developing commercial crew transportation systems. Like 2010, the coming year is unlikely to see commercial human missions, at least to orbit, but it will solidify the foundations upon which the efforts will be built. In the spring NASA is expected to make a new round of Commercial Crew Development (CCDev) awards to support work on various technologies and systems needed for such vehicles. SpaceX is scheduled to make its next COTS Falcon 9/Dragon launch later this year, approaching and potentially even berthing with the International Space Station, demonstrating the capabilities required to deliver cargo to the station—a key step towards human spaceflight. Orbital Sciences is also scheduled to make the inaugural launch of its Taurus 2 rocket and Cygnus cargo spacecraft this year, although it appears that effort is separate from its crew transportation proposals, which involve a lifting body vehicle launched on an EELV-class booster. Suborbital spaceflight was out of the limelight in 2010 compared to previous years, overshadowed by the surge in interest in orbital human spaceflight. Yet companies in the field made at least incremental progress, including the first captive carry and, later, glide tests of Virgin Galactic’s SpaceShipTwo. Spaceport America, the spaceport that will initially host operations of the system, is also scheduled for completion this year, after the dedication of its runway in October 2010. Several other companies, including Armadillo Aerospace, Masten Space Systems, and XCOR Aerospace, may begin flight tests of their vehicles (either crewed or remotely piloted) to high and even suborbital altitudes by the end of the year.

## **--XT 1 – Commercial Space increasing now**

### **Global commercial space activity is increasing**

**Pulham, 11** – CEO of the Space Foundation (Elliot, US Senate Testimony, 5/18, [http://commerce.senate.gov/public/?a=Files.Serve&File\\_id=5d3fad1f-2ed9-4b52-8bec-7ab618108605](http://commerce.senate.gov/public/?a=Files.Serve&File_id=5d3fad1f-2ed9-4b52-8bec-7ab618108605))

Additionally, more countries are becoming involved in space or are revitalizing dormant space programs, with Australia, South Africa and Iran as recent examples. In many cases, these space actors are incorporating a deliberate commercial element in their space programs that targets economic development and technology creation.

### **Commercial space innovation is driving economic growth**

**Pulham, 11** – CEO of the Space Foundation (Elliot, US Senate Testimony, 5/18, [http://commerce.senate.gov/public/?a=Files.Serve&File\\_id=5d3fad1f-2ed9-4b52-8bec-7ab618108605](http://commerce.senate.gov/public/?a=Files.Serve&File_id=5d3fad1f-2ed9-4b52-8bec-7ab618108605))

Space as an Economic Engine Space products and services are an integral part of daily life, expanding each year into new areas of human activity. In one dramatic example, space technology and expertise helped to ensure the survival and rescue of a group of Chilean miners trapped underground. This experience was but a single instance of how the knowledge gained from human activity in the challenging environment of space can be applied to life on Earth. In more commonplace situations, new space applications are helping people communicate with each other and access entertainment as they travel by ground, sea or air. Satellite-enabled Internet connections are becoming commonplace as airlines outfit their fleets with the latest equipment. Navigation applications for cell phones can combine input from built-in cameras and GPS chips, enabling users to view directions as an overlay on an image of their surroundings. GPS tracking systems installed on racecars allow people playing computer games to participate in virtual competitions against professional drivers during real racing events. Whether during work or leisure hours, most people reap the benefits of space systems and technology as an integral part of their daily lives. The commercial sector continues to incorporate space technology both in its manufacturing processes and in its products. The glass manufacturing industry is incorporating techniques used in the analysis of data from the Hubble Space Telescope and the semiconductor industry is creating more powerful microchips using technology developed for building ESA's XMM-Newton X-ray observatory. Consumers can purchase clothing made from textiles originally developed for use by astronauts or have their hair styled with tools that smooth and soften hair using nano-ceramic technology developed by NASA. Not only does space contribute to the wealth of products available to consumers, it also enables companies to estimate consumer activity by observing the ebb and flow of customer traffic in the parking lots of retailers by means of satellite imagery.

## 1NC Solvency Frontline

### **1. Cart before the horse – high launch costs prevent SSP**

**Cox, 11** - retired prosecutor and public interest lawyer, author and political activist (William, "The Race for Space Solar Energy," 3/26, <http://www.thepeoplesvoice.org/TPV3/Voices.php/2011/03/26/the-race-for-space-solar-energy>)

The remaining problem is the expense of lifting equipment and materials into space. The last few flights of the space shuttle this year will cost \$20,000 per kilogram of payload to move satellites into orbit and resupply the space station.

It has been estimated that economic viability of space solar energy would require a reduction in the payload cost to less than \$200 per kilogram and the total expense, including delivery and assembly in orbit, to less than \$3,500 per kilogram.

### **2. Technology fails – it's 40 years away**

**Day 8** (Dwayne, "Knights in shining armor," The Space Review, 6/9, <http://www.thespacereview.com/article/1147/1>)

The NSSO study is remarkably sensible and even-handed and states that we are nowhere near developing practical SSP and that it is not a viable solution for even the military's limited requirements. It states that the technology to implement space solar power does not currently exist... and is unlikely to exist for the next forty years. Substantial technology development must occur before it is even feasible. Furthermore, the report makes clear that the key technology requirement is cheap access to space, which no longer seems as achievable as it did three decades ago (perhaps why SSP advocates tend to skip this part of the discussion and hope others solve it for them). The activists have ignored the message and fallen in love with the messenger.

### **3. Bureaucratic turf wars crush effective U.S. space policy**

**Kueter, 07** - is president of the George C. Marshall Institute, a nonprofit think tank dedicated to science and technology in public policy (Jeff, New Atlantis, "China's Space Ambitions -- And Ours," Spring, lexis)

It may also be necessary to realign the government bureaucracy. Today, bureaucratic inaction afflicts space security policy. Tension between intelligence gatherers and warfighters over primary control of the space enterprise has created conflicts over budgets and turf. Within the military community more broadly, while there is lip-service recognition of the vital significance of space to the American warfighter, there is little real appreciation for the complexity of the challenge of defending and maintaining those systems. The 2005 decision to designate the Air Force Undersecretary as the Department of Defense's "Executive Agent for Space" was supposed to have clarified this situation, but it did not: While the Undersecretary is regularly held accountable for the failures of flawed acquisition strategies of past administrations, the Executive Agent exerts only secondary influence over the Pentagon's processes for space policy or budgeting. In any event, none of these Pentagon offices have any meaningful influence over the classified "black" (that is, secret) activities of the National Reconnaissance Office (NRO), which is now dominated by career civilian bureaucrats. This segregation flies in the face of nearly two decades of increasing interdependence between the "black" and "white" space communities. The inevitable inefficiencies resulting from separate space-sensor efforts are less worrisome than the potential complacency regarding growing threats to the intelligence community's programmatic empires. Although Donald Kerr, the director of NRO, told the press last year that evidence of Chinese ASAT development "makes us think," it is unclear when such thought will become action within the intelligence community.

### **4. Maintenance costs and placement in geostationary orbit make it not cost competitive**

**Ditto, 8** - Fellow, NASA Institute for Advanced Concepts (Thomas, reader comments on "Harvest the Sun – From Space", 7/23, <http://community.nytimes.com/article/comments/2008/07/23/opinion/23smith.html?permid=73#comment73>)

O. Glenn Smith doesn't address the costs and complexity of maintaining solar panel farms in space. In fact, if all the costs are factored in from manufacturing space-worthy solar arrays with their attendant radio wave beam transmission systems, their launch and deployment, as well as the cost of maintenance, including the inevitable decommissioning costs (something too often overlooked with satellites), and that cost is compared to ground-based solar arrays with their relative inefficiency, the enterprise doesn't look practical. Smith ignores orbital placement. This doesn't look like a low-earth orbit (LEO) installation where day/night issues are far worse than on earth's surface. Moreover, at LEO steering the radio waves would be a very complex process. On the other hand, humans have never worked at geostationary orbit where the transmission to fixed earth stations makes sense.

## --XT 1 – Launch costs

### **Lack of space launch services inhibit space solar power**

**Mankins, 8** - president of the Space Power Association, and former Manager, Advanced Concepts Studies, Office of Space Flight at NASA (John, Ad Astra, "Inexhaustible Energy from Orbit" Spring 2008, pg. 20, <http://www.nss.org/adastra/AdAstra-SBSP-2008.pdf>)

A major barrier to all space endeavors also applies to space solar power, and that is affordable access to space. This barrier is one of compelling importance. The problem of space access includes both low-cost and highly-reliable Earth-to-orbit transportation, and in-space transportation. (Fortunately, one of the key ingredients in overcoming this barrier is having a market that requires many flights. It's hard to imagine how air travel between continents would be affordable if the aircraft were used once or twice per year rather than once or twice per day!) Advances that drive down the cost of space operations present significant hurdles, too. These hurdles involve a range of capabilities, most of which have never been demonstrated in space—but all of which are entirely taken for granted here on Earth. The kinds of capabilities in question include the highly-autonomous assembly of large structures, the deployment and integration of modular electronic systems, refueling, and repair and maintenance. (The key ingredient is to perform such operations without large numbers of operators and sustaining engineers on Earth—which drive the high cost of contemporary space operations.)

### **Lack of low-cost space access blocks SSP**

**Mankins, 8** - president of the Space Power Association, and former Manager, Advanced Concepts Studies, Office of Space Flight at NASA (John, Ad Astra, "Inexhaustible Energy from Orbit" Spring 2008, pg. 20, <http://www.nss.org/adastra/AdAstra-SBSP-2008.pdf>)

Lower-Cost Space Access. Space launch is a well-known and classic case of the "chicken-and-egg" problem, and one that has proven extremely hard to overcome. For many concepts, very low recurring costs per pound of payload can be achieved only with high launch rates (so that the cost of fixed initial investments and annual overhead costs can be spread across many launches). Achieving high launch rates depends upon the actual revenue-generating traffic to be carried, which depends significantly on earlier investments in space-utilizing enterprises (for example, investments related to in-space manufacturing capacity). And, as a result, increased investments in space-utilizing enterprises (government or commercial) will depend upon the prior existence of assured availability of reliable launch services at the lower prices. So, in order to make space solar power possible, what has to be done about space transportation? In the case of conventional transportation infrastructures, low cost has always been achieved through reuse of vehicles and the deployment of general-purpose infrastructures that can be used many times by multiple customers, such as canals, railways, roads, and airports. It is hard to imagine how automobiles, aircraft, ships, or any other modern transportation system might somehow be produced so cheaply that the transport could somehow be "disposable" after each use. In order for space solar power systems to be economically viable, reusable Earth-to-orbit launchers will be essential. In-space transportation advances are also needed. In-space transportation systems must be very fuel-efficient. Also, transport hardware costs must be dramatically reduced through the development of reusable, rather than expendable, systems. Finally, the personnel costs for the transport infrastructure must be drastically reduced: the system must be largely autonomous, involving neither "marching armies" of operators or maintenance engineers.

## --XT 2 – Tech fails (1/3)

### **Space solar power has no credibility within the energy industry**

**Day, 10** - space policy analyst and historian who lives in Northern Virginia (Dwayne, "Blinded by the light," The Space Review, 6/7,  
<http://www.thespacereview.com/article/1641/1>

The more general reason that space solar power has reemerged is that just like in the 1970s, space solar power fills a cultural, ideological, and yes, spiritual need among a certain type of person. It has nothing to do with the concept suddenly becoming technically or economically feasible, or gaining any credibility within the energy sector. Last month two groups held solar energy conferences separated by one week, 1700 miles, and a million light years. The first was SOLAR 2010, the annual conference of the American Solar Energy Society held in Phoenix, Arizona. The second was the "First National Space Society Space Solar Power Symposium" held at the International Space Development Conference in Chicago, Illinois. The Space Solar Power Symposium featured approximately three dozen presentations on the subject, including individuals from Japan and India. The presentation topics ranged from the mundane ("Prospects for microwave wireless power transmission") to the polemic ("Why Space Solar Power is the Answer and the ONLY Answer to Our Long Term Energy Needs"). But if you went to SOLAR 2010 a week earlier, you would have noticed something rather striking. Despite the attendance of hundreds of people, numerous companies, and the presentation of hundreds of technical papers; despite the presence of the United States' best experts on energy policy, energy transmission, energy generation, and solar power technology—there were no presentations on space solar power. Think about that for a moment. What does it say about space solar power? What it says is that space solar power is a fringe idea that is not even taken seriously within the niche field of solar power generation. What it also says is that the space solar power community doesn't play with the big boys. It's a community that talks to itself, that seeks the comfort of like-minded individuals, and doesn't even try to sell its message to the audience most likely to give it a fair hearing. If the space solar power community wants to be taken seriously, there is a good way it can start. Instead of holding the "Second NSS Space Solar Power Symposium" at the International Space Development Conference next year, they should try to hold it at SOLAR 2011. They should see if they can face the members of the American Solar Energy Society directly and hear what they think of the idea of space solar power. It's time for the space solar power advocates to decide if they want to be a social organization, no different from a knitting circle or a model train club, or if they want to be an industry.

## --XT 2 – Tech fails (2/3)

**Space policy activists are fixated on technology – they wildly exaggerate the benefits and are so disconnected from real world economic and technological constraints that you should reject their claims**

**Day 9** - space policy analyst and historian who lives in Northern Virginia (Dwayne, “Space fetishism: space activism’s obsession with technological and ideological saviors,” 12/21, The Space Review, <http://www.thespacereview.com/article/1534/1>)

You don’t have to spend much time at space activist conferences or reading the comments on space blogs or discussion groups before you start to notice certain patterns. Very quickly you will recognize that certain people, or groups, have specific issues that they care passionately about, and they repeatedly advocate the same technological or ideological solutions to the problems that they think are most worthy of attention. They fit two of the three definitions of fetishes—things that space activists believe contain supernatural powers, and/or things that they have an abnormal fixation upon. There’s an old saying that when all you have is a hammer, every problem starts to look like a nail. A good corollary to this is that when you idealize your hammer, you look for things to pound. Technology fetishism With only a little bit of effort, it would be possible to produce a long list of examples of technologies that individual space activists are obsessed with and believe are the solution to different problems. At the top of this list is space solar power, which many space activists currently believe is a solution to... well, just about everything: global warming, the high cost of gasoline, poverty, Middle East instability, and terrorism. Build solar power satellites, some activists believe, and most problems in the world will be solved. But there are a multitude of other technological “solutions” fetishized within the space activist community. There are people who believe that all (or at least most) of the problems with military space can be solved with small satellites, or the Operationally Responsive Space approach. There are people who believe that space science and exploration can be vastly improved with the use of small satellites. Recently, a passionate subgroup has emerged in the form of cubesat and nanosatellite advocates, although these advocates have a difficult time explaining exactly what useful missions such satellites will do—their primary virtue appears that they are small and “small = good” and therefore “really small = better.” Perhaps the biggest fetishized technology category concerns propulsion. There are many different groups offering their solutions to different propulsion problems. There is the DIRECT group with their Jupiter rocket. There are the Shuttle-C advocates. Then there are the advocates of space elevators and space beaming technologies, and the advocates of nuclear rocket engines. A current hot topic among this latter group is the VASIMIR nuclear rocket which, if it works as advertized, could provide truly revolutionary propulsion to the outer planets—at immense difficulty and expense. There is a small but vocal group that believes that space fuel depots are the solution to human space exploration plans. And there’s a closely related group that believes that in situ resource utilization (ISRU) is a vital technology. There are also advocates of solar sails. And then there are advocates of specific niche technologies that have only superficial connection to space, such as Polywell fusion and liquid salt reactors. Now many of these technologies have some merit, and there is justification for spreading some development money around in order to see which ones can bear fruit. These technologies are not inherently invalid or stupid, but their enthusiastic advocates often dramatically overstate their utility, and ignore political or economic reality. Quite often, they are advocates talking to themselves, and failing to convince anybody outside of space activist circles. Go to a conference on energy development, or read magazines and journals on energy production, and you would be hard-pressed to see any mention of space solar power at all. If the people who are experts in energy development, and who make their living finding ways to improve the field—and make money—do not recognize space solar power as even a niche idea, then that tells you something about the claims made in the space activist community about SSP. Similarly, if you went to a conference on terrorism or third world poverty and proposed space solar power as a solution, the conference attendees would toss you out as a crank. But more to the point, many of these technologies have limited respectability even within the space R&D field, where engineers and managers are focused on near-term problems and technologies that can serve more immediate needs. Several years ago I read a blog commentary where somebody proposed in situ resource utilization (ISRU)—turning atmosphere into fuel—as a “solution” to a Mars sample return mission. But if you talk to the engineers who devote their time to Mars sample return, ISRU is a solution to a problem they don’t have. Their problem is not reducing the amount of propellant that they need to carry to Mars, but finding a way of protecting the propellant that they carry during a long cold soak in the extreme Martian environment. ISRU is unproven and highly challenging. It is not something that they would add to a mission that already has a large number of technology challenges. ISRU is a potentially highly beneficial technology, but not the kind of thing that any sane engineer would insert into an operational mission until it had been developed and tested on its own. To the people who work in the field, it is not a solution, but a diversion. To the activists, ISRU was a magic technological capability that they reflexively applied to a proposed Mars mission. Similarly, many of these technologies will require so much time, effort and money to develop that it is hard to see any connection to near-term needs. Does anybody really think that space elevators can be built in the next half century? Is the VASIMIR rocket really something that could be developed—assuming that it would actually work—without the expenditure of many billions of dollars? The advocates in some ways have to oversell the benefits of such long-term technologies in order to hide the reality that these are remote solutions. Only with hyperbole can they attract attention. Maybe if people think that the payoff is great, they’ll be willing to work on it for decades. The mundane bureaucratic reality is that in the past decade NASA has gutted its technology development budget and now trails industry and other countries in many R&D areas. As an agency with a relatively limited budget and too much to do, NASA has a hard time funding technology development for a number of reasons, including the fact that when space missions run over budget, the leadership goes looking for money in projects that are not tied to immediate needs, and technology programs take a hit. But another recent problem has been that the agency’s technology development program lacked focus—NASA funded too many in-space propulsion programs, for instance, rather than the one or two that it might use in the next decade—and this made the overall development program vulnerable. Anyone familiar with the current state of NASA’s technology development effort will realize that there are far more pressing needs than the technologies that many activists have glommed on to. NASA could make use of better ion engines and aerocapture, as two examples. But both of these are considered mundane by the space activist community, which is obsessed with technologies they consider sexier. The point to remember is that there is a vast gulf between present reality, and what technologies the activists are excited about.

## --XT 2 – Tech fails (3/3)

### **Launch costs aren't enough – the technology for space solar power has yet to be developed and it can't be adapted for military use**

**Hsu, 11** - InnovationNewsDaily Senior Writer (Jeremy, "Military Scientists Look to Space to Power Bases," 3/14, Innovation News Daily, <http://www.innovationnewsdaily.com/military-scientists-look-to-space-to-power-bases-1800/>)

Wise soldiers heed the modern military maxim: "Amateurs talk tactics, professionals talk logistics." The need to resupply forward bases in the dangerous terrain of Afghanistan means that the U.S. military must risk vehicles and lives in convoys that can fall prey to insurgent ambushes. But some military researchers have begun considering whether energy beamed from space could offer a futuristic solution to that problem. According to a 2009 report by the Naval Research Laboratory in Washington, D.C., orbital platforms could deliver energy to forward bases by way of microwave or laser and cut back on the amount of fuel that convoys need to deliver. Space-based solar power would harness the full power of sunlight with massive solar panel arrays orbiting above the Earth's atmosphere. That could reduce the fuel usage by generators that typically supply electricity to a forward base, and was deemed the best defense application for space-based solar power in the report. However, "despite their shortcomings, terrestrial solar, wind, nuclear and other possible alternatives enjoy decades of heritage, whereas [space-based solar power] has yet to be demonstrated on any scale," said Paul Jaffe, electronics engineer and head of systems integration at the Naval Research Laboratory. The report did not attempt to come up with a price tag for a military-focused application of space-based solar power. But it did include an early estimate that such military use would require more than \$10 billion and remains more than five years in the future. "It is currently quite unlikely" that the U.S. military would try that approach before civilian projects get off the ground, Jaffe told InnovationNewsDaily. The latter include European and Japanese project proposals, as well as a private effort by the California-based company Solaren Corp. Even if the expensive cost of launching the necessary equipment into space fell to zero, Jaffe pointed to much technological development that still needs to be done before a space-based solar power system could be deployed. To his knowledge, the U.S. Department of Defense has not funded efforts that focus specifically on such systems.

### **SSP technology fails and is based on propaganda**

**Rako, 8** – technical editor of Electronics Design, Strategy, and News (Paul, "Solar power in space, a really stupid idea," 7/25, <http://www.edn.com/blog/1700000170/post/1830030583.html>)

The New York Times has an article about solar power satellites (SPS). This is where you put a few square mile of solar panels up in space and then just beam the power down to earth with microwaves. This idea was so loony and so farcical on it's face that I about had a conniption fit. Well, this is the great thing about the Internet. See, the New York Times allows comments on its articles and they soon had six pages of comments, many from engineers like ourselves that pointed out how incredibly stupid this idea was. A few years ago the Times would have received a dozen letters critical of the article and maybe published one or maybe killed them and nobody is the wiser. Now they get 143 comments, mostly con, that suddenly appear and the whole world can see how absurd the proposals in the article are. And I love the researcher that comments, "What would it hurt to spend about 100 million on further research?" Well not his house payment, but we peons have better things to research with our tax dollars. Like why the seam of my blue jeans' legs curl up when they come out of the dryer. I always wondered about that. Just as sad, of all the comments with good reasoned analysis, the comment the Times put on the first page in a little highlighted box was: "Energy from space really is one of the crucial 'three pillars' of renewable electricity, along with wind and thermal solar farms." Dr. Paul J. Werbos, Arlington, Va. That was pretty unbelievable to me, but just look the first paragraph of the article itself: As we face \$4.50 a gallon gas, we also know that alternative energy sources — coal, oil shale, ethanol, wind and ground-based solar — are either of limited potential, very expensive, require huge energy storage systems or harm the environment. There is, however, one potential future energy source that is environmentally friendly, has essentially unlimited potential and can be cost competitive with any renewable source: space solar power. This is a flat-out lie. It's a lie in so many places it hurts my teeth. Sweeping all the alternative energy sources under the rug, without looking at the complex analog tradeoffs involved is an affront to reason and decency. That is a bad enough lie. But to then follow that absurdity with the assertion that space solar power is somehow economically possible and environmentally friendly is complete madness. Now I am going to give some sources you can read that prove beyond a shadow of a doubt that this proposal is clinically insane, but first I wanted to share an epiphany I had. Paul's epiphany came about 5 hours into a wasted Thursday night where I should have been in downtown San Jose having fun at the free concert. Instead I spent all night reading all the sources I could find regarding SPS. I am embarrassed because it took five hours to realize something that was plainly stated in the comments to the article that I read five hours before. Someone pointed out that the technology of this proposal did not matter. This space-panel microwave gizmo was also a weapon and it would be politically impossible to deploy it.

## 1NC Militarization Turn

### **SSP directly facilitates the offensive weaponization of space**

**Ramos 2k** – US Air Force Major, Thesis submitted for the AIR COMMAND AND STAFF COLL MAXWELL Air Force Base (Kim, “Solar Power Constellations: Implications for the United States Air Force,” April, <http://handle.dtic.mil/100.2/ADA394928>) Force Application United States Space Command developed four operational concepts to guide their vision. One of those operational concepts is global engagement. The USSPACECOM Long Range Plan defines global engagement as an “integrated focused surveillance and missile defense with a potential ability to apply force from space.”<sup>27</sup> This application of force from space involves holding at risk earth targets with force from space.<sup>28</sup> New World Vistas identifies several force application technologies. One of the technological issues associated with developing these space force application technologies is that they all require large amounts of power generation. A solar power satellite can supply the required power. Two technologies in particular would benefit from integration with a solar power satellite, directed energy weapons, such as lasers, and jamming devices.

The space-based lasers currently under study accomplish ground moving target indication, and air moving target indication, which would be part of missile defense.<sup>29</sup> The main difficulty with the laser is designing a power plant, which can produce the required energy in space without the enormous solar arrays required. By using a solar power satellite to beam power to the laser, this eliminates the problem.

Another project, which would benefit from integration with a solar power satellite, is a device, which would beam RF power to a particular geographic location to blind or disable any unprotected ground communications, radar, optical, and infrared sensors.<sup>30</sup> As with the laser and other directed energy applications, the limiting factor right now is generating enough power in space to energize the RF beam.

### **Its unilateral deployment will cause an immediate international backlash**

**Schwab, 05** – director of the Homeplanet Defense Institute (Martin, Homeplanet Defense: Strategic Thought for a World in Crisis, chapter 4)

Space solar power as a tool of diplomacy

Unilateral development of SSP by the U.S. would only add to the growing perception of the U.S. as an overbearing and arrogant hegemon. This dangerous perspective held by even the closest U.S. allies could at least be partially mitigated through international engagement, initiated by the U.S. in developing this secure energy for our homeplanet and beyond.

### **Space weaponization will encourage countries to destroy US satellites and cause a global war and extinction**

**Mitchell, et al 01** -Associate Professor of Communication and Director of Debate at the University of Pittsburgh (Dr. Gordon, ISIS Briefing on Ballistic Missile Defence, “Missile Defence: Trans-Atlantic Diplomacy at a Crossroads”, No. 6 July, <http://www.isisuk.demon.co.uk/0811/isis/uk/bmd/no6.html>)

A buildup of space weapons might begin with noble intentions of 'peace through strength' deterrence, but this rationale glosses over the tendency that '... the presence of space weapons...will result in the increased likelihood of their use'.<sup>33</sup> This drift toward usage is strengthened by a strategic fact elucidated by Frank Barnaby: when it comes to arming the heavens, 'anti-ballistic missiles and anti-satellite warfare technologies go hand-in-hand'.<sup>34</sup> The interlocking nature of offense and defense in military space technology stems from the inherent 'dual capability' of spaceborne weapon components. As Marc Vidricaire, Delegation of Canada to the UN Conference on Disarmament, explains: 'If you want to intercept something in space, you could use the same capability to target something on land'.<sup>35</sup> To the extent that ballistic missile interceptors based in space can knock out enemy missiles in mid-flight, such interceptors can also be used as orbiting 'Death Stars', capable of sending munitions hurtling through the Earth's atmosphere. The dizzying speed of space warfare would introduce intense 'use or lose' pressure into strategic calculations, with the spectre of split-second attacks creating incentives to rig orbiting Death Stars with automated 'hair trigger' devices.

In theory, this automation would enhance survivability of vulnerable space weapon platforms. However, by taking the decision to commit violence out of human hands and endowing computers with authority to make war, military planners could sow insidious seeds of accidental conflict. Yale sociologist Charles Perrow has analyzed 'complexly interactive, tightly coupled' industrial systems such as space weapons, which have many sophisticated components that all depend on each other's flawless performance. According to Perrow, this interlocking complexity makes it impossible to foresee all the different ways such systems could fail. As Perrow explains, '[t]he odd term "normal accident" is meant to signal that, given the system characteristics, multiple and unexpected interactions of failures are inevitable'.<sup>36</sup> Deployment of space weapons with pre-delegated authority to fire death rays or unleash killer projectiles would likely make war itself inevitable, given the susceptibility of such systems to 'normal accidents'. It is chilling to contemplate the possible effects of a space war. According to retired Lt. Col. Robert M. Bowman, 'even a tiny projectile reentering from space strikes the earth with such high velocity that it can do enormous damage — even more than would be done by a nuclear weapon of the same size!'<sup>37</sup> In the same Star Wars technology touted as a quintessential tool of peace, defence analyst David Langford sees one of the most destabilizing offensive weapons ever conceived: 'One imagines dead cities of microwave-grilled people'.<sup>38</sup> Given this unique potential for destruction, it is not hard to imagine that any nation subjected to space weapon attack would retaliate with maximum force, including use of nuclear, biological, and/or chemical weapons. An accidental war sparked by a computer glitch in space could plunge the world into the most destructive military conflict ever seen.

## 2NC Turns Case

### **War turns the case – it will cause attacks against satellites**

**Smith, o8** – Air Force Colonel, PhD student in the strategic studies program under Professor Colin Gray at the University of Reading in the UK, former Chief of Future Concepts for the National Security Space Office at the Pentagon, and the Director of the Space Solar Power Study (M.V., Message board post in response to a post by “Hsdebater”, 7/12, <http://spacesolarpower.wordpress.com/2008/04/09/ad-astra-special-report-space-based-solar-power/#comment-2680>)

Here’s a comment which is always controversial; space is already weaponized. There already exists in space and on the Earth the types of systems that we use every day for routine civil, commercial, and military space operations that can also be used as weapons to negate satellites. Everything for ramming one satellite into another or merely jamming satellite signals is already in place...it merely depends on how you use the systems we currently have. We’ve already witnessed a number of episodes of hostile satellite jamming and bandwidth piracy around the globe. Fortunately, most space faring states are highly motivated to use space peacefully. But if war between space faring nations breaks out here on Earth I believe it is highly likely that those nations will negate each other’s satellites—the alternative to negating uninhabited satellites may be the killing of more people on Earth. This places advocates of “space sanctuary” in a strange moral dilemma. Unfortunately, achieving orbit does not place activities in space beyond the realm of human affairs. It is really a matter of politics as usual, no matter where your assets lie; air, land, sea, or space. Preventing battles in space depends on preventing wars on Earth.

### **The impact turns the case – investment will take decades and will be derailed**

**Dinerman, o8** (Taylor, The Space Review, “Financial risk analysis for the space industry”, 6/16, <http://www.thespacereview.com/article/1151/1>)

Finally, there is the time frame problem, the greatest risk of all for entrepreneurial space firms. The failure of the Iridium communications satellite venture is an excellent example of how a good idea, implemented at the usual slow speed of the space industry, can be overtaken by newer and cheaper technology. Any large-scale ventures such as space solar power or Moon or asteroid mining will take decades to implement, and may be bankrupted by changes on Earth. Extraordinarily careful due diligence will be needed before such ventures can be financed by ordinary investors

## **2NC Turns Development**

### **The perception of ASAT deployment would ruin the commercial space industry**

**Hitchens, 02** – vice president of the Center for Defense Information (Theresa, “Future Security in Space: Commercial, Military, and Arms Control Trade-Offs,” Occasional Paper No. 10, ed: Moltz, <http://cns.miis.edu/pubs/opapers/op10/op10.pdf>)

The competitive and cost challenges the U.S. satellite industry faces could be increased if the United States moved to make space a battlefield. Until now, the threat that commercial satellites could become direct wartime casualties has been negligible. But an aggressive U.S. pursuit of ASATs would likely encourage others to do the same, thus potentially heightening the threat to commercial satellites. This could be costly for industry, especially because current commercial satellites have little protection (electronic hardening, for example, has been considered too expensive). There would be costs for increasing protection, not to mention the likely further skyrocketing of already sky-high insurance costs, and it is not at all clear that the U.S. government would cover all those costs.

### **Testing and deploying ASATs will destroy relations with the rest of the world and wreck commercial space**

**Krepon and Heller, 04** \*co-founder of The Henry L. Stimson Center and Director of the Center's Space Security Project AND \*\* Research Assistant on the Stimson Center's Space Security Project (Michael and Micheal, Disarmament Diplomacy, “A Model Code of Conduct for Space Assurance”, May/June, <http://www.acronym.org.uk/dd/dd77/77mkmh.htm>)

The flight testing and deployment of ASATs would also poison relations between major powers and further weaken America's ties with its allies. If advocates of space power are right, and if military conflict follows commerce, then there would be no sanctuary in deep space for revenue-generating satellites. Debris resulting from warfare in space would exponentially increase hazards to satellites. Subsequently, insurance rates would skyrocket, and consumers would pay more for services that could easily be disrupted.

## 2NC Turns Control

### **Developing ASATs will crush U.S. space control**

**Hitchens, 02** – vice president of the Center for Defense Information (Theresa, “Future Security in Space: Commercial, Military, and Arms Control Trade-Offs,” Occasional Paper No. 10, ed: Moltz, <http://cns.miis.edu/pubs/opapers/op10/op10.pdf>)

One problem is that space weapons, just like satellites, would have inherent vulnerabilities (for example, fixed orbital paths), raising the specter of an ever-spiraling need for better weapons and force protection. Just as it is difficult to protect satellites, it is difficult to protect space weapons. For example, satellites or space weapons traveling in fixed paths in low-Earth orbit (LEO) are virtual sitting ducks for ground-based ASATs or even fighter aircraft equipped with rockets, not to mention space-based ASATs.

The other related negative side effect of the inherent vulnerability of orbiting weapons is the pressure to use them first. The strategic dynamic of space-based weapons could perhaps be compared to that of nuclear intercontinental ballistic missiles— offense-dominant weapons with inherent vulnerabilities (fixed sites). This is a recipe for instability, as the United States and Soviet Union soon found in their nuclear competition.

Spurring other nations to acquire space- based weapons, either ASATs or weapons aimed at terrestrial targets, would undercut the ability of U.S. forces to operate freely on the ground on a global basis and thus negate what today is a unique advantage of being the world’s only military superpower.<sup>3</sup> Along with military assets in space, U.S. commercial satellites would also become targets (especially because the U.S. military is heavily reliant on commercial providers, particularly in communications). In other words, the United States could be in the position of creating strategic and military problems for itself, rather than solving them.

### **Preventing militarization is vital to U.S. hegemony—it prevents steps towards destroying existing satellites**

**Hartung, 05** (William, senior research fellow at the World Policy Institute at the New School, “Weapons in space put the world at risk”, 7/13, Seattle Post Intelligencer, [http://seattlepi.nwsourc.com/opinion/232239\\_spaceweapons13.html](http://seattlepi.nwsourc.com/opinion/232239_spaceweapons13.html))

But just because we can do something doesn't mean we should do it. For years space has served as a sanctuary where nations cooperate rather than confront one another. Satellites save lives and support our economy by predicting the weather, helping first responders provide emergency assistance, facilitating the delivery of humanitarian aid in cases of natural disaster and by making cell phones, pagers and modern financial transactions possible. A weapons-free space environment also allows the United States to maintain its military superiority by supporting state-of-the-art reconnaissance, communications and targeting capabilities. Placing weapons in space that can shoot down another nation's satellites will encourage them to respond in kind, putting U.S. satellites at risk.

## --XT Link – SSP is a weapon (1/3)

### **Microwave beams are electromagnetic weapons and can destroy power systems**

**Pop, 2k** – PhD Student, University of Glasgow Law School (Virgiliu, “SECURITY IMPLICATIONS OF NON-TERRESTRIAL RESOURCE EXPLOITATION”, [http://www.geocities.com/virgiliu\\_pop/publications/security.pdf](http://www.geocities.com/virgiliu_pop/publications/security.pdf))

High power microwaves (HPM) are a new means of warfare. The use of microwaves as the means of transmission of energy between the SPS and the ground based collecting rectenna may qualify them as electromagnetic weapons. The most widely acknowledged effect of HPM is “disruption of electronic systems”, able to “reset computers, cause complete loss of stored data and/or cause microprocessors to switch operating modes”<sup>7</sup>. This would “produce substantial paralysis in any target system, thus providing a decisive advantage in the conduct of Electronic Combat, Offensive Counter Air and Strategic Air Attack”<sup>8</sup>. In the same time, a HPM attack directed at an aircraft “could corrupt the plane’s control and navigation systems enough to cause a crash”<sup>9</sup>. Although of a non-lethal nature<sup>10</sup>, the effects of electromagnetic weapons are significant, ranging from “nuisance to catastrophic”<sup>11</sup>. This led experts to consider them as “Weapon[s] of Electrical Mass Destruction”<sup>12</sup>. Indeed, the reliance of today’s society on electronic and computer systems makes it extremely fragile; a HPM attack would have far more catastrophic effects than the Millennium Bug<sup>13</sup>.

### **SPS mirrors could be used to set cities on fire**

**Pop, 2k** – PhD Student, University of Glasgow Law School (Virgiliu, “SECURITY IMPLICATIONS OF NON-TERRESTRIAL RESOURCE EXPLOITATION”, [http://www.geocities.com/virgiliu\\_pop/publications/security.pdf](http://www.geocities.com/virgiliu_pop/publications/security.pdf))

Another “mass destruction-like” effect may be presented by the SPS that would use lasers instead of microwaves as means of transmission of energy and that may also have the capacity to cause catastrophic fires on enemy territory. Gerrard and Barber note that “there is some debate as to whether nuclear-powered lasers are [weapons of mass destruction]”<sup>14</sup>. The same may be true in the case of use of orbiting **solar mirrors: it may “become technically feasible to concentrate solar energy in certain areas of the earth and thereby cause fires, scorch the earth, or cause floods”**<sup>15</sup>. **Precedents of the use of solar rays as a weapon exist** as far back as the 3rd Century BC, when Archimedes is said to have put fire to the Roman fleet invading Syracuse by using solar rays concentrated by mirrors.

### **SPS is an ASAT weapon**

**Bloom, 7** (James Bloom, The Guardian, “Technology: Power from the final frontier: Giant collectors in space that beam solar energy back to Earth could soon be a reality.” 11-1-07, LN) // DCM

### **Damphouse = Lt. Colonel in the Pentagon's National Security Space Office**

The beam is most powerful near its source, and although at 25,000 miles up it would not pose a risk to astronauts in the International Space Station, it could be turned against communication or observation satellites in geostationary orbit. “Space Traffic Control would make sure the satellite is not tampered with before launch,” says Damphouse. “They would also ensure the spacecraft do not interfere with each other.”

### **Accidents are inevitable – geostationary orbit means the beam either has to be connected to a global grid or be redirected on the fly**

**Rako, 08** – technical editor of Electronics Design, Strategy, and News (Paul, “Solar power in space, a really stupid idea,” 7/25, <http://www.edn.com/blog/1700000170/post/1830030583.html>)

Safety. You are trying to aim a microwave beam at a 4-kilometer spot from 24,000 miles up. What could possibly go wrong?

Ecology. You will vaporize any bird or animal that gets into the beam. You will punch a hole through the clouds 24/7 where the beam comes down. Who knows the affect on the ionosphere or the earth’s magnetic field?

Security. For a power plant the installation has to be in geostationary orbit. That is directly above the equator. So if you beam the power straight down the receiver has to be on the equator as well. In addition to the security nightmare, you will still have to run wires from the equator to wherever the power is needed. Else you have to obliquely aim the thing and that is a real mess.

Fantasy. Come on, even non-technical people have to see that putting up factories on the moon, to save money making this thing, is complete BS. Ignoring the maintenance issues and real-world engineering for ivory-tower science-fair nonsense is equally fantastical.

Health. Having all these microwaves beaming around may cause cancer or other problems. If it comes down to 60 Hz or microwaves I will take 60 Hz any day.

## --XT Link – SSP is a weapon (2/3)

### **SPS could be used as an ASAT weapon**

**Pop, 2k** – PhD Student, University of Glasgow Law School (Virgiliu, “SECURITY IMPLICATIONS OF NON-TERRESTRIAL RESOURCE EXPLOITATION”, [http://www.geocities.com/virgiliu\\_pop/publications/security.pdf](http://www.geocities.com/virgiliu_pop/publications/security.pdf))

The SPS system, although not directly aimed at countering strategic ballistic missiles, might be accused of having an ABM “hidden agenda”, given its real ABM capabilities. Indeed, “[i]t was speculated that a high-energy laser beam could function as a thermal weapon to disable or destroy enemy missiles”<sup>22</sup>. Foldes also considers that one of the most logical offensive uses of SPS can include the “microwave heating of other space objects”<sup>23</sup>. OTA believes that “[a]lthough unlikely, use of the SPS for directed-energy weaponry, either directly, or as a source of energy to be transmitted to remote platforms, or for tracking, would be regulated by the ABM Treaty. Use of the SPS for ABM purposes would hence be banned”<sup>24</sup>.

The unilateral deployment of a SPS system either by the USA or Russia would entail the risk of apparent violation of the ABM treaty, and OTA considers that “[r]enewed negotiations may have to take SPS development into account, perhaps by specifying SPS designs that make it unusable as a weapons system”<sup>25</sup>.

### **SPS can be used to jam enemy communications and light up battlefields**

**Pop, 2k** – PhD Student, University of Glasgow Law School (Virgiliu, “SECURITY IMPLICATIONS OF NON-TERRESTRIAL RESOURCE EXPLOITATION”, [http://www.geocities.com/virgiliu\\_pop/publications/security.pdf](http://www.geocities.com/virgiliu_pop/publications/security.pdf))

The SPS potential of jamming of enemy radio communications is considered to be “significant”<sup>34</sup> and one of “the most logical offensive uses of SPS”<sup>35</sup>. Orbital solar mirrors could be used to intimidate the enemy and to illuminate the battlefields during an attack. Given their dimensions, SPS can serve as a “space launching pad”<sup>36</sup> and repair facilities<sup>37</sup>. The SPS “would be able to transmit power to remote military operations anywhere needed on earth”<sup>38</sup>.

## --XT Link – SSP is a weapon (3/3)

### SSP is a death ray

**Rako, 8** – technical editor of Electronics Design, Strategy, and News (Paul, “Solar power in space, a really stupid idea,” 7/25, <http://www.edn.com/blog/1700000170/post/1830030583.html>)

This is a flat-out lie. It's a lie in so many places it hurts my teeth. Sweeping all the alternative energy sources under the rug, without looking at the complex analog tradeoffs involved is an affront to reason and decency. That is a bad enough lie. But to then follow that absurdity with the assertion that space solar power is somehow economically possible and environmentally friendly is complete madness. Now I am going to give some sources you can read that prove beyond a shadow of a doubt that this proposal is clinically insane, but first I wanted to share an epiphany I had. Paul's epiphany came about 5 hours into a wasted Thursday night where I should have been in downtown San Jose having fun at the free concert. Instead I spent all night reading all the sources I could find regarding SPS. I am embarrassed because it took five hours to realize something that was plainly stated in the comments to the article that I read five hours before. Someone pointed out that the technology of this proposal did not matter. This space-panel microwave gizmo was also a weapon and it would be politically impossible to deploy it.

Wow, hours of my personal time down the drain before the epiphany. The epiphany was that this thing was exactly that, a weapon. That is why NASA researched it in the 1980s, that is what all the feasibility studies were about and that is why it is being floated out there right now. The military industrial complex wants to test how stupid we are. If the American people are dumb enough to believe that solar panels in space is even the slightest bit possible then they can use that cover as they do what they really want to do, make a death machine. The images of the Terminator movies and SkyNet are too chilling to even contemplate. Now there may be some Pollyanna types that think our wonderful government is way too nice to ever try and develop a death machine. Sorry, for those of you that think the United States Government is more like a fluffy little fabric softener sheet tumbling around the dryer, making everything silky smooth and smelling fresh, well, news flash: Governments are about coercion. Force, killing, jails, waterboards, and the rest are the essential nature and job of the government. Sure they hand out a bunch of middle class entitlements to stay in power and keep the sheep bleating happy sounds, but the core nature and purpose of governments is forcing people to do things. Most of the less naive among us are OK with that. After all, I am sitting on a lovely little parcel of land that was stolen from the Mexicans, who stole it from the Spanish priests, who stole it from the Portuguese priests, who stole it from the Indians, who stole it from each other for 10,000 years. Works for me, I just planted some cactus in the front yard. Of course I will be complaining about the effective 45% tax rate we engineers have to suffer till the day I die, I hate the government forcing me to do that. But I will just kind of skirt around the benefits all the killing and mayhem provided me. After all, I deserve a happy little Domicile of the Future here in sunny Sunnyvale. I have a title to prove it is all mine. I am glad my government stole the land for me, just like I am glad Burger King shoots a rod into a cow's head so I can have a tasty burger with none of the emotional baggage. Who wants to drive a nail into Elsie's skull?

OK, still doubtful that NASA, our beloved space program would try to fund a death machine under the cover of alternative energy? Well, you didn't have the benefit of working at several military contractors, like I did. When you work at those places you invariably meet people who think in military terms. One of them told me twenty years ago that the entire space program was a military operation. I was incredulous. He patiently explained. See, warfare has always been about controlling the high ground. If you could control the plains while the enemy was in the ditch, you won. If you controlled the hill while the enemy was on the plain, you won. If you control the mountain while the enemy is on the hill, you won. If you controlled the airplanes while the enemy was on the mountain, you won. OK, news flash, live at five, film at eleven: If you control space while the enemy is in an airplane, you win. The military types at those military contractors told me what was already pretty apparent—that there is no sensible scientific reason to put people in space. All the science is much much much cheaper if you don't need to launch life support. Sure astronauts do maintenance on the Hubble telescope, but for what we spent developing the shuttle, especially when you count the dead astronauts, we could have sent up a dozen Hubble telescope and just let the broken ones fall out of orbit. The space station is a prototype AWAC and this solar-power death-machine is a prototype AC-130. And remember, for the \$100 billion we spent on the space station, every American household could get 952 dollars for gasoline.

Trust me on this one; this solar power in space stuff is a military research project to make a death machine. Then things start to makes sense technologically and sociologically. Some of the most severe limitations of the system go away when it is a weapon. There is no need for constant maintenance since it is used intermittently. There is no need for a geostationary orbit, you want to be able to kill people anywhere, including and maybe especially inside the US borders. Keeping us in control is just as important as killing foreigners. Heck you don't even need a geosynchronous orbit. You can put the death machine in low earth orbit. That saves a huge amount of cost and dispenses with fantasy proposals like the NASA guy that said we should build them on the moon and then bring them down. I started to ask myself if these idiots have even been in a semiconductor fab, much less one on the moon, but see, then I realized, Doctorates are not stupid. The government needed some fantasy cover story to keep the research going in the face of the fact that the power would cost not 10, not 100 not 1000 but about 10,000 times more than terrestrial based power of any form.

Ok, sorry to all you hard-core technical types for that diatribe, but I did not want you spending 5 hours researching this like I did without understanding this is death machine proposal, not an alternative energy proposal. Here are the sources. The URSI (Union Radio-Scientifique Internationale) has a nice web page as well as an identical pdf that debunks most of the SPS proposals. They seem to make an error when they say you need 10,000m<sup>2</sup> to receive 14GW solar flux. With 1.37 kW/m<sup>2</sup> solar flux I see it as a million square meters, a solar panel 1 km on a side. The 14 GW is reduced to 1 GW by the 7% system efficiency they describe. The paper is very neutral, unlike some of my ham buddies that would just say; “You want to beam a gigawatt of RF energy into the atmosphere, and then build a whole bunch of them? Are you out of your f\*(&^ing mind?” This paper has references, both pro and con and it is the con ones that have the good reading. One good resource is S. Fetter, “Space Solar Power: An Idea Whose Time Will Never Come?” (pdf). Where you might want to start is just read all the comments in the NY Times article. Read all 6 pages.

## --AT: Defensive Weapons Only

### **Deployment of defensive weapons will spur counter weaponization and ASATS**

**Pena and Hudgins, 02** (Policy Analysis, March 18, Charles V. Peña is senior defense policy analyst and Edward L. Hudgins is former director of regulatory studies at the Cato Institute. <http://www.cato.org/pubs/pas/pa427.pdf> , Should the United States “Weaponize” Space? Military and Commercial Implications).

Advocates of a more aggressive U.S. military policy for space argue that the United States is more reliant on the use of space than is any other nation, that space systems are vulnerable to attack, and that U.S. space systems are thus an attractive candidate for a “space Pearl Harbor.” But as important and potentially vulnerable as current U.S. space-based assets may be, deploying actual weapons (whether defensive or offensive) will likely be perceived by the rest of the world as more threatening than the status quo. Any move by the United States to introduce weapons into space will surely lead to the development and deployment of anti-satellite weapons by potentially hostile nations. As the dominant user of space for military and civilian functions, the United States would have the most to lose from such an arms race. Although there are legitimate (and unique) military requirements for space assets, virtually all are “dual use.” Military requirements should not necessarily dictate those other uses. In fact, commercial efforts in space often lead those of the government and the Department of Defense and usually have lower costs, due to market influences and competition. National security must be one component of total U.S. space policy, but it must certainly not be the primary component. In the post–Cold War environment—with no immediate threat from a rival great power and none on the horizon— the United States must not establish overstated and costly military requirements for space-based resources. The military must make greater use of commercial space assets. Also, the United States should strive to foster an environment that allows commercial space activity to grow and flourish rather than use it to create a new area for costly military competition.

## 2NC Accidents Impact (1/3)

### **Poor Russian intelligence warning would result in miscalc on space debris and nuclear war**

**Lewis, 04** - Post doctorate Fellow in the Advanced Methods of Cooperative Security Program, (Jeffery, July "What if Space Were Weaponized? Possible Consequences for Conflict Scenarios" Center for Defense Information, <http://www.cdi.org/PDFs/scenarios.pdf>

This is the second of two scenarios that consider how U.S. space weapons might create incentives for America's opponents to behave in dangerous ways. The previous scenario looked at the systemic risk of accidents that could arise from keeping nuclear weapons on high alert to guard against a space weapons attack. This section focuses on the risk that a single accident in space, such as a piece of space debris striking a Russian early-warning satellite, might be the catalyst for an accidental nuclear war. As we have noted in an earlier section, the United States canceled its own ASAT program in the 1980s over concerns that the deployment of these weapons might be deeply destabilizing. For all the talk about a "new relationship" between the United States and Russia, both sides retain thousands of nuclear forces on alert and configured to fight a nuclear war. When briefed about the size and status of U.S. nuclear forces, President George W. Bush reportedly asked "What do we need all these weapons for?"<sup>43</sup> The answer, as it was during the Cold War, is that the forces remain on alert to conduct a number of possible contingencies, including a nuclear strike against Russia. This fact, of course, is not lost on the Russian leadership, which has been increasing its reliance on nuclear weapons to compensate for the country's declining military might. In the mid-1990s, Russia dropped its pledge to refrain from the "first use" of nuclear weapons and conducted a series of exercises in which Russian nuclear forces prepared to use nuclear weapons to repel a NATO invasion. In October 2003, Russian Defense Minister Sergei Ivanov reiterated that Moscow might use nuclear weapons "preemptively" in any number of contingencies, including a NATO attack.<sup>44</sup> So, it remains business as usual with U.S. and Russian nuclear forces. And business as usual includes the occasional false alarm of a nuclear attack. There have been several of these incidents over the years. In September 1983, as a relatively new Soviet early-warning satellite moved into position to monitor U.S. missile fields in North Dakota, the sun lined up in just such a way as to fool the Russian satellite into reporting that half a dozen U.S. missiles had been launched at the Soviet Union. Perhaps mindful that a brand new satellite might malfunction, the officer in charge of the command center that monitored data from the early-warning satellites refused to pass the alert to his superiors. He reportedly explained his caution by saying: "When people start a war, they don't start it with only five missiles. You can do little damage with just five missiles."<sup>45</sup> In January 1995, Norwegian scientists launched a sounding rocket on a trajectory similar to one that a U.S. Trident missile might take if it were launched to blind Russian radars with a high altitude nuclear detonation. The incident was apparently serious enough that, the next day, Russian President Boris Yeltsin stated that he had activated his "nuclear football" – a device that allows the Russian president to communicate with his military advisors and review his options for launching his arsenal. In this case, the Russian early-warning satellites could clearly see that no attack was under way and the crisis passed without incident.<sup>46</sup> In both cases, Russian observers were confident that what appeared to be a "small" attack was not a fragmentary picture of a much larger one. In the case of the Norwegian sounding rocket, space-based sensors played a crucial role in assuring the Russian leadership that it was not under attack. The Russian command system, however, is no longer able to provide such reliable, early warning. The dissolution of the Soviet Union cost Moscow several radar stations in newly independent states, creating "attack corridors" through which Moscow could not see an attack launched by U.S. nuclear submarines.<sup>47</sup> Further, Russia's constellation of early-warning satellites has been allowed to decline – only one or two of the six satellites remain operational, leaving Russia with early warning for only six hours a day. Russia is attempting to reconstitute its constellation of early-warning satellites, with several launches planned in the next few years. But Russia will still have limited warning and will depend heavily on its space-based systems to provide warning of an American attack.<sup>48</sup> As the previous section explained, the Pentagon is contemplating military missions in space that will improve U.S. ability to cripple Russian nuclear forces in a crisis before they can execute an attack on the United States. Anti-satellite weapons, in this scenario, would blind Russian reconnaissance and warning satellites and knock out communications satellites. Such strikes might be the prelude to a full-scale attack, or a limited effort, as attempted in a war game at Schriever Air Force Base, to conduct "early deterrence strikes" to signal U.S. resolve and control escalation.<sup>49</sup> By 2010, the United States may, in fact, have an arsenal of ASATs (perhaps even on orbit 24/7) ready to conduct these kinds of missions – to coerce opponents and, if necessary, support preemptive attacks. Moscow would certainly have to worry that these ASATs could be used in conjunction with other space-enabled systems – for example, long-range strike systems that could attack targets in less than 90 minutes – to disable Russia's nuclear deterrent before the Russian leadership understood what was going on. What would happen if a piece of space debris were to disable a Russian early-warning satellite under these conditions? Could the Russian military distinguish between an accident in space and the first phase of a U.S. attack? Most Russian early-warning satellites are in elliptical Molniya orbits (a few are in GEO) and thus difficult to attack from the ground or air. At a minimum, Moscow would probably have some tactical warning of such a suspicious launch, but given the sorry state of Russia's warning, optical imaging and signals intelligence satellites there is reason to ask the question. Further, the advent of U.S. on-orbit ASATs, as now envisioned<sup>50</sup> could make both the more difficult orbital plane and any warning systems moot. The unpleasant truth is that the Russians likely would have to make a judgment call. No state has the ability to definitively determine the cause of the satellite's failure. Even the United States does not maintain (nor is it likely to have in place by 2010) a sophisticated space surveillance system that would allow it to distinguish between a satellite malfunction, a debris strike or a deliberate attack – and Russian space surveillance capabilities are much more limited by comparison. Even the risk assessments for collision with debris are speculative, particularly for the unique orbits in which Russian early-warning satellites operate. During peacetime, it is easy to imagine that the Russians would conclude that the loss of a satellite was either a malfunction or a debris strike. But how confident could U.S. planners be that the Russians would be so calm if the accident in space occurred in tandem with a second false alarm, or occurred during the middle of a crisis? What might happen if the debris strike occurred shortly after a false alarm showing a missile launch? False alarms are appallingly common – according to information obtained under the Freedom of Information Act, the U.S.-

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## 2NC Accidents Impact (2/3)

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Canadian North American Aerospace Defense Command (NORAD) experienced 1,172 “moderately serious” false alarms between 1977 and 1983 – an average of almost three false alarms per week. Comparable information is not available about the Russian system, but there is no reason to believe that it is any more reliable.<sup>51</sup> Assessing the likelihood of these sorts of coincidences is difficult because Russia has never provided data about the frequency or duration of false alarms; nor indicated how seriously early-warning data is taken by Russian leaders. Moreover, there is no reliable estimate of the debris risk for Russian satellites in highly elliptical orbits.<sup>52</sup> The important point, however, is that such a coincidence would only appear suspicious if the United States were in the business of disabling satellites – in other words, there is much less risk if Washington does not develop ASATs. The loss of an early-warning satellite could look rather ominous if it occurred during a period of major tension in the relationship. While NATO no longer sees Russia as much of a threat, the same cannot be said of the converse. Despite the warm talk, Russian leaders remain wary of NATO expansion, particularly the effect expansion may have on the Baltic port of Kaliningrad. Although part of Russia, Kaliningrad is separated from the rest of Russia by Lithuania and Poland. Russia has already complained about its decreasing lack of access to the port, particularly the uncooperative attitude of the Lithuanian government.<sup>53</sup> News reports suggest that an edgy Russia may have moved tactical nuclear weapons into the enclave.<sup>54</sup> If the Lithuanian government were to close access to Kaliningrad in a fit of pique, this would trigger a major crisis between NATO and Russia. Under these circumstances, the loss of an early-warning satellite would be extremely suspicious. It is any military’s nature during a crisis to interpret events in their worst-case light. For example, consider the coincidences that occurred in early September 1956, during the extraordinarily tense period in international relations marked by the Suez Crisis and Hungarian uprising.<sup>55</sup> On one evening the White House received messages indicating: 1. the Turkish Air Force had gone on alert in response to unidentified aircraft penetrating its airspace; 2. one hundred Soviet MiG-15s were flying over Syria; 3. a British Canberra bomber had been shot down over Syria, most likely by a MiG; and 4. The Russian fleet was moving through the Dardanelles. Gen. Andrew Goodpaster was reported to have worried that the confluence of events “might trigger off ... the NATO operations plan” that called for a nuclear strike on the Soviet Union. Yet, all of these reports were false. The “jets” over Turkey were a flock of swans; the Soviet MiGs over Syria were a smaller, routine escort returning the president from a state visit to Moscow; the bomber crashed due to mechanical difficulties; and the Soviet fleet was beginning long-scheduled exercises. In an important sense, these were not “coincidences” but rather different manifestations of a common failure – human error resulting from extreme tension of an international crisis. As one author noted, “The detection and misinterpretation of these events, against the context of world tensions from Hungary and Suez, was the first major example of how the size and complexity of worldwide electronic warning systems could, at certain critical times, create momentum of its own.” Perhaps most worrisome, the United States might be blithely unaware of the degree to which the Russians were concerned about its actions and inadvertently escalate a crisis. During the early 1980s, the Soviet Union suffered a major “war scare” during which time its leadership concluded that bilateral relations were rapidly declining. This war scare was driven in part by the rhetoric of the Reagan administration, fortified by the selective reading of intelligence. During this period, NATO conducted a major command post exercise, Able Archer, that caused some elements of the Soviet military to raise their alert status. American officials were stunned to learn, after the fact, that the Kremlin had been acutely nervous about an American first strike during this period.<sup>56</sup>

### **The presence of ASAT weapons mean that false alarms are misinterpreted and risk crisis escalation**

**Lewis, 04** - Post doctorate Fellow in the Advanced Methods of Cooperative Security Program, (Jeffery, July “What if Space Were Weaponized? Possible Consequences for Conflict Scenarios” Center for Defense Information, <http://www.cdi.org/PDFs/scenarios.pdf>)

All of these incidents have a common theme – that confidence is often the difference between war and peace. In times of crisis, false alarms can have a momentum of their own. As in the second scenario in this monograph, the lesson is that commanders rely on the steady flow of reliable information. When that information flow is disrupted – whether by a deliberate attack or an accident – confidence collapses and the result is panic and escalation. Introducing ASAT weapons into this mix is all the more dangerous, because such weapons target the elements of the command system that keep leaders aware, informed and in control. As a result, the mere presence of such weapons is corrosive to the confidence that allows national nuclear forces to operate safely.

## 2NC Accidents Impact (3/3)

### **The fear of Chinese asats will cause the U.S. to use its space weapons preemptively**

**Lewis, 04** - Post doctorate Fellow in the Advanced Methods of Cooperative Security Program, (Jeffery, July "What if Space Were Weaponized? Possible Consequences for Conflict Scenarios" Center for Defense Information, <http://www.cdi.org/PDFs/scenarios.pdf>)

It is not clear whether even a very large American first strike would completely neutralize the 75 to 100 Chinese nuclear weapons that the CIA anticipates will be capable of reaching the United States in the next ten to 15 years.<sup>24</sup> Controlling escalation, however, appears dicey — if the United States succeeded in severely degrading the Chinese command and control system, Chinese leaders might not even know that the original attack had been confined to conventional weapons. Those who say this scenario is far fetched may be surprised to learn that it happened — in a war game sponsored by the Naval War College.<sup>25</sup> In that game, which was held August 14-25, 2000, a large Asian nation with over a billion people called Red (China) was conducting large-scale military exercises that the Blue Team (the United States) believed were a prelude to an attack on a U.S. ally located in region, designated Brown. During these exercises, the commander of Blue Forces became concerned that Red might use ground-based lasers against U.S. satellites. Fearing the loss of such important assets, he ordered a limited preemptive strike — using a fleet of CAVs that he had deployed in space — against suspected ground-based laser sites deep inside Red's country. At the same time, he refrained from striking other targets "rationalizing that the preemptive strike was only protecting high-value space assets, not initiating hostilities."<sup>26</sup> The Blue Team was stunned when Red viewed the strike on targets deep inside its territory as an act of war and retaliated — causing a general war. One flabbergasted participant, sounding not completely convinced of what had just happened, reportedly explained: "We thought these preemptive strikes might very well have stopped the crisis situation. But there were some who had a different point of view — that the strikes may have been provocative."<sup>27</sup> It is important to note that the Chinese don't even have to actually acquire ASATs for this nightmare scenario to happen.

The Pentagon's assessments of Chinese ASATs are based largely on circumstantial evidence — a Hong Kong newspaper report here; a commercial purchase by a Chinese company there. In fact, the Pentagon admits that "specific Chinese programs for a laser ASAT system have not been identified" and that press reports of a so-called "parasitic" microsatellite "cannot be confirmed."<sup>28</sup> Such gaps in U.S. knowledge are dangerous, given the natural tendency of defense planners to assume the worst. Although Blue claimed that it had acted on "unambiguous warning" of a threat to space assets, the mere fact that the Chinese might already have such system — or could improvise a crude ASAT in a pinch — would create a strong incentive to use U.S. space systems before they were lost. It is not too far fetched to imagine the president, faced with a crisis over Taiwan, deciding — as he did with Iraq — that "we cannot wait for the final proof — the smoking gun — that could come in the form of a mushroom cloud."<sup>29</sup>

## 2NC Preemption impact

### **SSP will cause China to nuke Cape Canaveral before it's deployed**

**Rako, 8** — technical editor of Electronics Design, Strategy, and News (Paul, "Solar power in space, a really stupid idea," 7/25, <http://www.edn.com/blog/1700000170/post/1830030583.html>)

I will try to summarize the basic arguments: SPS Pro Solar flux density in space is 1.37 kW/m<sup>2</sup> as opposed to 1 kW/m<sup>2</sup> in Arizona at noon. The solar collector can work all day since a geostationary orbit is 24,000 miles up, directly over the equator, and the earth does not shadow the collector. There are no clouds in space. SPS Con Economics. This is just madness, bat-shiat crazy stuff if your goal is to generate commercial electric power. Launch costs, maintenance costs, safety costs are, literally, astronomical. Politics. Like the commentator said, this is a weapon, and by the time we develop it China will have the technology and international standing to nuke Cape Canaveral to keep us from putting it in space.

### **ASAT strikes risk global nuclear war**

**Schwab, 05** — director of the Homeplanet Defense Institute (Martin, Homeplanet Defense: Strategic Thought for a World in Crisis, chapter 1)

ASATs are designed to take out the ability of an adversary to see. War games played by the U.S. military in this area consistently result in a nuclear exchange for most nuclear powers. When transparency in space is compromised, military personnel of contending countries cannot verify what each is doing with their nuclear arsenals. When this occurs, each military' opponent (a human decision-maker) is bound by duty to their nation-state to assume the worst, which may cause pre-emptive nuclear strikes. These strikes usually result in retaliation, meaning global nuclear tragedy in the war games.<sup>18</sup> War games reveal that when a nation disables another nation's ground-based laser that poses a threat to space assets in an attempt to de-escalate a crisis, all-out war can be unleashed, as the "de-escalating" action can easily be interpreted as provocation.'

### **Attempts to seize space control risks preemptive strikes against the U.S.**

**Krepon and Heller, 04** \*co-founder of The Henry L. Stimson Center and Director of the Center's Space Security Project AND \*\* Research Assistant on the Stimson Center's Space Security Project (Michael and Micheal, Disarmament Diplomacy, "A Model Code of Conduct for Space Assurance", May/June, <http://www.acronym.org.uk/dd/dd77/77mkmh.htm>)

Today, advocates of space warfare capabilities in the United States believe in dominance, not mutual deterrence. The rejection of mutual deterrence in space has profoundly destabilising prospects. In order to seize dominion in space, those who deploy ASAT weapons or weapons designed to strike targets on earth would need to prevent potential adversaries from responding in kind. This would require preemptive strikes against the facilities of a state believed to be preparing an ASAT launch, or killing the launch vehicle or its payload en route to space. This hard logic is driven by cold facts: Dominion in space cannot be achieved if a potential adversary's ASATs are trailing satellites that are essential for the execution of war plans. Nor can dominion be established if anti-satellite warfare produces debris fields.

### **U.S. ASAT development will trigger full scale space weaponization and risks of miscalculation**

**Krepon and Heller, 04** \*co-founder of The Henry L. Stimson Center and Director of the Center's Space Security Project AND \*\* Research Assistant on the Stimson Center's Space Security Project (Michael and Micheal, Disarmament Diplomacy, "A Model Code of Conduct for Space Assurance", May/June, <http://www.acronym.org.uk/dd/dd77/77mkmh.htm>)

The flight testing and prospective deployment of anti-satellite (ASAT) and other space weapons would have significantly adverse consequences for national security, global commerce, and scientific endeavour. If the United States took the lead in such efforts, other nations would surely respond in kind. Similarly, the flight testing and deployment of space weapons by other countries would prompt a vigorous response by the United States.

A situation in which satellites orbiting the earth are trailed by objects designed to destroy or disable them is inherently destabilising, given the vulnerability of satellites and the ease with which they could be harmed. Potential adversaries in space would be faced with the dilemma of shooting first or risking the loss of critical satellites. The quest to secure dominion over space would therefore elevate into the heavens the hair-trigger postures that plagued humankind during the Cold War.

## 2NC Space race impact

**Any deployment of space weapons would trigger a massive arms race, make space unusable for civilians, and lead to nuclear war.**

**Cox, 7** (Stan, Alternet.com, "Real-Life Star Wars: The Militarization of Space", 11-15-07, <http://www.alternet.org/audits/67699/?page=2&ses=bc840069826945d72d02af984b214a450>)

Why should we citizens even care what goes on outside the planet and its atmosphere? The prospect of space war seems a lot less ominous than did, say, the threat of a US-Soviet nuclear holocaust. Nobody lives in space; no civilians will be maimed or killed by a robotic shoot-em-up in orbit. Helen Caldicott and Craig Eisendrath answered such arguments in their book *War in Heaven: The Arms Race in Outer Space*, published earlier this year. In the wake of the Soviet launch of Sputnik in 1957, they wrote, humans across the globe began asking, "Would [outer space] be the venue for wars and synchronized killings, or the common space for a complex of cooperative peaceful efforts benefiting our species? The two uses of space could not exist side by side." They stress that the first deployment of weapons will set off a multi-trillion-dollar arms race, risk littering orbital space with enough debris to make it unusable for any civilian purpose, and possibly trigger a nuclear war.

## AT: Space Militarization Deters Conflict

### **Space militarization would result in an arms race and killing hegemony- outweighing any potential short term benefits of developing first**

**Hitchens**, CDI Vice President, **2002** (Theresa, April 18 "Weapons in Space: Silver Bullet or Russian Roulette? The Policy Implications of U.S. Pursuit of Space-Based Weapons", <http://www.cdi.org/missile-defense/spaceweapons.cfm>)

China and Russia long have been worried about possible U.S. breakout on space-based weaponry. Officials from both countries have expressed concern that the U.S. missile defense program is aimed not at what Moscow and Beijing see as a non-credible threat from rogue-nation ballistic missiles, but rather at launching a long-term U.S. effort to dominate space. Both Russia and China also are key proponents of negotiations at the UN Conference on Disarmament to expand the 1967 Outer Space Treaty to ban all types of weapons. The effort to start talks known as PAROS, for "prevention of an arms race in outer space," has been stalled due in large part to the objection of the United States. For example, in November 2000, the United States was one of three countries (the others were Israel and Micronesia) to refuse to vote for a UN resolution citing the need for steps to prevent the arming of space. It is inconceivable that either Russia or China would allow the United States to become the sole nation with space-based weapons. "Once a nation embarks down the road to gain a huge asymmetric advantage, the natural tendency of others is to close that gap. An arms race tends to develop an inertia of its own," writes Air Force Lt. Col. Bruce M. DeBlois, in a 1998 article in *Airpower Journal*. Chinese moves to put weapons in space would trigger regional rival India to consider the same, in turn, spurring Pakistan to strive for parity with India. Even U.S. allies in Europe might feel pressure to "keep up with the Joneses." It is quite easy to imagine the course of a new arms race in space that would be nearly as destabilizing as the atomic weapons race proved to be. Such a strategic-level space race could have negative consequences for U.S. security in the long run that would outweigh the obvious (and tremendous) short-term advantage of being the first with space-based weapons. There would be direct economic costs to sustaining orbital weapon systems and keeping ahead of opponents intent on matching U.S. space-weapon capabilities — raising the proverbial question of whether we would be starting a game we might not be able to win. (It should be remembered that the attacker will always have an advantage in space warfare, in that space assets are inherently static, moving in predictable orbits. Space weapons, just like satellites, have inherent vulnerabilities.) Again, the price tag of space weapons systems would not be trivial — with maintenance costs a key issue. For example, it now costs commercial firms between \$300 million and \$350 million to replace a single satellite that has a lifespan of about 15 years, according to Ed Cornet, vice president of Booz Allen and Hamilton consulting firm. Many experts also argue there would be costs, both economic and strategic, stemming from the need to counter other asymmetric challenges from those who could not afford to be participants in the race itself. Threatened nations or non-state actors might well look to terrorism using chemical or biological agents as one alternative. Karl Mueller, now at RAND, in an analysis for the School of Advanced Airpower Studies at Maxwell Air Force Base, wrote, "The United States would not be able to maintain unchallenged hegemony in the weaponization of space, and while a space-weapons race would threaten international stability, it would be even more dangerous to U.S. security and relative power projection capability, due to other states' significant ability and probably inclination to balance symmetrically and asymmetrically against ascendant U.S. power." Spurring other nations to acquire space-based weapons of their own, especially weapons aimed at terrestrial targets, would certainly undercut the ability of U.S. forces to operate freely on the ground on a worldwide basis — negating what today is a unique advantage of being a military superpower.

### **The ease of ground-based ASATs makes effective space control impossible**

**Marshall, 06** - fellow at the Belfer Center for Science and International Affairs at Harvard's Kennedy School of Government and jointly at the Space Policy Institute of George Washington University (William, Boston Globe, "Weapons in outer space", 7/5, [http://www.boston.com/news/globe/editorial\\_opinion/oped/articles/2006/07/05/weapons\\_in\\_outer\\_space/](http://www.boston.com/news/globe/editorial_opinion/oped/articles/2006/07/05/weapons_in_outer_space/))

The problem is that satellites are also vulnerable to elimination by enemies. A Space Commission report chaired by Defense Secretary Donald Rumsfeld considers the threat so real it warned of a "Space Pearl Harbor."

Naturally, Americans want to protect these assets, so why not pursue space weapons? The most compelling reason is that they would actually make the situation worse.

This is due to the technical ease of ground-based anti-satellite systems. Adversaries wouldn't need to go to the trouble of building space-based weapons systems. Simple and inexpensive, ground-based systems could shoot these satellites out of the sky. More than 25 nations already have the missile capability to reach the altitude at which the satellites orbit. More significantly, powerful lasers able to kill a satellite in low orbit through heating are available commercially in more than 50 nations. If the United States deploys ground-based anti-satellite technology, or ASATs (which it can do technically now), then others will follow suit. America has the most assets in orbit to lose in such a game.

If the United States deploys space-based weapons -- like interceptors for missile defense (which it is on course to deploy within about 6 years) -- an adversary could simply take them out from the ground. If any security advantage afforded by such a weapon is easily negated, then one is left with the prospect of other nations moving toward developing ground-based ASAT capabilities. This would severely jeopardize America's precious satellites, all of them. Also, the capabilities provided by each proposed space-based weapon can be achieved with ground-based alternatives that are generally 100 to 1,000 times cheaper.

In addition, the United States is planning to release a new National Space Policy within weeks, tweaks to the language of which could give the green light for US deployment of space-based weapons. Instead, the United States should send a sign to other nations by taking space-based weapons off the books once and for all. America can still protect its satellite systems -- in less-threatening ways.

## AT: Deterrence Solves China

### **Impossible to deter China, three reasons: China already has weapons, military-commercial bonds, and other states could aid China**

**Meteyer, 5**—Major, U.S. Air Force (“David O., “The Art of Peace: Dissuading China from Developing Counter Space Weapons,” page 41-42, June 2005, <http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA435590>)

Several factors will complicate a U.S. defense policy of dissuasion that aims to reduce the threat of space systems. First, China’s space program already has operational systems providing a wide range of military and commercial capabilities. 74 China’s space capabilities give it more than just a foot-in-the-door. In fact, China is already reaping the numerous benefits afforded by the highest frontier. In addition, even though China’s space programs are relatively immature when compared to the U.S., the learning curve for improving upon these technologies is steep. Finally, it is one thing to dissuade someone from doing something they cannot already do and hence cannot appreciate its advantages; it is an entirely different thing to dissuade someone from doing something they already do, especially when it has clear benefits. Second, there is an extremely close relationship between military and commercial entities in the space industry. Some systems are dual use such as navigational or weather satellites. Therefore, targeting programs that provide many services enjoyed by the public is challenging to carry out. For example, it would be difficult to justify the denial of satellite produced weather information used to aid civilian populations. A properly networked space-based weather information structure may have reduced the devastation caused by the recent Indian Ocean tsunamis as well as other types of catastrophic events. Third, states frequently buy space capabilities from other states or commercial businesses. For example, France and Russia both operate military space systems and it is widely believed that both of these states offer their military space systems for use by other countries. 75 In addition, several commercial companies sell space services to include imaging and satellite communications. 76 This limits the prospect of a dissuasion policy because even if China abandons certain space programs, they may still acquire similar information through these third party connections. In light of these reasons, it seems unlikely that dissuasion will succeed in stopping China from pursuing many types of military space systems. In addition, many of these space systems (e.g., commercial communications satellites) simply do not pose a significant enough threat to U.S. security interests to justify a dissuasion campaign. However, space weapon systems that can destroy other satellites (e.g., space mines) or from space can destroy things on earth (e.g., space-based laser) do in fact present a significant threat to not only U.S. space supremacy, but to U.S. security as well. It is for these reasons that a dissuasion campaign should only target counter space systems.

## AT: Plan Allows Better Diplomacy

### **Space weaponization blinds policymakers to diplomatic options**

**Lewis, 04** - Post doctorate Fellow in the Advanced Methods of Cooperative Security Program, (Jeffery, July "What if Space Were Weaponized? Possible Consequences for Conflict Scenarios" Center for Defense Information, <http://www.cdi.org/PDFs/scenarios.pdf>)

The prospect that space weapons might render the United States invulnerable to any kind of attack will remain tempting. And, for the foreseeable future, it will remain out of reach, for myriad reasons. Many warn that space weapons will be technologically daunting and cost-prohibitive, while alienating nations allied to the United States and antagonizing others. These five scenarios attempt to explain a different, complicated idea: In a world with space weapons, the United States may be better armed, but we may well be less secure. • Scenario 1 argues that our anti-satellite (ASAT) programs are likely to inspire and aid the ASAT programs of others. In world where many states have ASATs, the United States, which is heavily dependent on space systems, has the most to lose. • Scenario 2 argues that the tremendous value provided by space-based military systems is also very vulnerable to attack, creating perverse incentives for a U.S. president to rapidly escalate conflict in a crisis situation. • Scenario 3 argues that Russia and China are likely to change their nuclear postures in response to expanding U.S. military capabilities in outer space, increasing the readiness of their forces at the expense of operational control, and undermining years of efforts at risk reduction. • Scenario 4 argues that the space-enabled war-fighting strategies tangle nuclear and space forces together in way that creates unnecessary risks of accident — such as a piece of space debris striking a Russian early-warning satellite that could be interpreted as an attack. • Scenario 5 considers the possibility of conflicts that escalate into space threatening American space assets through collateral damage, even if the United States is a third party. In many of these scenarios, space weapons merely exacerbate underlying instabilities. In others, space capabilities, by reinforcing the belief that vulnerability is a choice, may blind U.S. policymakers to the need to complement military power with political and diplomatic efforts

### **Space militarization will cause the entire world to backlash against the U.S. – their authors are writing from narrow patriotic tunnel vision**

**Moore, 06** - contributing editor of The Bulletin of the Atomic Scientists (Mike, SAIS Review, "A New Cold War?", Winter Spring, projectmuse)

We Americans are inclined to believe that our nation's virtues are endless. Given that, why would any law-abiding nation be alarmed by ownership-of-space rhetoric? Why should other nations, other than rogue states, worry about the U.S. capacity for "instant engagement anywhere in the world"?

The rhetoric of space warriors, the Defense Department, and the White House (whether occupied by Democrats or Republicans) seems driven by a worldview that says the values of the United States represent the end state in human development. If the United States chooses to develop a space-control capability and to place weapons in space, it will have done so because in this troubled world only it can be trusted to do it right.

U.S. space-power partisans define space control as having the capability to grant access to space to the good guys and deny access to the bad guys. That power is framed in the language of deterrence; it would be used only when necessary.

However, this goal ignores the predictable political impact of possessing such power. A nation able to deny access to space to hostile states in a time of conflict would have the latent capability to deny access to anyone at any time.

Why would any nation-state that values its own sovereignty be content with that?

The people of many nations already hate, fear or mistrust the United States, in part because of its staggering lead in high-tech warfare, which has been repeatedly demonstrated not only in war games, but in actual battle.

One suspects most countries already have come to terms with the fact that the United States will continue indefinitely to be the most powerful state the world has ever known, militarily, economically, and culturally. But is there a tipping point? A line beyond which even a nation as relatively benign as the United States cannot go without provoking reactions that ultimately would compromise the security of its own citizens? [End Page 178]

U.S. control of space, says Everett C. Dolman of the Air Force's highly influential School of Advanced Air and Space Studies, would place "as guardian of space the most benign state that has ever attempted hegemony over the greater part of the world." It would be a bold and decisive step, and "at least from the hegemon's point of view, morally just."<sup>4</sup>

Morally just? That phrase lies at the heart of the debate over space control and weapons in space. This debate is not just about whether such courses of action would be prudent or imprudent. It is also about America's message to the world. The United States is a free and open society, with a commitment to liberty and the rule of law. We have a generosity of spirit that is uncommon in history, which we advertise widely. On balance, this sounds like a nation concerned with morality and justice.

But modern America has at times demonstrated an unseemly imperial arrogance in its foreign policy. Americans sometimes ask, "Why do they hate US?" One answer comes easily: We are the world's richest and most powerful nation, a nation that—on the whole—lives well. This fact incites envy. Another easy answer: Many tens of millions of people hate America because they live in an intellectual dark age and are culturally incapable of understanding the extraordinary values that make the United States great. One would not describe jihadists as children of the Enlightenment.

Yet there is another, harsher answer. Perhaps some men and women hate us because they know America well. They resent the common belief among Americans that the United States—alone among nations—is nearly always right. Indeed, righteous. For more than a century, dozens of U.S. interventions—hundreds, really—in the internal affairs of other states have been driven, at least in part, by that sense of righteousness.<sup>5</sup>