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### T-in

**A. Definitions -**

**In indicates PLACE**

Encarta, 9(Encarta® World English Dictionary [North American Edition] © & (P)2009, <http://encarta.msn.com/encnet/features/dictionary/DictionaryResults.aspx?refid=1861620513>) in [ in ] CORE MEANING: a grammatical word indicating that something or somebody is within or inside something http://encarta.msn.com/xImages/dictionary/bullet.gifhttp://encarta.msn.com/xImages/trans.gif (prep) The dinner's in the oven. http://encarta.msn.com/xImages/dictionary/bullet.gifhttp://encarta.msn.com/xImages/trans.gif (adv) I stopped by, but you weren't in. Definition: 1. preposition indicates place: indicates that something happens or is situated somewhere http://encarta.msn.com/xImages/dictionary/bullet.gifhttp://encarta.msn.com/xImages/trans.gifHe spent a whole year in Russia.

**And In Means throughout**

Words and Phrases 1904(*Judicial and Statutory Definitions of Words and Phrases*, Volume 4, pg. 3465) In the act of 1861 providing that justices of the peace shall have jurisdiction “in” their respective counties to her and determine all complaints, etc., the word “in” should be construed to mean “throughout” such counties. Reynolds v. Larkin, 14 Pac. 114, 117, 10 Colo. 126.

**the US consists of the 50 states and DC**

US Census Bureau 2000(<http://www.census.gov/geo/www/geo_defn.html#US>) UNITED STATESThe United States consists of the 50 states and the District of Columbia.

### CP

#### Text

#### The National Oceanic and Atmospheric Administration should:

#### release sulfate aerosols sufficient to increase Earth’s albedo by two percent, distributed over time, near the tropical upward branch of the stratospheric circulation system,

#### adjust albedo enhancement as necessary as data becomes available based on the results,

#### should not stop abruptly without taking into account the effect on carbon sinks, or without the ability to quickly restart if necessary.

#### and should implement the Reasonable Defense plan.

#### Counterplan solves warming- natural albedo enhancement and best climate science prove

Ikle, CSIS distinguished scholar, and Wood, Hoover Institute research fellow, 2008

[Fred, undersecretary of defense for policy for President Ronald Reagan and director of the Arms Control and Disarmament Agency for Presidents Richard Nixon and Gerald Ford, and Lowell, "Climatic Engineering," The National Interest, l/n, accessed 9-6-10, mss]

Moreover, climate scientists now warn us we cannot be sure that the envisaged future emission controls would stabilize the climate anywhere close to its present state. Instead, we are told that substantially more warming is “locked in” by what has already transpired. We clearly need to find more promising ways to address the whole global warming issue. The policies discussed to date in the global warming conferences have addressed only half the arena for remedial action—the inside of the “greenhouse.” They seek to end the accumulation of greenhouse gases (principally carbon dioxide and methane) within the atmosphere, where these gasses entrap infrared radiation rising from the Earth-surface and lower atmosphere. This entrapment is akin to the glass cover of a greenhouse that keeps the planted vegetables warmer than if they were left exposed to the open air, by admitting the shorter wavelengths of sunlight while reflecting back into the greenhouse the longer wavelengths of thermal infrared radiation and thus preventing the loss of “trapped” heat. The other arena for action is outside of the “greenhouse.” It offers opportunities for reducing global warming by increasing the fraction of incoming sunlight that is reflected outward by the upper atmosphere back into space. Expressed in the metaphoric language of the “greenhouse effect”, this type of climate geoengineering would put a parasol over the greenhouse to scatter away roughly 2 percent of incoming sunlight, instead of letting this small fraction impinge on our planet’s biosphere through the “greenhouse roof” (which in fact is the Earth’s lower atmosphere). In the language of climate science, such geoengineering would increase by a few percent the Earth’s albedo—the ratio of incoming sunlight reflected back into space relative to the total inbound from the Sun.4 Nature routinely varies the local values of the Earth’s albedo by **substantial** amounts, with clouds being the most familiar and quantitatively most important reflective entities, and ice- and snow-covered regions the next most significant. Episodically, large regions of our planet have been cooled for several years by major volcanic eruptions, which inject millions of tons of fine particulate material—mostly sulfate aerosols—into the stratosphere, where they increase the albedo until they’re slowly removed by natural processes. For instance, the Mount Pinatubo eruption in 1991 caused a cooling of most of the Earth for a few years, of a magnitude which was roughly equivalent to reversing half of the total global warming that occurred during the **entire** twentieth century. The idea of artificially increasing the Earth’s albedo is not new. In 1992, a report by the National Academy of Sciences found the prospect of lower stratospheric-based albedo enhancement to be “feasible, economical, and capable. . . .” And it doesn’t necessarily have unpleasant side effects. Professor Paul Crutzen, who received the Nobel Prize for his work on atmospheric ozone, wrote in 2005 that climate geoengineering with sulfate aerosols sufficient to offset the global warming caused by a doubling of the atmospheric carbon dioxide content (which might occur by 2100) would probably do less damage to the upper stratospheric ozone layer than did the Mount Pinatubo volcanic eruption in 1991.

#### Prevents sequestration, which solves all military impacts –avoids politics

Nash-Hoff 11/6 (Michele Nash-Hoff, Author of 'Can American Manufacturing be Saved? Why We Should and How We Can', <http://www.huffingtonpost.com/michele-nashhoff/lame-duck-congress_b_2084076.html>, November 6, 2012)

The clock is ticking -- only 55 more days until sequestration takes effect on Jan. 2, 2013. For the uninformed, sequestration is the across-the-board 10 percent cut in discretionary spending in the budget, including the Department of Defense budget, that is mandated by the Budget Control Act of 2011. The mandatory entitlement spending of the federal budget, Social Security, Medicare, Medicaid, will continue to grow, along with the interest on the national debt. If Congress is unable to reach a compromise on how to reduce our $16 trillion national debt, over $500 billion dollars in cuts to the defense budget over the next decade would be mandated to start Jan. 3, translating into a cut of about $55-60 billion for 2013. Our government took drastic action to prevent the bankruptcy of General Motors, but the effect of sequestration would be like both General Motors and Ford going bankrupt. It would not only affect all of the major defense prime contractors, but would affect their subcontractors, and in turn, their vendors, all the way down to the bottom of the defense and military supply chain. The lower tiers of the supply chain are nearly all small businesses, many of them disadvantaged businesses in the minority, veteran, or women-owned categories. After three and a half years of a weak recovery, the last thing we need is a drastic cut in defense and military spending. In many regions of the country, defense and military spending has been the major factor in helping a region to recover. My hometown of San Diego is one of these regions that would be impacted severely. According to the San Diego Military Advisory Council (SDMAC) 2012 Economic Impact Study, "a total of $20.6 billion of direct spending related to defense was estimated to flow into San Diego County during fiscal year 2012," and "the military sector is responsible for 311,000 of the region's total jobs in 2012 after accounting for all of the ripple effects of defense spending. This represents one out of every four jobs in San Diego." "Defense‐related activities and spending were predicted to generate $32 billion of gross regional product (GRP) for San Diego County in fiscal year 2012," more than the total economic output estimated for Colorado Springs, Colo., or El Paso, Texas. The report states that "dollars linked to national security enter San Diego through three primary channels: wages and benefits for active duty and civilian workers; benefits for retirees and veterans; and direct spending on contracts, grants, and small purchases" by the military and other Department of Defense (DoD) agencies. According to the report: "San Diego will not be immune to the planned cutbacks in troop levels and spending by the Department of Defense. The Marine Corps is expected to see its size gradually reduced over the next five years primarily through attrition and a reduction in recruiting. The number of Navy personnel based in San Diego is projected to increase in fiscal year 2013 with the return of a second aircraft carrier, the USS Ronald Reagan. The shift in strategic focus to the Asia Pacific region will continue to support the Navy's presence in San Diego as with the potential addition of a third aircraft carrier." In the San Diego region, the manufacturing industry is the largest business sector that provides goods and services to the military. One-third of all companies reported some dependency on the defense industry. Over 1,700 companies of the San Diego companies profiled on the Connectory.com database of primary industries reported that military and government contracts make up a portion of their market share, so "an orchestrated approach to future defense downsizing and its impact on the manufacturing sector is needed." Nearly all of the major defense prime contractors -- BAE Systems, Boeing, General Dynamics, General Atomics, Lockheed-Martin, Northrop Grumman, and United Technologies -- have a presence in the San Diego region. According to an editorial by the president of the National Defense Industry Association, Lawrence Farrell Jr., about "$22 billion of the sequester cut of $54 billion for fiscal year 2013 will come from operations and maintenance accounts. About $21 billion of the reductions will be from investments in new weapons systems and technology." He also wrote, "With or without sequester, the near term reality for defense is military forces will be smaller, and weapons a bit older unless planned acquisition catches up with aging systems. Every branch of the military needs to modernize their aging fleets." On Aug. 6, 2012, Defense Secretary Leon E. Panetta said, "I've made clear, and I'll continue to do so, that if sequestration is allowed to go into effect, it'll be a disaster for national defense and it would be a disaster, frankly, for defense communities as well." Panetta called sequestration "an indiscriminate formula" that was never meant to take effect. "It was never designed to be implemented," he said. "It was designed to trigger such untold damage that it would force people to do the right thing. He urged the defense community leaders to do what they can to ensure Congress reaches a solution that avoids sequestration." On Sept. 21, 2012, Sen. John McCain, ranking Republican on the Armed Services Committee and committee Chairman Carl Levin and four other Republican and Democratic senators sent a letter to Senate Majority Leader Harry Reid (D-NV) and Senate Republican Leader Mitch McConnell (R-KY) urging their party leaders to find a way to avert the spending cuts slated to begin Jan. 2, 2013 to "send a strong signal of our bipartisan determination to avoid or delay sequestration and the resulting major damage to our national security, vital domestic priorities and our economy.'' In an August 2012 article titled "A Smarter Way to Trim the Pentagon Budget," Charles Knight, co-director of the Project on Defense Alternatives, stated: "There are numerous ways to save defense dollars that avoid both institutional disruption and most of the economic pain associated with deep cuts to government spending. An illustrative option is the Reasonable Defense plan, which will soon be released in its entirety by the Project on Defense Alternatives." The Project on Defense Alternatives is a think tank which promotes consideration of a broad range of defense options and advocates resetting America's defense posture along more sustainable, cost-effective lines. The plan would decrease the 2013 defense budget by only $30 billion vs. $55 billion, comparable to the 2006 defense budget adjusted for inflation, and the reduction over a 10 year period would be more gradual than the Budget Control Act cap on defense spending. Key points of the plan are: The Reasonable Defense budget for ten years would cost $560 billion less than the 2013 plan submitted by the White House. Over the course of ten years the White House plan is to provide the Pentagon with $5.76 trillion. The Reasonable Defense budget would provide the Pentagon with $5.2 trillion over ten years. The Budget Control Act would cap defense at about $5.18 trillion.

### CIR

#### CIR will pass – Obama pushing – momentum now.

Sink and Mali 3-25. [Justin, Meghashyam, reporters, "Obama: 'The time has come' to move immigration reform in Congress" The HIll -- thehill.com/video/administration/290129-obama-the-time-has-come-to-move-immigration-reform]

Obama said he expects debate on an immigration bill to “begin next month” at a ceremony where 28 people, including 13 armed servicemembers, became citizens.¶ Bipartisan groups in both the House and Senate are moving closer to unveiling separate immigration reform proposals, and the president is hoping to build momentum for a deal.¶ “We've known for years that our immigration system is broken, that we're not doing enough to harness the talent and ingenuity of all those who want to work hard and find a place in America,” Obama said. “And after avoiding the problem for years, the time has come to fix it once and for all. The time has come for comprehensive, sensible immigration reform.”¶ Speaking from the East Room, Obama argued that immigration strengthens the country.¶ “It keeps us vibrant, it keeps us hungry, it keeps us prosperous. It is what makes us such a dynamic country,” he said. “If we want to keep attracting the best and the brightest, we've got to do a better job of welcoming them.”¶ Advocates for immigration reform see a real chance for legislation to pass Congress this year, despite opposition from some House GOP lawmakers, many of whom have said they will oppose measures that grant “amnesty” to illegal immigrants and have questioned proposed protections for gay or lesbian couples.¶ Immigration reform is a potent political issue for Obama, who won more than 70 percent of the Hispanic vote in 2012. Since that showing, a growing number of conservative lawmakers have signaled they would back immigration reform, including measures to provide a pathway to citizenship.¶ Groups aligned with Obama have signaled their intention of pressuring Congress.¶ On Monday, The New York Times reported that Organizing for Action — the political group born from the president's reelection campaign — will launch a new online effort featuring the stories of some 7,000 supporters, some of whom entered the country illegally.¶ The Senate’s “Gang of Eight” introduced their framework, calling for a pathway to citizenship, heightened border security, increased high-skilled immigration and a guest worker program, in January.¶ But since then, senators have been tied down in negotiations over the details of the plan, with many key issues still unresolved.¶ Obama said he wanted to see debate begin on a congressional bill by April.¶ “We are making progress, but we've got to finish the job, because this issue is not new,” Obama said. “Everyone pretty much knows what's broken, everyone knows how to fix it.”¶ At a briefing later Monday with reporters, White House spokesman Josh Earnest insisted that the White House did not hold the event over concern with the progress of negotiations.¶ "We are pleased with the progress they are reportedly making" in the Senate, Earnest said, adding that President Obama had been in touch with members of the Gang of Eight.¶ Earnest also dismissed criticism from freshman Sen. Ted Cruz (R-Texas), who suggested over the weekend that Obama secretly hoped talks would fall through, so Democrats could gain a political wedge for the 2014 midterm elections.¶ "There's no evidence to support those claims," Earnest said.¶ Members of the Senate group predict their plan could move forward when legislators return from a two-week Easter break.¶ A bipartisan House group has yet to share details of their proposals, but their work has already received general support from leaders in both parties.

#### Capital is key to comprehensive bill.

Anniston Star, 3-27 [Editorial Board, "On the offensive: Obama is wise to start anew the push for immigration reform," 3-27-13, annistonstar.com/view/full\_story/22088295/article-On-the-offensive--Obama-is-wise-to-start-anew-the-push-for-immigration-reform?instance=opinion\_lead, accessed 3-28-13, mss]

The point: President Obama didn’t fulfill his promise of securing sweeping immigration-reform policies during his first term. Now in his second, Obama is beginning a new campaign to urge legislators — particularly Republicans — to find a bipartisan compromise that (a.) **isn’t watered down** and (b.) is effective. It’s a lot to ask. Nevertheless, Obama is wise to go on this offensive. The need, as always, is great. An Associated Press report this week points out that the president is working behind the scenes in order to **keep Republicans at the** negotiating **table** between now and Congress’ April 8 return from spring break. The key is the Senate working group, the Gang of Eight, that is putting together a bipartisan plan the White House has yet to see. “We’ll reserve judgment on the product of those discussions until it’s produced,” White House spokesman Josh Earnest said.

#### Plan’s unpopular

Day 8 (Dwayne A., Program Officer – Space Studies Board of the National Research Council, “Knights in Shining Armor”, The Space Review, 6-9, <http://www.thespacereview.com/article/1147/1>)

If all this is true, why is the space activist community so excited about the NSSO study? That is not hard to understand. They all know that the economic case for space solar power is abysmal. The best estimates are that SSP will cost at least three times the cost per kilowatt hour of even relatively expensive nuclear power. But the military wants to dramatically lower the cost of delivering fuel to distant locations, which could possibly change the cost-benefit ratio. The military savior also theoretically solves some other problems for SSP advocates. One is the need for deep pockets to foot the immense development costs. The other is an institutional avatar—one of the persistent policy challenges for SSP has been the fact that responsibility for it supposedly “falls through the cracks” because neither NASA nor the Department of Energy wants responsibility. If the military takes on the SSP challenge, the mission will finally have a home. But there’s also another factor at work: naïveté. Space activists tend to have little understanding of military space, coupled with an idealistic impression of its management compared to NASA, whom many space activists have come to despise. For instance, they fail to realize that the military space program is currently in no better shape, and in many cases worse shape, than NASA. The majority of large military space acquisition programs [have experienced major problems](http://www.aviationnow.com/aw/generic/story_generic.jsp?channel=space&id=news/milspace031008.xml&headline=GAO%20IDs%20Space%20Acquisitions%20Woes), in many cases cost growth in excess of 100%. Although NASA has a bad public record for cost overruns, the DoD’s less-public record is far worse, and military space has a bad reputation in Congress, which would never allow such a big, expensive new program to be started. Again, this is not to insult the fine work conducted by those who produced the NSSO space solar power study. They accomplished an impressive amount of work without any actual resources. But it is nonsensical for members of the space activist community to claim that “the military supports space solar power” based solely on a study that had no money, produced by an organization that has no clout.

#### Immigration reform is key to food security

**ACIR ‘7** (December 4, 2007 THE AGRICULTURE COALITION FOR IMMIGRATION REFORM

Dear Member of Congress: The Agriculture Coalition for Immigration Reform (ACIR) is deeply concerned with pending immigration enforcement legislation known as the ‘Secure America Through Verification and Enforcement Act of 2007' or ‘SAVE Act’ (H.R.4088 and S.2368). While these bills seek to address the worthy goal of stricter immigration law enforcement, they fail to take a comprehensive approach to solving the immigration problem. History shows that a one dimensional approach to the nation’s immigration problem is doomed to fail. Enforcement alone, without providing a viable means to obtain a legal workforce to sustain economic growth is a formula for disaster. Agriculture best illustrates this point. Agricultural industries that need considerable labor in order to function include the fruit and vegetable, dairy and livestock, nursery, greenhouse, and Christmas tree sectors. Localized labor shortages have resulted in actual crop loss in various parts of the country. More broadly, producers are making decisions to scale back production, limit expansion, and leave many critical tasks unfulfilled. Continued labor shortages could force more producers to shift production out of the U.S., thus stressing already taxed food and import safety systems. Farm lenders are becoming increasingly concerned about the stability of affected industries. This problem is aggravated by the nearly universal acknowledgement that the current H-2A agricultural guest worker program does not work. Based on government statistics and other evidence, roughly 80 percent of the farm labor force in the United States is foreign born, and a significant majority of that labor force is believed to be improperly authorized. The bills’ imposition of mandatory electronic employment eligibility verification will screen out the farm labor force without providing access to legal workers. Careful study of farm labor force demographics and trends indicates that there is not a replacement domestic workforce available to fill these jobs. This feature alone will result in chaos unless combined with labor-stabilizing reforms. Continued failure by Congress to act to address this situation in a comprehensive fashion is placing in jeopardy U.S. food security and global competitiveness. Furthermore, congressional inaction threatens the livelihoods of millions of Americans whose jobs exist because laborintensive agricultural production is occurring in America. If production is forced to move, most of the upstream and downstream jobs will disappear as well. The Coalition cannot defend of the broken status quo. We support well-managed borders and a rational legal system. We have worked for years to develop popular bipartisan legislation that would stabilize the existing experienced farm workforce and provide an orderly transition to wider reliance on a legal agricultural worker program that provides a fair balance of employer and employee rights and protections. We respectfully urge you to oppose S.2368, H.R.4088, or any other bills that would impose employment-based immigration enforcement in isolation from equally important reforms that would provide for a stable and legal farm labor force.

#### Food insecurity sparks World War 3

**Calvin ’98** (William, Theoretical Neurophysiologist – U Washington, Atlantic Monthly, January, Vol 281, No. 1, p. 47-64)

The population-crash scenario is surely the most appalling. Plummeting crop yields would cause some powerful countries to try to take over their neighbors or distant lands -- if only because their armies, unpaid and lacking food, would go marauding, both at home and across the borders. The better-organized countries would attempt to use their armies, before they fell apart entirely, to take over countries with significant remaining resources, driving out or starving their inhabitants if not using modern weapons to accomplish the same end: eliminating competitors for the remaining food. This would be a worldwide problem -- and could lead to a Third World War -- but Europe's vulnerability is particularly easy to analyze. The last abrupt cooling, the Younger Dryas, drastically altered Europe's climate as far east as Ukraine. Present-day Europe has more than 650 million people. It has excellent soils, and largely grows its own food. It could no longer do so if it lost the extra warming from the North Atlantic.

#### CIR key to economy

Smith 12. [Gerry, technology reporter, "Brain Drain: Why We're Driving Immigration Talent Overseas" Huffington Post -- November 5 -- www.huffingtonpost.com/2012/11/09/immigrant-entrepreneur\_n\_2077183.html]

Stories like his are not unique. They’re also troubling for the U.S. economy, advocates say. For the first time, the number of immigrant-founded startups is in decline, as foreign-born entrepreneurs struggle to obtain a limited number of visas and green cards and decide to launch companies in other countries that offer perks to start businesses there. Losing founders like Darash, who launch startups that create jobs, means that America risks losing a source of employment and a competitive edge in the global economy as the country claws its way out of a recession, they say.¶ For years, immigrant entrepreneurs have propelled the growth of Silicon Valley, building some of the most successful tech companies in the world: Sergey Brin, co-founder of Google, was born in Russia; Elon Musk, co-founder of PayPal and Tesla, was born in South Africa; Vinod Khosla, co-founder of Sun Microsystems, was born in India. When they immigrated, it was likely easier for them because there was not a backlog that there is today, according to Vivek Wadhwa, a professor at the Pratt School of Engineering at Duke University who researches high-tech immigration. Immigrants are more than twice as likely to start a business as native-born Americans, according to a report earlier this year by the Partnership for a New American Economy. And their companies have produced sizable economic benefits. This year, engineering and technology companies founded in the United States employed about 560,000 workers and generated $63 billion in sales, according to Wadhwa. About a quarter of those companies had at least one foreign-born founder.¶ An estimated three out of every four startups fail, if not more. But by the conventional wisdom of Silicon Valley, Darash’s chances were even slimmer. For one, he does not have a co-founder. He insists he doesn’t need one. (Paul Graham, creator of the startup incubator Y Combinator, has said having a co-founder is critical because “a startup is too much for one person to bear.”) Darash also never worked for a major tech company before, so he did not have the network of contacts that help other entrepreneurs find engineers and meet investors.¶ But what he has lacked in support and connections he has made up for through a work ethic that borders on obsession.¶ “Asaf is a stubborn guy,” said Adam Gries, a childhood friend and founder of Smart Bites, a smartphone app that teaches people English. “He gets into his head that something is going to happen and he’s tenacious.”¶ Darash awakes every morning at 4:30 a.m., takes the BART train from his home in Berkeley to San Francisco, and arrives at the office by 6 a.m. He works for an hour, then walks across the street to the gym to swim and lift weights (A back injury he suffered while serving in the Israeli army requires him to stay physically strong). He typically does not go home until 9 p.m., after his children have gone to bed. Employees say he is a “total workaholic” who sends emails past midnight and sleeps just a few hours a night.¶ “I have a one-and-a-half year old who sees his Daddy maybe three hours a week,” Darash said. “It’s hard to explain how much sacrifice you make to bring a company from an idea to something real, especially if it’s a company with high-level technology.”¶ He is hands-on about all aspects of the company, from courting new clients to writing code. But lately, Darash has been distracted, spending valuable hours gathering documents and talking to lawyers, instead of running his company. His wife recently flew back to Israel to find housing and a school for their kids in case they have to leave the United States. He describes feeling a range of emotions: anger, fear, frustration. Mostly, though, he is confused. In his homeland of Israel, politicians fight over who can attract more foreign entrepreneurs. The United States, he says, should be rolling out the welcome mat for him, not ushering him out the door.¶ “I could not even comprehend this would become a problem,” he said. “I’m creating a company. I’m creating jobs. There’s nothing bad in what I’m doing and there’s nothing I’m taking away from someone else. The only thing I’m doing is creating more!”¶ “SERIOUS ALARM”¶ Since 2005, the number of immigrant-founded startups in Silicon Valley has declined from 52 percent to 44 percent, according to Wadhwa, who argues this drop is cause for “serious alarm” because America needs to attract immigrant entrepreneurs for its economy to recover.¶ “The United States risks losing a key growth engine right at the moment when it’s economy is stuck in a deep ditch, growing slowly and struggling to create jobs,” Wadhwa wrote in his new book, The Immigrant Exodus.¶ Their recent decline could be linked to entrepreneurs finding better business prospects abroad, especially in countries with growing economies like India and China. But advocates say a major reason why immigrants are launching fewer startups in the United States is because they are struggling to secure visas to remain in the country.

#### Economic decline causes nuclear war

Merlini 11

[Cesare Merlini, nonresident senior fellow at the Center on the United States and Europe and chairman of the Board of Trustees of the Italian Institute for International Affairs (IAI) in Rome. He served as IAI president from 1979 to 2001. Until 2009, he also occupied the position of executive vice chairman of the Council for the United States and Italy, which he co-founded in 1983. His areas of expertise include transatlantic relations, European integration and nuclear non-proliferation, with particular focus on nuclear science and technology. A Post-Secular World? DOI: 10.1080/00396338.2011.571015 Article Requests: Order Reprints : Request Permissions Published in: journal Survival, Volume 53, Issue 2 April 2011 , pages 117 - 130 Publication Frequency: 6 issues per year Download PDF Download PDF (357 KB) View Related Articles To cite this Article: Merlini, Cesare 'A Post-Secular World?', Survival, 53:2, 117 – 130]

Two neatly opposed scenarios for the future of the world order illustrate the range of possibilities, albeit at the risk of oversimplification. The first scenario entails the premature crumbling of the post-Westphalian system. One or more of the acute tensions apparent today evolves into an open and traditional conflict between states, perhaps even involving the use of nuclear weapons. The crisis might be triggered by a collapse of the global economic and financial system, the vulnerability of which we have just experienced, and the prospect of a second Great Depression, with consequences for peace and democracy similar to those of the first. Whatever the trigger, the unlimited exercise of national sovereignty, exclusive self-interest and rejection of outside interference would likely be amplified, emptying, perhaps entirely, the half-full glass of multilateralism, including the UN and the European Union. Many of the more likely conflicts, such as between Israel and Iran or India and Pakistan, have potential religious dimensions. Short of war, tensions such as those related to immigration might become unbearable. Familiar issues of creed and identity could be exacerbated. One way or another, the secular rational approach would be sidestepped by a return to theocratic absolutes, competing or converging with secular absolutes such as unbridled nationalism.

#### High skilled workers key to biotech

**Mowad 7.** [Michelle, Doctor, “Cap on Visas for Skilled Foreign Workers Stifling Biotech, Tech”, San Diego Business Journal, 4-23, http://www.allbusiness.com/legal/immigration-law-passports-visas-employment/10582800-1.html]

The local biotechnology and technology industries, highly dependent on very highly skilled workers, are waiting to see if their foreign job applicants have been awarded work visas. U.S. immigration officials received twice the maximum number of applications for H-1B visas given to foreign individuals holding advanced degrees on the first day of the application process. The U.S. Citizenship and Immigration Services opened the application process on April 2 for granting visas for the new fiscal year that starts Oct. 1. Because the "cap" was exceeded the first day, the USCIS will hold a lottery to select from the applicants who applied on the first and second days. There are enormous economic and health benefits to opening up employment to international candidates, said Kristie Ford with Biocom, a life sciences industry association representing 530-plus member companies in Southern California. "Biotech is an industry that is going to continue to boom, and we need a work force that fits the industry needs," she said. Domestic businesses use the H-1B program so they can hire foreign workers In occupations that require theoretical or technical expertise in specialized fields, such as accounting, architecture, education, engineering, law, mathematics, medicine and health, physics, social sciences and theology. Kevin Carroll, executive director of the San Diego chapter of the American Electronics Association, said technology businesses have a history of welcoming the best and brightest workers. He said there is a need to raise the cap. "We need more (H-1B visas) and we need them now," said Carroll, whose AeA chapter consists of 150 technology-based member businesses. He said that demand for technology employers is extremely high. The unemployment rate for engineers is significantly low at 2 percent, according to Carroll. "This has an impact on the ability of San Diego to stay competitive," he said. Carroll added that a limited number of work visas forces companies to go to extraordinary lengths for recruiting. Each year, the USCIS processes 65,000 H-1B visas. This year, the agency received 124,000 applications in the first two days. In addition, the USCIS will issue an additional 20,000 H-1B visas to foreigners who hold advanced degrees from U.S. universities. USCIS received 13,000 applications for this type of visa within the first two days of the processing period. Individuals who applied for the work visa earlier this month will now have to wait up to four weeks after April 12 before they know if they have been approved or need to leave the country. The wait and importance of H-1B visas to San Diego is at the forefront of many minds. Attorneys from the San Diego office of Duane Morris LLP will host a seminar on the current trends in employment, benefits and immigration law on April 26. Topics to be covered include H-1B visas and the caps being met so early. Lisa Spiegel, an immigration and nationality attorney with Duane Morris, said two years ago applications reached the cap amount in August. Last year, the applications reached the cap amount in May and this year on the first day. "It is a sign of the economy growing," she said. "Companies need more high-tech workers." She said highly skilled jobs in the computer and biotechnology industries are driving the need for a higher cap number. "Companies need employees with a certain level of education and skill set, and they can't find enough in the U.S. so they are willing to hire top talent from around the world, but the problem is that they can't get them into the U.S.," she said. She added that domestic companies often resort to opening foreign satellite offices because it is so difficult to bring professionals here. "The U.S. is losing out on attracting foreign workers and top talent to come here, we are losing their taxes, we are losing the company's tax base and we are losing the ability to make the U.S. a place where the top talent wants to come for graduate school," she said. And if foreigners can't be certain they can obtain a work visa after graduation from a U.S. university, they may be reluctant to attend school here, she said. "These are not people coming in illegally, these are people coming in and contributing to our country," she said. The economy of California will suffer as a result of this cap, said Spiegel. "Companies are losing workers and losing the ability to remain competitive because they cannot get enough people to staff their projects," she said. The San Diego office of Mintz Levin Cohn Ferris Glovsky and Popeo PC hosted an immigration strategies conference April 19 at Estancia La Jolla Hotel & Spa. William L. Coffman, an attorney with Mintz Levin's Boston office, was a speaker at the event. Coffman reviewed alternative visa options for foreigners who may not be awarded an H-1B visa. Biocom offers several programs aimed to attract a local and national work force. The association created a Life Sciences Success program to facilitate student internships, teacher externships and a summer life sciences boot camp to connect students and teachers with leading companies in San Diego's life sciences community. Last year, 34 students attended boot camp, 44 participated in summer internships and 18 educators carried out externships. "Bottom line is that life sciences companies need a skilled work force," said Ford, associate director of Workforce Development for Biocom. "Biocom is trying to help it two ways - we are trying to grow our homegrown work force, but then we also support raising the H-1B visa cap as well." While many companies are not optimistic applicants will receive these coveted H-1B visas, talk of immigration reform has permeated the market. For now, industry associates including Biocom and local businesses are attempting to garner support for reform to make life easier for biotechnology and technology.

#### Solves extinction

**Trewavas 00** [Anthony, Institute of Cell and Molecular Biology – University of Edinburgh, “GM Is the Best Option We Have”, AgBioWorld, 6-5, http://www.agbioworld.org/biotech-info/articles/biotech-art/best\_option.html]

But these are foreign examples; global warming is the problem that requires the UK to develop GM technology. 1998 was the warmest year in the last one thousand years. Many think global warming will simply lead to a wetter climate and be benign. I do not. Excess rainfall in northern seas has been predicted to halt the Gulf Stream. In this situation, average UK temperatures would fall by 5 degrees centigrade and give us Moscow-like winters. There are already worrying signs of salinity changes in the deep oceans. Agriculture would be seriously damaged and necessitate the rapid development of new crop varieties to secure our food supply. We would not have much warning. Recent detailed analyses of arctic ice cores has shown that the climate can switch between stable states in fractions of a decade. Even if the climate is only wetter and warmer new crop pests and rampant disease will be the consequence. GM technology can enable new crops to be constructed in months and to be in the fields within a few years. This is the unique benefit GM offers. The UK populace needs to much more positive about GM or we may pay a very heavy price. In 535A.D. a volcano near the present Krakatoa exploded with the force of 200 million Hiroshima A bombs. The dense cloud of dust so reduced the intensity of the sun that for at least two years thereafter, summer turned to winter and crops here and elsewhere in the Northern hemisphere failed completely. The population survived by hunting a rapidly vanishing population of edible animals. The after-effects continued for a decade and human history was changed irreversibly. But the planet recovered. Such examples of benign nature's wisdom, in full flood as it were, dwarf and make miniscule the tiny modifications we make upon our environment. There are apparently 100 such volcanoes round the world that could at any time unleash forces as great. And even smaller volcanic explosions change our climate and can easily threaten the security of our food supply. Our hold on this planet is tenuous. In the present day an equivalent 535A.D. explosion would **destroy** much of our **civilisation**. Only those with agricultural technology sufficiently advanced would have a chance at **survival**. Colliding asteroids are another problem that requires us to be forward-looking accepting that **technological advance may be the only buffer between us and annihilation**.

### Space Weap

**Obama is pursuing space cooperation – US multilateral leadership is creating a framework against weaponization**

**Huntley, 11** - senior lecturer in the National Security Affairs department at the Naval Postgraduate School in Monterey, California (Wade, “The 2011 U.S. National Space Security Policy: Engagement as a Work in Progress”, Disarmament Times, Spring, <http://disarm.igc.org/index.php?option=com_content&view=article&id=429:the-2011-us-national-space-security-policy-engagement-as-a-work-in-progress&catid=154:disarmament-times-spring-2011&Itemid=2>)

As is well understood, the space policies of the Bush administration were decidedly oriented toward military security concerns and independent action. The 2006 National Space Policy unabashedly proclaimed the U.S. intention to maintain a dominant position in space indefinitely. This policy orientation dismissed multilateral cooperation as impinging on U.S. “freedom of action,” throwing weight instead behind a wide range of technology development initiatives founded on the assumption that deployment of weapons in space was, if not already factual, certainly inevitable.2 U.S. commercial and civil engagement was overshadowed by these security concerns, expressed through the tightening of export control restrictions inhibiting a broad range of technology sharing. Once again, U.S. space policy was subsumed by other national priorities, in this case dominated by military security concerns.

This background is essential for appreciating how the space policies of the Obama administration are beginning to genuinely break new trails. The U.S. National Space Policy issued in June 2010 has been widely recognized for its cooperative and multilateral tone, including as explicit near-term goals the expansion of international cooperation on all activities and pursuing international as well as national measures to enhance space stability. Particularly notable are the document’s emphasis on orienting U.S. “leadership” toward fostering international cooperation, and its references, in its concluding section, to cooperation with other states and non-state actors in the pursuit of national security space objectives.3

Less broadly noticed was this policy’s clarity and coherence in articulating a vision for U.S. space activities on its own terms.  The document is organized around core principles, subsidiary goals and implementing guidelines that exceed its predecessors in delineating a longer-term direction for U.S. space policy that is integrated with, rather than derivative of, broader U.S. global aims.4 The policy also was generated and issued far earlier in the tenure of the administration than either of its predecessors, indicating an increased prioritization of attention to space policy at higher levels of policy-making.

To some degree, a turn toward multilateral cooperation in U.S. space policy was to be expected. China’s 2007 anti-satellite weapon (ASAT) test and the 2009 Iridium-Cosmos collision increased awareness of the challenge of space debris and the need for better global information sharing on space situational awareness (SSA).5  Also, new budget realities and unpromising technological developments have scaled back ambitions in some quarters for solving U.S. space security concerns with new independent capabilities. Finally, the Obama administration has pursued a more cooperative disposition across a wide range of global policy challenges, from Iranian nuclear ambitions to global climate change. But the improved clarity of vision in the 2010 Space Policy suggests that the emphasis on fostering global cooperation on space-related activities is more grounded in deliberate foresight than sailing the prevailing political winds.

The 2011 National Security Space Strategy, released February 4, is best interpreted against this background of the Obama administration’s turn toward both greater international space cooperation and greater attention to space policy in general. This first-of-its-kind strategic statement culminates a congressionally mandated space posture review.6 The initial section portraying the strategic environment to which U.S. security policy must be responsive highlights the growing problems of space debris, orbital congestion and coordination among a growing number of space actors — not state-based security threats per se.  The Security Space Strategy features the objective of a “stable space environment in which nations exercise shared responsibility.”7 Specific provisions intended to implement this strategy, relevant to the preceding observations, include:8

• The strategy presents a full section on “Partnering with Responsible Nations, International Organizations, and Commercial Firms.” This category is not wholly multilateral in the traditional sense, displaying a symbiosis of alliance-building and collective cooperation not always carefully distinguished; i.e., “The United States will lead in building coalitions of like-minded space-faring nations and, where appropriate, work with international institutions to do so.”

• The strategy intends to “encourage responsible behavior in space and lead by the power of example,” a significant observation given the tendency of U.S. policy-makers (as noted above) not to expect quid pro quo responses to cooperative gestures. Also, the strategy states the U.S. “will support development of data standards, best practices, transparency and confidence-building measures, and *norms of behavior for responsible space operations*.” [italics added] In the context of the section on “Preventing and Deterring Aggression,” the strategy similarly intends to “support diplomatic efforts to promote norms of responsible behavior in space” as well as “pursue international partnerships that encourage potential adversary restraint,” along with other measures.  This emphasis on norm-building and the role of example suggests a near-term endorsement of the development of “codes of conduct” for space activities (such as the recently revised European Union Code of Conduct, discussed below), whether or not such concord leads to more formal arms control arrangements in the longer-term.

• The Department of Defense is directed to “foster cooperative SSA relationships,” and to “expand provision of safety of flight services to U.S. Government agencies, other nations, and commercial firms.” Greater SSA information sharing has been a key suggestion for fostering international cooperation; the U.S. possesses globally superior SSA capabilities, but restricts the sharing of this information on the basis of national security concerns.9 Hence, this nominal commitment is significant in its own right.

• The strategy commits to reforming export controls. “In particular, as new opportunities arise for international collaboration, a revised export control system will better enable the domestic firms competing for these contracts.” As noted above, the oppressive impact of current U.S. export controls not only impinges on U.S. commercial space actors but also epitomizes the high degree to which U.S. policy has subsumed commercial and civil interests to national security concerns. The strategy appears to acknowledge this connection and commit to remedy it.

• The most assertive passages of the statement are moderated with community-building intent. For example, the strategy’s section on “Preventing and Deterring Aggression” concludes that the U.S. “will retain the right and capabilities to respond in self-defense, should deterrence fail,” but immediately adds that the U.S. “will use force in a manner that is consistent with longstanding principles of international law, treaties to which the United States is a party, and the inherent right of self defense.”

• The concluding and most conflict-oriented section of the strategy opens by noting that “some actors may still believe counterspace actions could provide military advantage.” Counterspace capabilities, unarticulated in the document, include ASATs, ground-based directed energy weapons and satellite transmission jamming. Deputy Assistant Secretary of Defense for Space Policy Gregory Schulte explained at the strategy’s rollout that China is a principal concern in this regard, but so is the proliferation of these technologies: “If Ethiopia can jam a commercial satellite, you have to worry what others can do.”10  This section of the strategy does not, however, call for maintaining options to develop complementary space conflict capabilities.

Rather, the strategy asserts that the U.S. “must be prepared to ‘fight through’ a degraded environment,” and identifies “resilience” and “space protection” as the key criteria.

The preceding survey of elements of the 2011 National Security Space Strategy is deliberately selective, highlighting those elements expressing consistency with the 2010 National Space Policy’s bend toward fostering greater international collaboration. Perhaps as striking as the prevalence of such passages, however, is the absence of expressed intention — even couched in hedging language — to sustain or expand the kind of independent space-based military capabilities that were the centerpiece of the prior administration’s aims (if not its accomplishments). Again, to some extent this turn in tone is overdetermined by extenuating global circumstances. But one must still be struck by the degree to which developments such as the Chinese ASAT test have not ignited the kind of response one might have anticipated only a few short years after Donald Rumsfeld’s notorious warning of a “space Pearl Harbor.”11

The most immediate significance of the National Security Space Strategy is likely the signals its sends concerning U.S. policy toward the recently revised European Union Code of Conduct.12  The strategy did not explicitly endorse this EU initiative, but Mr. Schulte, at the February 4 presentation of the strategy, highlighted the initiative “as a potential way” to promote “transparency and confidence-building measures, which tend to be voluntary as opposed to legally binding.” A week earlier, Rose Gottemoeller, Assistant Secretary of State for Arms Control, Verification and Compliance, stated at the Conference on Disarmament that the administration was nearing a decision on whether the U.S. would sign on to the code, and what modifications might be required in order to do so.13 As U.S. interest in the Code of Conduct has increased, debates over its provisions and its relationship to the Outer Space Treaty have intensified.

These policy movements toward multilateral engagement and commitment to behavioral standards (even if non-binding) mark a sharp departure from the stiff resistance to curtailing U.S. “freedom of action” in the previous administration, and have accordingly generated resistance from congressional opponents on just those terms. Prior to the release of the National Security Space Strategy, a group of 37 Republican senators led by Arizona Senator Jon Kyl issued a letter to Secretary of State Hillary Rodham Clinton expressing concern over a potential multilateral commitment that might limit development and/or deployment of space-based missile defense interceptors and ASAT-defeating systems.14  Critics also decried the strategy’s emphasis on “the old fallacious assumption that the power of example will prevent adversaries from doing the United States harm,” and endorsed maintaining the goal of U.S. retention of a “dominant position in military and intelligence space capabilities.”15 In fact, the administration’s warming toward normative commitments in general — and the EU Code of Conduct in particular — are in part intended to forestall pressure for more formal and binding measures that would definitively cut off the “hedge” of unilateral U.S. weapons development options.16 The balance of U.S. debate may have shifted toward greater international cooperation, but the terms of the debate remain the same.

In sum, the National Security Space Strategy appears to mark not only a swing in U.S. policy toward greater global engagement but also, and more importantly, a step toward greater long-term coherence in thinking concerning the core goals of U.S. space activities. Even supporters of the general directions of the strategy noted its more-than-expected breadth of thought.17 But if this reading is sound, the strategy is still but one step on a long road, and ongoing debates over the role of U.S. space policy vis-à-vis broader national security interests will insure that road is bumpy. Suggesting such limitations, Mr. Schulte acknowledged that the classified version of the strategy is only four pages longer than the released version, indicating that more specific guidelines for military implementation of the strategy remain to be developed.18 Many devils may lurk in these details.

**The plan is perceived as weaponization**

**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>)

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”22. Foldes also considers that one of the most logical offensive uses of SPS can include the “microwave heating of other space objects”23. 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”24.

**Nuclear war**

**Hitchens, 8** – president of the Center for Defense Information (Theresa, “Space Wars - Coming to the Sky Near You?”, Scientific American, February, <http://www.sciam.com/article.cfm?id=space-wars-coming-to-the-sky-near-you>)

Perhaps of even greater concern is that several other nations, including one of China’s regional rivals, India, may feel compelled to seek ­offensive as well as defensive capabilities in space. The U.S. trade journal Defense News, for instance, quoted unidentified Indian defense officials as stating that their country had already begun developing its own kinetic-energy (nonexplosive, hit-to-kill) and laser-based antisatellite weapons.

If India goes down that path, its archrival Pakistan will probably follow suit. Like India, Pakistan has a well-developed ballistic missile program, including medium-range missiles that could launch an antisatellite system. Even Japan, the third major Asian power, might join such a space race. In June 2007 the National Diet of Japan began considering a bill backed by the current Fukuda government that would permit the development of satellites for “military and national security” purposes.

As for Russia, in the wake of the Chinese test President Vladimir Putin reiterated Moscow’s stance against the weaponization of space. At the same time, though, he refused to criticize Beijing’s actions and blamed the U.S. instead. The American efforts to build a missile defense system, Putin charged, and the increasingly aggressive American plans for a military position in space were prompting China’s moves. Yet Russia itself, as a major spacefaring power that has incorporated satellites into its national security structure, would be hard-pressed to forgo entering an arms race in space.

Given the proliferation of spacefaring entities, proponents of a robust space warfare strategy believe that arming the heavens is inevitable and that it would be best for the U.S. to get there first with firepower. Antisatellite and space-based weapons, they argue, will be necessary not only to defend U.S. military and commercial satellites but also to deny any future adversary the use of space capabilities to enhance the performance of its forces on the battlefield.

Yet any arms race in space would almost inevitably destabilize the balance of power and thereby multiply the risks of global conflict. In such headlong competition—whether in space or elsewhere—equilibrium among the adversaries would be virtually impossible to maintain. Even if the major powers did achieve stability, that reality would still provide no guarantee that both sides would perceive it to be so. The moment one side saw itself to be slipping behind the other, the first side would be strongly tempted to launch a preemptive strike, before things got even worse. Ironically, the same would hold for the side that perceived itself to have gained an advantage. Again, there would be strong temptation to strike first, before the adversary could catch up. Finally, a space weapons race would ratchet up the chances that a mere technological mistake could trigger a battle. After all, in the distant void, reliably distinguishing an intentional act from an accidental one would be highly problematic.

Hit-to-Kill Interceptors According to assessments by U.S. military and intelligence officials as well as by independent experts, the Chinese probably destroyed their weather satellite with a kinetic-energy vehicle boosted by a two-stage medium-range ballistic missile. Technologically, launching such direct-ascent antisatellite weapons is one of the simplest ways to take out a satellite. About a dozen nations and consortia can reach low Earth orbit (between roughly 100 and 2,000 kilometers, or 60 to 1,250 miles, high) with a medium-range missile; eight of those countries can reach geostationary orbit (about 36,000 kilometers, or 22,000 miles, above Earth). But the real technical hurdle to making a hit-to-kill vehicle is not launch capacity; it is the precision maneuverability and guidance technology needed to steer the vehicle into its target. Just how well China has mastered those techniques is unclear. Because the weather satellite was still operating when it was destroyed, the Chinese operators would have known its exact location at all times. Ground-Based Lasers The test of China’s direct-ascent antisatellite device came on the heels of press reports in September 2006 that the Chinese had also managed to “paint,” or illuminate, U.S. spy satellites with a ground-based laser [see lower box on page 83]. Was Beijing actually trying to “blind” or otherwise damage the satellites? No one knows, and no consensus seems to have emerged in official Washington circles about the Chinese intent. Per­haps China was simply testing how well its network of low-power laser-ranging stations could track American orbital observation platforms. Even so, the test was provocative. Not all satellites have to be electronically “fried” to be put out of commission. A 1997 test of the army’s MIRACL system (for midinfrared advanced chemical laser) showed that satellites designed to collect optical images can be temporarily disrupted—dazzled—by low-power beams. It follows that among the satellites vulnerable to such an attack are the orbital spies. The U.S. and the former Soviet Union began experimenting with laser-based antisatellite weapons in the 1970s. Engineers in both countries have focused on the many problems of building high-power laser systems that could reliably destroy low-flying satellites from the ground. Such systems could be guided by “adaptive optics”: deformable mirrors that can continuously compensate for atmospheric distortions. But tremendous amounts of energy would be needed to feed high-power lasers, and even then the range and effectiveness of the beams would be severely limited by dispersion, by attenuation as they passed through smoke or clouds, and by the difficulty of keeping the beams on-target long enough to do damage. During the development of the SDI, the U.S. conducted several laser experiments from Hawaii, including a test in which a beam was bounced off a mirror mounted on a satellite. Laser experiments continue at the Starfire Optical Range at Kirtland Air Force Base in New Mexico. Pentagon budget documents from fiscal years 2004 through 2007 listed antisatellite operations among the goals of the Starfire research, but that language was removed from budget documents in fiscal year 2008 after Congress made inquiries. The Starfire system incorporates adaptive optics that narrow the outgoing laser beam and thus increase the density of its power. That capability is not required for imagery or tracking, further suggesting that Starfire could be used as a weapon. Yet despite decades of work, battle-ready versions of directed-energy weapons still seem far away. An air force planning document, for instance, predicted in 2003 that a ground-based weapon able to “propagate laser beams through the atmosphere to [stun or kill low Earth orbit] satellites” could be available between 2015 and 2030. Given the current state of research, even those dates seem optimistic. Co-orbital Satellites Recent advances in miniaturized sensors, powerful onboard computers and efficient rocket thrusters have made a third kind of antisatellite technology increasingly feasible: the offensive microsatellite. One example that demonstrates the potential is the air force’s experimental satellite series (XSS) project, which is developing microsatellites intended to conduct “autonomous proximity operations” around larger satellites. The first two microsatellites in the program, the XSS-10 and XSS-11, were launched in 2003 and 2005. Though ostensibly intended to inspect larger satellites, such microsatellites could also ram target satellites or carry explosives or directed-energy payloads such as radio-frequency jamming systems or high-powered microwave emitters. Air force budget documents show that the XSS effort is tied to a program called Advanced Weapons Technology, which is dedicated to research on military laser and microwave systems. During the cold war the Soviet Union developed, tested and even declared operational a co-orbital antisatellite system—a maneuverable interceptor with an explosive payload that was launched by missile into an orbit near a target satellite in low Earth orbit. In effect, the device was a smart “space mine,” but it was last demonstrated in 1982 and is probably no longer working. Today such an interceptor would likely be a microsatellite that could be parked in an orbit that would cross the orbits of several of its potential targets. It could then be activated on command during a close encounter. In 2005 the air force described a program that would provide “localized” space “situational awareness” and “anomaly characterization” for friendly host satellites in geostationary orbit. The program is dubbed ANGELS (for autonomous nanosatellite guardian for evaluating local space), and the budget line believed to represent it focuses on acquiring “high value space asset defensive capabilities,” including a “warning sensor for detection of a direct ascent or co-orbital vehicle.” It is clear that such guardian nanosatellites could also serve as offensive weapons if they were maneuvered close to enemy satellites. And the list goes on. A “parasitic satellite” would shadow or even attach itself to a target in geostationary orbit. Farsat, which was mentioned in an appendix to the [Donald] Rumsfeld Space Commission report in 2001, “would be placed in a ‘storage’ orbit (perhaps with many microsatellites housed inside) relatively far from its target but ready to be maneuvered in for a kill.” Finally, the air force proposed some time ago a space-based radio-frequency weapon system, which “would be a constellation of satellites containing high-power radio-frequency transmitters that possess the capability to disrupt/­destroy/disable a wide variety of electronics and national-level command and control systems.” Air force planning documents from 2003 envisioned that such a technology would emerge after 2015. But outside experts think that orbital radio-frequency and microwave weapons are technically feasible today and could be deployed in the relatively near future. Space Bombers Though not by definition a space weapon, the Pentagon’s Common Aero Vehicle/Hypersonic Technology Vehicle (often called CAV) enters into this discussion because, like an ICBM, it would travel through space to strike Earth-bound targets. An unpowered but highly maneuverable hypersonic glide vehicle, the CAV would be deployed from a future hypersonic space plane, swoop down into the atmosphere from orbit and drop conventional bombs on ground targets. Congress recently began funding the project but, to avoid stoking a potential arms race in space, has prohibited any work to place weapons on the CAV. Although engineers are making steady progress on the key technologies for the CAV program, both the vehicle and its space plane mothership are still likely decades off. Some of the congressional sensitivity to the design of the CAV may have arisen from another, much more controversial space weapons concept with parallel goals: hypervelocity rod bundles that would be dropped to Earth from orbital platforms. For decades air force planners have been thinking about placing weapons in orbit that could strike terrestrial targets, particularly buried, “hardened” bunkers and caches of weapons of mass destruction. Commonly called “rods from God,” the bundles would be made up of large tungsten rods, each as long as six meters (20 feet) and 30 centimeters (12 inches) across. Each rod would be hurled downward from an orbiting spacecraft and guided to its target at tremendous speed. Both high costs and the laws of physics, however, challenge their feasibility. Ensuring that the projectiles do not burn up or deform from reentry friction while sustaining a precise, nearly vertical flight path would be extremely difficult. Calculations indicate that the nonexplosive rods would probably be no more effective than more conventional munitions. Furthermore, the expense of lofting the heavy projectiles into orbit would be exorbitant. Thus, despite continued interest in them, rods from God seem to fall into the realm of science fiction. Obstacles to Space Weapons What, then, is holding the U.S. (and other nations) back from a full-bore pursuit of space weapons? The countervailing pressures are threefold: political opposition, technological challenges and high costs. The American body politic is deeply divided over the wisdom of making space warfare a part of the national military strategy. The risks are manifold. I remarked earlier on the general instabilities of an arms race, but there is a further issue of stability among the nuclear powers. Early-warning and spy satellites have traditionally played a crucial role in reducing fears of a surprise nuclear attack. But if antisatellite weapons disabled those eyes-in-the-sky, the resulting uncertainty and distrust could rapidly lead to catastrophe. One of the most serious technological challenges posed by space weapons is the proliferation of space debris, to which I alluded earlier. According to investigators at the air force, NASA and Celestrak (an independent space-monitoring Web site), the Chinese antisatellite test left more than 2,000 pieces of junk, baseball-size and larger, orbiting the globe in a cloud that lies between about 200 kilometers (125 miles) and 4,000 kilometers (2,500 miles) above Earth’s surface. Perhaps another 150,000 objects that are a centimeter (half an inch) across and larger were released. High orbital velocities make even tiny pieces of space junk dangerous to spacecraft of all kinds. And ground stations cannot reliably monitor or track objects smaller than about five centimeters (two inches) across in low Earth orbit (around a meter in geostationary orbit), a capability that might enable satellites to maneuver out of the way. To avoid being damaged by the Chinese space debris, in fact, two U.S. satellites had to alter course. Any shooting war in space would raise the specter of a polluted space environment no longer navigable by Earth-orbiting satellites. Basing weapons in orbit also pre­sents difficult technical obstacles. They would be just as vulnerable as satellites are to all kinds of outside agents: space debris, projectiles, electromagnetic signals, even natural micrometeoroids. Shielding space weapons against such threats would also be impractical, mostly because shielding is bulky and adds mass, thereby greatly increasing launch costs. Orbital weapons would be mostly autonomous mechanisms, which would make operational errors and failures likely. The paths of objects in orbit are relatively easy to predict, which would make hiding large weapons problematic. And because satellites in low Earth orbit are overhead for only a few minutes at a time, keeping one of them constantly in range would require many weapons. Finally, getting into space and operating there is extremely expensive: between $2,000 and $10,000 a pound to reach low Earth orbit and between $15,000 and $20,000 a pound for geostationary orbit. Each space-based weapon would require replacement every seven to 15 years, and in-orbit repairs would not be cheap, either. Alternatives to Space Warfare  
Given the risks of space warfare to national and international security, as well as the technical and financial hurdles that must be overcome, it would seem only prudent for spacefaring nations to find ways to prevent an arms race in space. The U.S. focus has been to reduce the vulnerability of its satellite fleet and explore alternatives to its dependence on satellite services. Most other space-capable countries are instead seeking multilateral diplomatic and legal measures. The options range from treaties that would ban antisatellite and space-based weapons to voluntary measures that would help build transparency and mutual confidence.  
The Bush administration has adamantly opposed any form of negotiations regarding space weapons. Opponents of multilateral space weapons agreements contend that others (particularly China) will sign up but build secret arsenals at the same time, because such treaty violations cannot be detected. They argue further that the U.S. cannot sit idly as potential adversaries gain spaceborne resources that could enhance their terrestrial combat capabilities.  
Proponents of international treaties counter that failure to negotiate such agreements **entails real opportunity costs.** An arms race in space may end up compromising the security of all nations, including that of the U.S., while it stretches the economic capacities of the competitors to the breaking point. And whereas many advocates of a space weapons ban concede that it will be difficult to construct a fully verifiable treaty—because space technology can be used for both military and civilian ends—effective treaties already exist that do not require strict verification. A good example is the Biological Weapons Convention. Certainly a prohibition on the testing and use (as opposed to the deployment) of the most dangerous class of near-term space weapons—destructive (as opposed to jamming) antisatellite systems—would be easily verifiable, because earthbound observers can readily detect orbital debris. Furthermore, any party to a treaty would know that all its space launches would be tracked from the ground, and any suspicious object in orbit would promptly be labeled as such. The international outcry that would ensue from such overt treaty violations could deter would-be violators.  
Since the mid-1990s, however, progress on establishing a new multilateral space regime has lagged. The U.S. has blocked efforts at the United Nations Conference on Disarmament in Geneva to begin negotiations on a treaty to ban space weapons. China, meanwhile, has refused to accept anything less. Hence, intermediate measures such as voluntary confidence-building, space traffic control or a code of responsible conduct for spacefaring nations have remained stalled.  
Space warfare is not inevitable. But the recent policy shift in the U.S. and China’s provocative actions have highlighted the fact that the world is approaching a crossroads. Countries must come to grips with their strong self-interest in preventing the testing and use of orbital weapons. The nations of Earth must soon decide whether it is possible to sustain the predominantly peaceful human space exploration that has already lasted half a century. The likely alternative would be unacceptable to all.

**War in space occurs through miscalculation, risks extinction**

**Mitchell, et al 1** -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'.33 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'.34 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'. 35 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'.36 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!'. 37 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'.38 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.

### Solvency

#### We have reached a tipping point – space debris is increasing exponentially due to chain reactions and will destroy satellites

Carreau 12/1/11 (Mark Carreau, staff writer at Aviation Weekly, “Orbital Debris Expert Urges Retrieval,” Aerospace Daily and Defense Report, <http://www.aviationweek.com/aw/generic/story_channel.jsp?channel=space&id=news/asd/2011/12/01/11.xml&headline=Orbital%20Debris%20Expert%20Urges%20Retrieval>)

Efforts over the past two decades to mitigate the growth through changes in the design and operation of launch systems and satellites have given way to a new concern – the increasing risk of collision between existing debris in Earth orbit, adding to the fragment population faster than the junk can make a destructive descent into the atmosphere naturally. “It took a lot of effort, energy and money to get these things into space, and by golly, it will take a lot of that to get it out,” Johnson told a Nov. 29 gathering of the Houston section of the American Institute of Aeronautics and Astronautics. “That is our challenge right now.” A failure to methodically address the issue could place future generations of vital communications, navigation and weather satellites in jeopardy, he said. Johnson’s concerns echo those of a Sept. 1 report issued by the National Research Council, Limiting Future Collision Risk to Spacecraft: An Assessment of NASA’s Meteoroid and Orbital Debris Programs. The prospect of new debris from collisions between existing space junk has reached a “tipping point,” according to the NRC, which urged a re-examination of internationally recognized restrictions that prevent any one nation from sweeping away the debris from another country’s spacecraft.

#### plan causes 100,000 launches

**Globus 08** (Al Globus, space expert, “On The Moon,” Ad Astra, Spring 2008, <http://www.nss.org/adastra/AdAstra-SBSP-2008.pdf>)

While it has been suggested that in the long term, space solar power (SSP) can provide all the clean, renewable energy Earth could possibly need (and then some), there has been less discussion on the most economic way to produce that power. If we want to build two or three solar power satellites, one obvious approach is to manufacture the parts on the ground, launch them into orbit, and assemble them there, just like the International Space Station. But a few power satellites won’t solve our energy or greenhouse gas problems. We’ll need more. To generate all the energy used on Earth today (about 15 terawatts) would require roughly 400 solar power satellites 10 kilometers across. Assuming advanced, lightweight space solar power technology, this will require at least 100,000 launches to bring all the materials up from Earth. But even 400 satellites won’t be enough. Billions of people today have totally inadequate energy supplies—and the population is growing. Providing everyone with reasonable quantities of energy might take five to ten times more than we produce today. To supply this energy from solar power satellites requires a staggering launch rate. There are two major issues with a very high launch rate.

#### Extinction

**Thomas 06** (William Thomas, Investigative Journalist, 8-7-2006, “Scientist Says Chemtrails, Shuttle Launches Endangering Earth,” Chem Trails, http://www.chemtrails911.com/docs/Space%20Shuttle%20Launch-Ozone%20Layer.htm)

A Canadian atmospheric scientist warns that chemtrails, airliners and shuttle launches are weakening the stratosphere and destroying Earth’s ozone layer—threatening all life on Earth. It was one of those messages that phones are notorious for delivering—the kind of call that cancels the sleep and makes flu symptoms worse. But this time, the health of the entire planet was at stake. A concerned Canadian scientist named Neil Finley was on the line to inform me that high-altitude jet traffic, space launches and chemtrails are threatening to destroy not only Earth’s protective radiation shielding—but the stratosphere itself.

#### Makes bird flu inevitable

**Harmon 09** (Katherine, News Reporter @ Scientific American “Satellites Used to Predict Infectious Disease Outbreaks,” 8/24, http://www.scientificamerican.com/author.cfm?id=1822)

Rather than searching for weird weather or enemy missiles, some satellites are helping researchers to track—and predict—the spread of deadly diseases. With the pandemic spread of H1N1 swine flu and the continued advance of the H5N1 avian flu, scientists are anxious to better predict the spread of infectious diseases and are looking for new tools wherever they might be—even if that's hundreds of miles in the sky. "Ideally we could predict conditions that would result in some of these major outbreaks of cholera, malaria, even avian flu," says Tim Ford of the University of New England in Biddeford, Maine. Ford and a group of experts have co-authored a perspective paper (pdf), due out next month in Emerging Infectious Diseases, that proposes making use of environmental data—tracked via satellite—to predict disease outbreaks. "As climate changes, and even with many of our weather patterns, [it] directly affects the distribution of disease," Ford says. Hantavirus, the pulmonary disease spread by rodents, for example, has been linked to changes in precipitation. With more rainfall, vegetation increases, which then fuels rodent populations. And pinpointing an area as relevant conditions emerge—before an outbreak starts—buys precious time to spread public health messages. Satellite imaging can also help warn of cholera outbreaks, which are predicted to worsen with climate change. The satellites provide information about water surface temperatures, which are key to the spread of this waterborne disease. One study found that giving people simple preventative instructions, such as filtering water through a sari cloth, reduced cholera-related deaths by an estimated 50 percent in some areas. Remote data have already been used to map the avian flu in Asia. Xiangming Xiao, associate director of the University of Oklahoma's Center for Spatial Analysis in Norman, has been tracking likely outbreaks of this highly pathogenic flu by looking for key habitat and weather changes. The domestic duck—determined to be the main carrier of the disease—is a common inhabitant of Southeast Asia's rice paddies, and the movement of migratory birds—a secondary carrier—could be predicted based on temperatures. So using both land-use and temperature information from satellites, Xiao and his team could track the spread of the flu by estimating where the birds would be.

#### Extinction

**Chandra, 4** — Deputy National Security Advisor of India (Satish, “Global Security: A broader concept for the 21st century”, Center for Strategic Decision Research, 5/7/2004, http://www.csdr.org/2004book/chandra.htm)

This scenario, as frightening as it is, pales in comparison with what could overtake us by 2007 if the highly pathogenic form of bird flu “H5N1” becomes transmittable human to human; all it would take for this to happen is a simple gene shift in the bird flu virus, which could happen any day. In a globalized world linked by rapid air travel, the disease would spread like a raging forest fire. If it did, it would overwhelm our public health system, cripple our economies, and wipe out a billion people within the space of a few months—a 60 percent mortality rate is estimated.

#### SPS Fails

Fetter 04—PhD in energy and resources from UC Berkley and professor at the University of Maryland

(Fetter, Steve “Space Solar Power: An Idea Whose Time Will Never Come?”, <http://drum.lib.umd.edu/bitstream/1903/3992/1/2004-P&S-SSP.pdf> , FS)

In summary, SSP could compete with earth-based solar power only if all of the following conditions are met: • solar supplies ~100% of total electricity demand; • the cost of space-based solar arrays is reduced to $1000 kWp–1 and earth-based arrays do not cost less than space-based arrays; • SSP transmission is no less efficient and no more expensive than storage or intercontinental transmission of electricity generated by earth-based systems; • SSP operation and maintenance is no more expensive than operations and maintenance of earth-based systems; • total on-orbit system mass is less than 5 kg kW–1; and • launch cost (currently about $10,000 kg–1 to low-earth orbit) is less than $350 kg–1. Much of the discussion surrounding SSP has focused on the last of these conditions. With chemical propellants, very low launch costs can be achieved only with a reusable vehicle. At today’s prices, propellant for a reusable vehicle would cost about $50 per kilogram placed into low-earth orbit (LEO) and 150 kg–1 for geosynchronous orbit (GEO).9 Achieving a total cost of $350 kg–1 would therefore require a total-to-fuel cost ratio of 7:1 for LEO and 2:1 for GEO. To put this into perspective, the cost ratio for the U.S. air freight industry is about 4:1. The probability the SSP could simultaneously meet all of the conditions outlined above and produce electricity more cheaply than solar arrays on earth is so small that any significant expenditure of federal funds for research and development on this concept would be unwise and unwarranted.

#### demonstration fails

Livingston 2k, -Dr. David M. Livingston, founder of the Mars society, lecturer on space business, doctorate in business administration, 2001 (“$pace: The Final Financial Frontier,” Space Future, Accessed online at http://www.spacefuture.com/archive/space\_the\_final\_financial\_frontier.shtml, Accessed on 6/29/11)

Conclusion Financiers pay attention to the bottom line-the payback period and the expected return. They will also consider political risk and market risk. The economic viability of such programs must be demonstrated before private-sector capital will flow into them. Research and development alone will not attract or justify private-sector funding as these ventures will be steeped in financial uncertainty. Aside from millionaire space enthusiasts who will support projects regardless of business merit, the great majority of investors will require rational, grounded, and proven financial results. This point should not be forgotten when planning new space development projects. Developing NSIs can be as potentially lucrative as the satellite industry. Yet there are still significant obstacles to be addressed before NSIs can become reality. To succeed, the management of NSIs must understand how they are going to be evaluated, how their business is going to be financed, and what the true market potential for their venture means in terms of generating revenues and ultimately profits. NSI management must present legitimate business plans, projections, and forecasts to demonstrate to financiers that their ventures can not only compete with terrestrial investments, but can ultimately be more profitable. There is much to be done before most NSI development can commence.

#### SPS is not practical for military applications – the tech not feasible and bases are too small

**Jaffe, 10** – U.S. Naval Research Laboratory (1/28/10, Paul, AIP Conference Proceedings, SPACE, PROPULSION & ENERGY SCIENCES INTERNATIONAL FORMUM, “A Study of Defense Applications of Space Solar Power,” Vol. 1208, Is. 1, [http://link.aip.org.proxy.lib.umich.edu/link/?APCPCS/1208/585/1)](http://link.aip.org.proxy.lib.umich.edu/link/?APCPCS/1208/585/1)RK)

It was observed that safe power densities for wireless energy transmission may generally restrict military and other applications to large, relatively immobile receiver sites; and also that capital, launch, and maintenance costs remain significant unresolved concerns in the economics of fielding a practical SBSP system. A detailed analysis of the economics associated with SBSP systems was beyond the scope of the study, and would be a critical undertaking prior to implementing such a system (Johnson, 2008).

Military Operations Scenarios

Specifically regarding military operation scenarios, a number of observations were made. SBSP systems employing microwave power transmission at frequencies below 10 GHz would be most suited to a limited number of bases and installations where the large area required for efficient power reception would be available. For applications requiring smaller apertures, millimeter wave or laser power transmission may be preferable, though tradeoffs among safety, increased atmospheric attenuation, and received power density would need to be addressed carefully. Direct power transmission to individual end users, vehicles, or very small, widely scattered nodes did not appear practical at the time the study was conducted, primarily because of the large inefficiencies and the possible risks of providing what amounts to a “natural resource”. Backup alternatives to SBSP would need to be considered for military installations in the event of failure, compromise, or military action as such a system may present the problem of a single point of failure. Several military application scenarios from the report are outlined and summarized in Table 1.

Forward Operating Base Power

A Forward Operating Base (FOB) exists to support a small number of reconnaissance and surveillance teams as well as for military power projection ahead of primary forces. As such, the FOB can be anywhere from 50 to 5,000 personnel because it is task-organized and scales accordingly.

Provision of electrical energy to the FOB must be viewed as a necessary commodity. The FOBs tend to be in remote, relatively inaccessible areas, due to both terrain and location of opposing forces (OPFOR). Resupply missions are tradeoffs between the risk of sending in an armed convoy and the risk, and substantial additional costs, of air resupply.

With basic assumptions of 1-3 kW/person at the FOB, generator usage can grow rapidly. An appropriate example is the mobile Command and Control center known as the Unit Operations Center (UOC) – the generator provided is 20kW and consumes approximately one half of a small trailer (the other half is occupied by an 8-ton environmental control unit and tent). The UOC is an appropriately sized for use in a FOB and yet provides power only for itself. One innovative option is to have battlefield vehicles provide power for temporary operations – a concept demonstrated by the Reconnaissance, Surveillance and Targeting Vehicle (RST-V) – which was capable of providing 30kW of prime power to external systems. 30kW may be adequate for temporarily powering the UOC, but it is inadequate for any larger installation.

Currently, sets of semi-permanent generators are used set some distance away from the Command Operations Center (COC) in order to provide both thermal and noise abatement. Fuel and ammunition (designated the Forward Ammunition and Refueling Point [FARP]) are likewise separated from the COC and living spaces for safety reasons.

Could SBSP credibly provide power to the FOB? Any replacement for the generators would have to meet similar safety and density provisions to those currently in operation. One of the advantages of using liquid fuel is that it is relatively dense for the energy provided. The generators are relatively small and portable (towable) and usage is well understood. Many SBSP proposals limit power density to the equivalency of one Sun at ground level. This implies that for a FOB of 500 persons (medium task size, no air strip) we need 500 m2 of antenna, energy conversion and short-term storage equipment, and support systems to provide ~200 kW of power. Support would include the necessary security perimeter. Efficient microwave power transfer to such a small area would be challenging. Instead, much of the surrounding countryside would likely also benefit from the power transfer – OPFOR included.

The size of the base in question is a critical factor. For microwave power reception from an SBSP satellite in space for sizable power provision while maintaining safe power densities, a contiguous elliptical **area on the order of square kilometers will likely be required.** This may limit applicability to infrastructure supporting tactical operations. Depending on the area and resources available for setting up a receiving array, forward bases, larger command posts, and supply depots may or may not be supportable with SBSP.

A point that needs to be clarified is the ultimate purpose of the power delivery. Will it provide utility grid service for an installation or is it for another purpose? Is it necessary to charge an energy storage device such as a battery or might it be stored as generated fuel? If energy cannot be directly delivered to its final application, either the application must be changed or it must be stored for later delivery by another method. Some possible contexts:

Stationary facilities with large amounts of available real-estate – provide large amounts of continuous power to larger facilities. This scenario starts to look and feel like the power grid-type application that is typically posed for SBSP.

Direct delivery to a power storage/conversion facility – charge batteries or convert into other energystorage paradigms (fuels, stored mechanical potential energy, etc.).

Either contextual application is more suitable for a fairly secure area, relatively far away from any action. While potentially extremely useful to the personnel in action, the implementation is very different, and would seem to stretch the definition of “tactical”.

Millimeter-wave or laser delivery systems offer possible advantages as the decrease in wavelength allows either (or both) apertures (transmit and receive) to be made smaller. Disadvantages include that power generation is less efficient, perhaps by as much as half, and propagation effects become important. Atmospheric absorption cuts delivered power perhaps by half again, and weather effects such as rain can introduce many dB of attenuation. The forward base application of SBSP becomes more credible when it is applied to larger facilities, where it begins to approximate a special case of the utility grid application. Army fuel consumption data show that during field activity, electrical generators consume the largest fraction of delivered fuel, nearly 35%. (Defense Science Board, 2008) However, without a major shift in DoD transportation architecture to synthetic fuels, it may be of little help in fuel convoy reduction because of the large amount of aircraft and vehicle fuel required by such installations (Johnson, 2008).

Power to Individual End Users

The prospect of reducing the need for soldiers and other users to carry numerous and heavy batteries is very attractive. Batteries are logistically challenging for their mass and for the need to protect them from moisture, extreme temperatures, and other hazards. It is estimated that 15-20% of a soldier’s 30-40 kg pack consists of batteries. Obtaining replacement batteries adds to the fuel consumed by resupply lines and the task of recharging batteries adds to the load on generators at forward bases. Because of this, SBSP has been posed as a means to recharge such batteries or to displace the need for them by providing power directly to the soldier.

**Direct SBSP power delivery to daily patrols, either individuals or vehicles, seems problematic at best.** In considering this, note that at microwave frequencies of 1.5 GHz to 15 GHz, safe power densities for continuous exposure are between 1 and 10 mW / cm2, or about 1 to 10 W per sq ft., respectively (IEEE C95.1-1999). The FCC (Bulletin 65) limits this exposure more, to a constant 1 mW / cm2 (about 1 W per sq ft) above 1.5 GHz.

Examples of end user consumption:

Radio transmitter: Considerable power needs to be available, for example, to operate a radio – 10’s to 100’s of Watts while transmitting.

Vehicle operation: A typical car only requires 10’s of horsepower to travel at reasonable speeds on a highway (much more when accelerating or traversing rough terrain). 1 HP is approximately 750 Watts, so even a 10 or 20 HP requirement becomes a requirement for 7.5 to 15 kW of power, even before considering the conversion efficiency between electrical and mechanical energy.

The preferred application of power to these problems would require the ability to directly beam energy to each recipient rather than blanketing the area for several reasons:

Only the people / vehicles need the power – a tremendous fraction of power is wasted if it is transmitted everywhere.

Transmitting power everywhere is like providing a natural resource – one’s enemies can also use it, greatly reducing the advantage one gains by developing and implementing the system

At radio frequency (RF) frequencies, it is extraordinarily difficult to directly point beams small enough to solve the efficiency problem from space. Extraordinarily large antenna apertures would likely be required at microwave frequencies. Perhaps even more difficult would be how to tell the power source exactly where to point the beams (potentially several thousand of them, all to a delivered accuracy of 1 meter or less). To further compound the problem, if the beam pointing challenges were solved, power density issues would need to be resolved – that is, if there was enough power in the beam to do any good, it would likely pose a safety hazard to the people in or near the beam.

Based on these statements, direct delivery of energy using microwave power to a final application to small, mobile units is not practically feasible with near-term foreseeable technology. (Johnson, 2008)

#### No tech – 40 years at best

**Day 08** – program officer at the Space Studies Board of the [National Research Council](http://en.wikipedia.org/wiki/United_States_National_Research_Council) in Washington, D.C, [American](http://en.wikipedia.org/wiki/United_States) [space](http://en.wikipedia.org/wiki/Space) [historian](http://en.wikipedia.org/wiki/Historian) and policy analyst, doctorate degree in political science from [The George Washington University](http://en.wikipedia.org/wiki/The_George_Washington_University)[[1]](http://en.wikipedia.org/wiki/Dwayne_A._Day#cite_note-nasabio-0) where he specialized in space policy and management of the national security bureaucracy (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.

#### It causes debris that make space unusable

Sénéchal 7 – Thierry Sénéchal, PhD from Columbia University, 2007, “Space Debris Pollution: A Convention Proposal,” Protocol for a Space Debris Risk and Liability Convention, <http://www.pon.org/downloads/ien16.2.Senechal.pdf>

The time is right for addressing the problem posed by orbital debris and realizing that, if we fail to do so, there will be an increasing risk to continued reliable use of space-based services and operations as well as to the safety of persons and property in space. We have reached a critical threshold at which the density of debris at certain altitudes is high enough to guarantee collisions, thus resulting in increased fragments. In a scenario in which space launches are more frequent, it is likely that we will create a self-sustaining, semi-permanent cloud of orbital ―pollution that threatens all future commercial and exploration activities within certain altitude ranges. The debris and the liability it may cause may also poison relations between major powers.

#### High launch costs

**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.

#### It’s not cost competitive to earth based solar power

Nelder 09 – Author, journalist, publisher, media talent and expert on energy issues, project manager with technical skills in the solar and software industries, Twelve years as a writer on energy issues. Recognized expert in the broad domain of energy, including oil, natural gas, coal, nuclear, solar, wind, geothermal, marine, and efficiency, wrote two book on peak oil and renewable energy (Chris, April 25th, <http://turn.org/article.php?id=850>) Jacome

To get an idea of what kind of bang for the buck SBSP might deliver, the Journal quoted a Pentagon report estimating that a 10 megawatt pilot satellite would run about $10 billion, or about $1 million per kilowatt of capacity.

By comparison, an off-the-shelf solar photovoltaic (PV) system for the home runs about $8,850 per kilowatt, for a commercial system about $6,720 per kilowatt, and for an industrial sized system, about $4,850 per kilowatt (source). Even after quadrupling those costs to account for the fact that PV systems generally produce power for only about 6 hours a day, it's still a tiny, tiny fraction of the cost of SBSP, and uses technology that is in commercially operation today, not fantasy technology of the future.

A more apt comparison would be concentrating solar power (CSP) plants, which are utility-scale systems that can run 24 hours a day with internal heat-storage technology. These plants generate power for $3,000 to $3,500 per kilowatt and likewise use current, commercially available technology (source). At 11 to 12 cents per kilowatt-hour (kWh) of production today, on its way to 7 cents per kWh for next generation plants, CSP systems will soon be economically competitive with coal-fired and nuclear electrical generation.

Why would anyone be interested in space-based solar power when commercial utility scale solar technology on the ground today costs 0.3% of its price?

#### Technological efficiencies can’t solve that

Strauss 09 (Stephen Strauss, He won numbers of awards and fellowships as a science writer for the Globe and published three books. October 1, 2009 <http://www.cbc.ca/news/technology/story/2009/09/30/vp-strauss-space-orbital-solar-power-generators.html>)

No market advantage What the telegraph story says to me is that space-based power is increasingly more likely to fail than to succeed. It's the market-timing paradox. When the telegraph line was put in, its only competition was the transmission of information using ships. Sailing across the Atlantic took the better part of two weeks and led to the newspapers of the time often featuring stories with the attribution "a recently arrived boat passenger has reported." Conversely, once the telegraph line was actually functional in the 1860s, it could transmit Morse-coded accounts of events in minutes. What this leap in the speed of information transmission meant is that there was effectively no competition for a telegraph. Accordingly, customers were charged $5 a word for the initial transmissions. To put this in modern context for you, when inflation is taken into consideration, that would translate into a 140-character internet tweet costing upwards of $4,000. Therein lies the fundamental problem with space-based solar power: it isn't different from any other kind of electricity. Toasters or computers or the internet won't run faster or smoother or better when powered by solar energy from space. And this means that space solar power is — in price, reliability, availability and reduction of global warming — in competition with every other form of alternative and conventional energy. It is as if laying telegraph cables existed in a world where primitive forms of radio transmissions and cellphones and internet signals were also developing. In this complex marketplace, price isn't set by a monopoly medium but by all media in competition. The most optimistic of scenarios today has space-based solar costing five to 10 times as much as traditional energy sources. Prohibitive cost The argument that proponents make is that a variety of technological advances could bring this cost down. However, there is a root problem in this. The same pressure to provide sustainable, environmentally friendly energy sources is at work through out the power industry. And Earth-based technologies have an intrinsic advantage in what is called "the learning curve." Jonathan Koomey, who co-authored in 2007 an article called "The Risk of Surprise in Energy Technology Costs," points out that when developing something like a better wind power generator, errors teach you things. "You learn what went wrong, correct it and build another one," Koomey said from Yale University, where he is a visiting professor. But space construction bedevils any simple learning feedback. Simply getting to where the problem exists to determine the problem and fix it is a huge issue. A single space shuttle flight costs about $1 billion. Even cheap launch vehicles envisaged for the future are estimated to cost around $78 million a flight. How can you be nimble and do quick redesigns with this kind of overhead? I don't think you can. And thus the paradox: if SBSP gets better but its competitors do as well, space power might never be good enough to compete in the energy marketplace. So, what the transatlantic telegraph tells me is a great irony for proponents of space solar power. Despite all its recent activity and advances, SBSP seems today more likely to fail because external circumstances mean other energy alternatives are more likely to succeed.

### Warming

#### Investment in alternative energy causes OPEC to flood the market.

William Kole, 9/8/2007. Associated Press Writer. “Despite rising prices, OPEC appears to be in no rush to raise its output targets,” NWI Times, <http://nwitimes.com/articles/2007/09/08/business/business/doc7e79bb33cb7ec6f28625734f00723bfd.txt>.

If you remember what happened in the 1970's (look it up if you don't) you will find the biggest fear OPEC has. It is that oil prices will go up and stay high long enough to fuel investment into conservation and alternative energy sources to the point that a critical mass is reached and the need for their oil is greatly diminished or replaced by other energy sources they don't control. That's exactly what started happening in the 1970's and it took OPEC opening up the tap to make oil cheap again over a decade to reverse the trends. The result was that interest in conservation and alternative energy waned and investments dried up in the face of cheap oil again. We are once again nearing that point and you can expect to see OPEC flood the market again if they see us getting serious with conservation and alternative energy sources that compete with, or worse yet, actually replace demand for their oil. OPEC walks the fine line between price and demand and wants to keep us hooked up to their oil like a bunch of junkies on drugs while making as much money as possible.

#### Saudi would flood the market in response to the plan and crash oil prices

HULBERT ’12 - Lead Analyst at European Energy Review; Senior Research Fellow, Netherlands Institute for International Relations; Senior Research Fellow at the Center for Security Studies (Hulbert, Matthew. “OPEC's Pending Bloodbath”. June 10, 2012. http://www.forbes.com/sites/matthewhulbert/2012/06/10/opecs-pending-bloodbath/)

That’s unlikely to happen, precisely because Riyadh can bring further pricing pressures to bear if it wants to get its way in the cartel. The Kingdom’s policy space has admittedly tightened over the past couple of years, but they remain the only producer capable of significantly increasing or reducing production at will. Initial tanker data from Europe suggests Riyadh may have started reigning in production that was running around 6% over OPEC quota. It’s also raised July benchmarks for Arab Light grades in Asia. But Iran, Venezuela, Nigeria, Angola and Algeria will want restraint to come far faster and far deeper to firm prices. The line being spun from the ‘free lunch’ brigade is that storage should easily cover any Iranian spikes when EU sanctions come into full effect 1st July, while OPEC quotas should be pared down to 29.5mb/d (or less). Cheap words from petro-hawks, not least because they’ll all continue to cheat on quotas to squeeze out every last drop they have. Riyadh knows that of course; hawks want a price floor to be set at $100/b to sustain political regimes, but to do so entirely at Saudi expense. Russia is no different outside the cartel: free riding 101. Saudi Arabia (and its GCC partners) might be willing to play ball given ongoing concerns from the Arab Awakening, but with some budgetary tweaks and counter-cyclical cash to burn, they could all easily survive at $85/b making Iran et al sweat. Tehran might decide to rip up formal quotas as it did in June 2011, but that would be a costly mistake. If the Saudis let prices fall, political outages across smaller producer states could help to set a floor for them anyway. Iran would have no say in the matter. Given such ‘pricing perils’, Saudi Arabia holds all the aces to settle institutional issues, not to mention giving the global economy more breathing space (and Washington greater leeway over Iranian sanctions). But the real reason to let prices fall a little further isn’t just to make very clear to OPEC states where the ultimate volume and pricing power rests, but to fight Riyadh’s bigger battle over the next decade: Retaining 40% of OPEC market share in the midst of supposedly huge non-OPEC supply growth. It didn’t go unnoticed that despite Saudi production averaging 31 year highs and prices hitting $128/b in March 2012, the forward curve for 2018 was trading at $30/b discounts relative to spot. You’d think with the cartel maxed out and proximate demand side problems looking bleak, five year curves would be exactly the other way, in sharp contango (i.e. far above prompt prices) once the global economy and demand side fundamentals were fixed. The fact they weren’t is principally because the market thinks vast swathes of unconventional production will come online, not just in North America where production is back above 6mb/d, but in Canada, Brazil and even Arctic extremes. At $100/b that was a fair bet to place, but once benchmark prices drop back to two figures, the 6.4 trillion barrels of unconventional reserves sitting in the Americas look a far less certain prospect. Canadian tar distinctly sticky; Brazilian pre-salt horribly deep; Russian Arctic plays simply impossible. So when OPEC meets in Vienna expect Saudi Arabia to call the shots. The new Secretary General will either be a Saudi national, or a compromise candidate Riyadh can live with. Quotas will stay close to 30mb/d with minor reductions possible. Thinly veiled threats of sustained (or increased) production will be made if Iran doesn’t play ball. Yet the long term price point to watch isn’t just one that keeps OPEC in business and Riyadh in control, but where the al-Saud can maintain secular market share. Letting prices informally slide to $85-90/b might be the kind of warning shot Riyadh wants to send to scrub unconventional plays off global balance sheets. Its OPEC colleagues will see that as sailing far too close to the political wind, but a Saudi bloodbath now, might be just the medicine OPEC requires to sustain its long term health, not unless the cartel is absolutely determined to keep pricing itself out of existence.

#### Oil prices are key to Russian military modernization

BENNETT ‘12 – MA from the University of Chicago; Emory University School of Law (John T. “Oil Prices Fueling Russia's Disruption of U.S. Foreign Policy”. April 04, 2012. http://www.usnews.com/news/articles/2012/04/03/oil-prices-fueling-russias-disruption-of-us-foreign-policy)

Russia's return to the fore as a check against America's global whims has escalated in recent months, as Russian Prime Minister Vladimir Putin was elected as President, and is setting his agenda for a third term. U.S.-Russian relations returned to the front pages last week after Obama urged outgoing Russian President Dmitry Medvedev to "give me space" on several issues, including a European missile defense shield that Moscow opposes. Likely GOP presidential nominee Mitt Romney soon after called Russia America's "top geopolitical enemy." "Putin still aspires for Russia to be a superpower," says Steven Pifer, a former U.S. ambassador to Ukraine. "There are only two ways for Russia to achieve that: nuclear weapons, and oil and natural gas sales." The price of a barrel of oil was nearly $105 at midday Tuesday, steadily climbing from a 52-week low of $76.35 per barrel in October. Oil prices began to rise in late 2010, peaking at $113 per barrel in May 2011, before dipping last summer and then rising again. Russia is the world's second-largest oil exporter at 5 million barrels a day, and its the ninth-leading natural gas exporter at 38.2 billion cubic meters a year, according to the CIA World Factbook. Russia rakes in nearly $500 billion annually in exports, with the CIA listing petroleum and natural gas as its top two commodities. Frances Burwell, vice president of the Atlantic Council, says Russia's oil revenues "give it a comfort zone" from which its leaders feel they have the global cache to make things tough for Washington. Burwell says she "places more weight" for Russia's recent global muscularity on "Putin's re-emergence." The Russian once-and-soon-again president "clearly sees playing the national card as the strong guy internationally benefits him," she says. But, make no mistake, bloated national coffers from high oil and gas prices underwrite Putin's muscle-flexing, experts say. Putin made a number of big domestic promises during the presidential race, including plans to usher in sweeping pension and wage hikes. He also put forth "a rather ambitious military modernization program," Pifer says. "If oil prices remain high, he might be able to do all of those things," Pifer says. "If prices come down, however, Putin will have some very tough decisions to make at home ... between guns versus butter." Should oil and gas prices tumble, experts say Putin would likely pick butter. "In 2007 when oil was doing well, Putin [as president] could have modernized the Russian military," says Pifer. Instead, Putin made a number of economic moves, such as the creation of a rainy day fund that was used during the recent global financial crisis," Pifer notes. What's more, Putin returns to power with his sharp eyes locked on his opposition, which is composed of the country's urban, middle-class populations. Experts agree that Putin would be hard-pressed to break his pension and wage promises in favor of a few more missiles. But even an economically weaker Russia would likely pick its spots to block Washington's desires.

#### Impact is Russian nuclear preemption—modernization key to lower nuclear reliance and Russian threat perception

RENZ AND THORNTON 12 – lectures on international security in the Faculty of Social Sciences, University of Nottingham (Bettina., Rod. “Russian Military Modernization Cause, Course, and Consequences” Problems of Post-Communism Volume 59, Number 1 / January / February 2012. P 52-54)

The perceived weakness of this triad means that the Kremlin was pleased with the START agreement of March 2010. The treaty limits favor Moscow in that it does not have to cut any of its own nuclear warheads or delivery systems—the numbers of ICBMs and warheads in its own triad are actually below the negotiated caps. Only the United States has had to bring its numbers down.58 Normally, in the arranging of such international security treaties, negotiating from a position of military weakness—as Russia was—is not conducive to the ability to drive a hard bargain. Moscow has been lucky, however, in that Washington seems not to be too interested in the shape of Russia’s current and future nuclear arsenal. Rather, in terms of perceived security threats, Washington has its eye more on the terrorist ball than on the Russian one. Additionally, under START, Russia does not have to reduce the number of its tactical nuclear weapons. It has more of these than the United States. These are prized and important assets to Moscow, and they have become even more prized and important as Russia’s conventional military has become weaker. They are seen more and more as the fallback option if Russia one day faces some sort of defeat in a conventional conflict—against the likes of Georgia or China. In the largest Russian military exercise held since the end of the cold war—conducted recently in the Russian Far East—tactical nuclear weapons (i.e., mines) were notionally “exploded” as part of the exercise play.59 This fact alone seems to confirm that Russia’s conventional military weakness has led to a reduction in its nuclear-use threshold. Conclusion The current modernization in the Russian military is long overdue. Because it is long overdue, it has to be completed in a rushed, haphazard fashion and against a backdrop of a military–industrial complex unable to fulfill its role in the process. Traditionally, military modernization is not achieved lightly, given the bureaucratic inertia and cultural norms that are always present. When, as in the current situation in Russia, such barriers to change are aided and abetted by any number of additional problems (not to mention the rampant corruption that is endemic across all levels of Russian state institutions, including the military), then it must be expected that Russia’s armed forces will be striving for some time to become truly “modern.”60 In essence, what should have been accomplished as an evolution over many years, and should have begun during the Yeltsin era, is now being attempted as a revolution in the post–Georgian war era. As with any revolutionary change, a good deal of disruption and disaffection has been created. Moreover, the current Russian military is a weakened military. The psychology of the tsarist/Soviet/Russian military has always been that numbers counted, that mass would prevail. Numbers inspired confidence, and numbers could deter. But the current Russian military is losing numbers while not making up for them by creating smaller, more professional forces equipped with the requisite technologies. Quality is not replacing quantity. The military is in a state of flux. Russian politicians and military figures both now lack a genuine confidence in the armed forces’ ability to deter. This can have two consequences. Either Russia takes large steps to avoid the possibility of military confrontation by stressing diplomatic solutions to possible threat scenarios (as the tsarist government did in 1914), or it goes the opposite way, fearing that if any state is threatening military action against Russia then the hair trigger comes into operation (Israeli-style). That is, the mentality of the first, preemptive strike becomes paramount—taking advantage of surprise—and using what assets Russia now has. The alternative is to take the risk of waiting to be attacked and maybe “losing.” What is clear is that, with its armed forces currently weakened by the process of change, the sense of vulnerability generated has led Russia, in classic confirmation of the security dilemma concept, to magnify the threats it faces, or thinks it faces. Conscious of its vulnerability to threats, real or imagined, Moscow may begin to look more and more toward the inflexible tool of its tactical nuclear weapons as its principal defense mechanism. While no one really supposes that such weapons will be used in any confrontation with the West, the same cannot be said of any possible conflict with the Chinese. Ironically, Beijing’s military still relies on mass. The best modern military counter to mass is to employ either PGMs or tactical nuclear weapons. The Russian military has hardly any of the former but plenty of the latter. Hair triggers and tactical nuclear weapons are not comfortable bedfellows.

#### Turn – Manufacturing leads to increase in emissions

**Decker ’08** – Creater of low-tech magazine, freelance journalist (Kris de, 3-20, “The Ugly Side of Solar Panels”, <http://www.lowtechmagazine.com/2008/03/the-ugly-side-o.html>)

Solar panels don’t come falling out of the sky – they have to be manufactured. Similar to computer chips, this is a dirty and energy-intensive process. First, raw materials have to be mined: quartz sand for silicon cells, metal ore for thin film cells. Next, these materials have to be treated, following different steps (in the case of silicon cells these are purification, crystallization and wafering). Finally, these upgraded materials have to be manufactured into solar cells, and assembled into modules. All these processes produce air pollution and heavy metal emissions, and they consume energy - which brings about more air pollution, heavy metal emissions and also greenhouse gases.

#### The Link turn outweighs – we won’t be able to have enough satellites, but the construction wrecks the environment

**Globus 08** – Bachelors in information science University of California at Santa Cruz in 1979, worked at NASA Ames Research Center (Al, “On The Moon,” Ad Astra, <http://www.nss.org/adastra/AdAstra-SBSP-2008.pdf>) Jacome

While it has been suggested that in the long term, space solar power (SSP) can provide all the clean, renewable energy Earth could possibly need (and then some), there has been less discussion on the most economic way to produce that power. If we want to build two or three solar power satellites, one obvious approach is to manufacture the parts on the ground, launch them into orbit, and assemble them there, just like the International Space Station. But a few power satellites won’t solve our energy or greenhouse gas problems. We’ll need more. To generate all the energy used on Earth today (about 15 terawatts) would require roughly 400 solar power satellites 10 kilometers across. Assuming advanced, lightweight space solar power technology, this will require at least 100,000 launches to bring all the materials up from Earth. But even 400 satellites won’t be enough. Billions of people today have totally inadequate energy supplies— and the population is growing. Providing everyone with reasonable quantities of energy might take five to ten times more than we produce today. To supply this energy from solar power satellites requires a staggering launch rate. There are two major issues with a very high launch rate.

The cost issue is obvious: the cheapest launches today run thousands of dollars per kilogram to low Earth orbit (LEO), and we need to get the materials all the way to geosynchronous Earth orbit (GEO), which is significantly more expensive. The cost of launch goes up very quickly with the change in velocity, which is measured in meters per second (m/s). For each increase in velocity, additional fuel is needed, and even more fuel to lift the additional fuel, and heavier structures to hold the increased fuel, and even more fuel to lift the heavier structures … you get the idea. In any case, the velocity change from the ground to LEO is 8,600 m/s, but to GEO it’s 12,400 m/s. Paul Werbos (see references on page 36) estimates that launch costs must come down to somewhere in the neighborhood of $450/kg for SSP to deliver energy near current prices (5-10 cents/kw-h). Fortunately, a high launch rate drives prices down, just as the mass-produced Ford Model-T was far cheaper than the previous generations of automobiles.

The environmental impact of these launches is also a concern. Today there are few launches and, therefore, they have little effect on the atmosphere. What will happen when hundreds of thousands of rockets are dumping exhaust, even clean exhaust, into the upper atmosphere? If the vehicles are reusable, which we expect, they will use atmospheric drag to come down. The heat generated will create a number of chemical reactions in the upper atmosphere. What will be the effect? We don’t know. There’s reason to believe the problems won’t be severe, but the studies conducted so far are inadequate.

#### And even if they got the required satellites it would take 1000 years to solve Hempsell 06 – senior lecturer in space technology at the University of Bristol, (Mark, Acta Astronautica, Volume 59, Issue 7, October, <http://www.sciencedirect.com/science/article/pii/S0094576506001755)>

The key contributor to global warming gases is anthropogenic carbon dioxide and its removal from the atmosphere would clearly be desirable. The natural process of fixing carbon dioxide is far slower than the annual production rate of around 30 Gtonnes a year and artificial fixing is clearly of interest [29]. To remove a tonne of the gas over a year and split the carbon from the oxygen would require around 1 kW. It follows a 5 GW system dedicated to a removal and processing plant would remove 5 million tonnes a year, which is a factor of ten thousand below the current production rate. Taking a scenario of the expanded reference system with around 200 SPS in place providing most of the world's energy needs without any carbon dioxide being produced there would still be a need to remove the carbon dioxide already there. Assuming another 200 satellites are constructed and dedicated to CO2 removal the removal rate would be 1 Gtonne/year, still a factor of 30 below the current production rate. Such a system (doubling mankind's energy consumption on the Earth) would need to be operational for a thousand yearsto undo the few decades of heavy dependence on energy from fossil fuels.

#### Can’t solve warming

**AP 9** (Associated Press, Six Degree Temperature Rise by 2100 is Inevitable: UNEP, September 24, <http://www.speedy-fit.co.uk/index2.php?option=com_content&do_pdf=1&id=168>)

Earth's **temperature is likely to jump six degrees** between now and the end of the century **even if every country cuts** greenhouse gas **emissions** as proposed, according to a United Nations update. **Scientists looked at emission plans** from 192 nations **and calculated what would happen** to global warming. The projections take into account 80 percent emission cuts from the U.S. and Europe by 2050, which are not sure things. The U.S. figure is based on a bill that passed the House of Representatives but is running into resistance in the Senate, where debate has been delayed by health care reform efforts. Carbon dioxide, mostly from the burning of fossil fuels such as coal and oil, is the main cause of global warming, trapping the sun's energy in the atmosphere. The world's average temperature has already risen 1.4 degrees since the 19th century. Much of projected rise in temperature is because of developing nations, which **aren't talking much about cutting their emissions**, scientists said at a United Nations press conference Thursday. China alone adds nearly **2 degrees** to the projections. "We are headed toward very serious changes in our planet," said Achim Steiner, head of the U.N.'s environment program, which issued the update on Thursday. The review looked at some 400 peer-reviewed papers on climate over the last three years. **Even if the developed world cuts** its emissions by **80 percent and the developing world cuts theirs in half** by 2050, as some experts propose, **the world is** still **facing a 3-degree increase** by the end of the century, said Robert Corell, a prominent U.S. climate scientist who helped oversee the update. Corell said the most likely agreement out of the international climate negotiations in Copenhagen in December still translates into a nearly 5-degree increase in world temperature by the end of the century. European leaders and the Obama White House have set a goal to limit warming to just a couple degrees. The U.N.'s environment program unveiled the update on peer-reviewed climate change science to tell diplomats how hot the planet is getting. The last big report from the Nobel Prize-winning Intergovernmental Panel on Climate Change came out more than two years ago and is based on science that is at least three to four years old, Steiner said. Global warming is speeding up, especially in the Arctic, and that means that some top-level science projections from 2007 are already out of date and overly optimistic. Corell, who headed an assessment of warming in the Arctic, said global warming "is accelerating in ways that we are not anticipating." Because Greenland and West Antarctic ice sheets are melting far faster than thought, it looks like the seas will rise twice as fast as projected just three years ago, Corell said. He said seas should rise about a foot every 20 to 25 years.

#### Warming won’t cause extinction

**Barrett** **‘7** professor of natural resource economics – Columbia University, (Scott, Why Cooperate? The Incentive to Supply Global Public Goods, introduction)

First, **climate change does not threaten the survival of the human species**.5 If unchecked, it will cause other species to become extinction (though biodiversity is being depleted now due to other reasons). It will alter critical ecosystems (though this is also happening now, and for reasons unrelated to climate change). It will reduce land area as the seas rise, and in the process displace human populations. “Catastrophic” climate change is possible, but not certain. Moreover, and unlike an asteroid collision, large changes (such as sea level rise of, say, ten meters) **will likely take centuries to unfold, giving societies time to adjust.** “Abrupt” climate change is also possible, and will occur more rapidly, perhaps over a decade or two. However, **abrupt climate change** (such as a weakening in the North Atlantic circulation), though potentially very serious, **is unlikely to be ruinous.** Human-induced climate change is an experiment of planetary proportions, and we cannot be sur of its consequences. Even in a worse case scenario, however, global climate change is not the equivalent of the Earth being hit by mega-asteroid. Indeed, if it were as damaging as this, and if we were sure that it would be this harmful, then our incentive to address this threat would be overwhelming. The challenge would still be more difficult than asteroid defense, but we would have done much more about it by now.

**CO2 isn’t key**

**Watts ’12** 25-year climate reporter, works with weather technology, weather stations, and weather data processing systems in the private sector, 7/25/

(Anthony, <http://wattsupwiththat.com/2012/07/25/lindzen-at-sandia-national-labs-climate-models-are-flawed/>)

ALBUQUERQUE, N.M. — Massachusetts Institute of Technology professor Richard Lindzen, a global warming skeptic, told about 70 Sandia researchers in June that too much is being made of climate change by researchers seeking government funding. He said their data and their methods did not support their claims. “Despite concerns over the last decades with the greenhouse process, **they oversimplify the effect**,” he said. “Simply cranking up CO2 [carbon dioxide] (as the culprit) is not the answer” to what causes climate change. Lindzen, the ninth speaker in Sandia’s Climate Change and National Security Speaker Series, is Alfred P. Sloan professor of meteorology in MIT’s department of earth, atmospheric and planetary sciences. He has published more than 200 scientific papers and is the lead author of Chapter 7 (“Physical Climate Processes and Feedbacks”) of the International Panel on Climate Change’s (IPCC) Third Assessment Report. He is a member of the National Academy of Sciences and a fellow of the American Geophysical Union and the American Meteorological Society. For 30 years, **climate scientists have been “locked into a simple-minded identification of climate with greenhouse-gas level**. … That climate should be the function of a single parameter (like CO2) has always seemed implausible. Yet an **obsessive focus on such an obvious oversimplification** has likely set back progress by decades,” Lindzen said. **For major climates of the past, other factors were more important than carbon dioxide.** Orbital variations have been shown to quantitatively account for the cycles of glaciations of the past 700,000 years, he said, and the elimination of the arctic inversion, when the polar caps were ice-free, “is likely to have been **more important than CO2** for the warm episode during the Eocene 50 million years ago.” There is little evidence that changes in climate are producing extreme weather events, he said. “Even the IPCC says there is little if any evidence of this. In fact, there are important physical reasons for doubting such anticipations.” Lindzen’s views run counter to those of almost all major professional societies. For example, the American Physical Society statement of Nov. 18, 2007, read, “The evidence is incontrovertible: Global warming is occurring.” But he doesn’t feel they are necessarily right. “Why did the American Physical Society take a position?” he asked his audience. “Why did they find it compelling? They never answered.” Speaking methodically with flashes of humor — “I always feel that when the conversation turns to weather, people are bored.” — he said a basic problem with current computer climate models that show disastrous increases in temperature is that relatively small increases in atmospheric gases lead to large changes in temperatures in the models. But, he said, “predictions based on high (climate) sensitivity ran well ahead of observations.” Real-world observations do not support IPCC models, he said: “**We’ve already seen** almost the equivalent of **a doubling of CO2** (**in radiative forcing**) **and that has produced very little warming.”** He disparaged proving the worth of models by applying their criteria to the prediction of past climatic events, saying, “The models are no more valuable than answering a test when you have the questions in advance.” Modelers, he said, merely have used aerosols as a kind of fudge factor to make their models come out right. (Aerosols are tiny particles that reflect sunlight. They are put in the air by industrial or volcanic processes and are considered a possible cause of temperature change at Earth’s surface.) Then there is the practical question of what can be done about temperature increases even if they are occurring, he said. “China, India, Korea are not going to go along with IPCC recommendations, so … the only countries punished will be those who go along with the recommendations.” He discounted mainstream opinion that climate change could hurt national security, saying that “historically there is little evidence of natural disasters leading to war, but economic conditions have proven much more serious. Almost all proposed mitigation policies lead to reduced energy availability and higher energy costs. All studies of human benefit and national security perspectives show that increased energy is important.” He showed a graph that demonstrated that more energy consumption leads to higher literacy rate, lower infant mortality and a lower number of children per woman. Given that proposed policies are unlikely to significantly influence climate and that lower energy availability could be considered a significant threat to national security, to continue with a mitigation policy that reduces available energy “would, at the least, appear to be irresponsible,” he argued. Responding to audience questions about rising temperatures, he said **a 0.8 of a degree C change in temperature in 150 years is a small change.** Questioned about five-, seven-, and 17-year averages that seem to show that Earth’s surface temperature is rising, he said temperatures are always fluctuating by tenths of a degree.

#### Oceans resilient

**Kennedy 2** (Victor, Coastal and Marine Ecosystems and Global Climate Change, http://www.pewclimate.org/projects/marine.cfm)

There is evidence that marine organisms and ecosystems are resilient to environmental change. Steele (1991) hypothesized that the biological components of marine systems are tightly coupled to physical factors, allowing them to respond quickly to rapid environmental change and thus rendering them ecologically adaptable. Some species also have wide genetic variability throughout their range, which may allow for adaptation to climate change.

#### Warming won’t cause wars

**Burns ‘9** (October 25, 2009 Study challenges the idea of global warming wars Former Vice President Al Gore John Burns

Al Gore got a Nobel peace prize, in part, for helping to prevent war by highlighting global warming and helping to slow it. In fact, climate change is not likely to cause conflict in the future, according to a study co-authored by Professor Richard Tol of the Economic and Social Research Institute (Esri) in Dublin. The conclusion challenges predictions made by the likes of Hillary Clinton, the American secretary of state, and John Reid, the former British defence secretary, who have forecast that future conflicts will be caused by rising temperatures. Earlier this year Clinton told her Senate confirmation hearing that climate change is a security threat. “At the extreme, it threatens our very existence,” she said. “But well before that point, it could well incite wars of an old kind over basic resources like food, water and arable land.” Tol’s study concludes that, if anything, it’s lower temperatures that cause conflicts, and even this link has weakened since the industrial revolution. “This implies that future global warming is not likely to lead to war between European countries,” says the study, published in the Climatic Change journal. The Esri research professor and a colleague, Sebastian Wagner, investigated the relationship between war in Europe and the continent’s climate between the years 1000 and 2000. They took information on conflicts from warscholar.com, and mapped them against temperature and rainfall records that have been kept throughout Europe since 1500. For earlier centuries, they used indirect information about climate derived from sources such as tree rings and the growth pattern of corals. The further back they went, the greater the correlation between war and weather. “This confirms the agricultural hypothesis,” the study says. “Agriculture became progressively less important over the period, because of economic development, and agriculture became less dependent on weather, because of improved cultivation methods and better fertilisers.” The closest link was found between 1300 and 1650, the most violent period of the millennium. “Europe gradually cooled and then warmed over the millennium, while conflict worsened and then waned,” they say. The finding that periods with lower temperatures in the pre-industrial era were accompanied by violent conflicts is similar to a conclusion reached about China by Professor David Zhang at the University of Hong Kong. He deduced that food scarcity was the reason why more wars were fought during colder periods. “We do not believe that people fight to keep warm,” Tol and Wagner say. “Rather, temperature and precipitation are proxy variables for agricultural production.” The authors note that while “scenarios of climate-changeinduced violence can be painted with abandon”, this is because there is “very little research to either support or refute such claims”. Previous studies suggest that resource scarcity is at most a contributory factor rather than a direct cause of war, the study says.. They admit it is possible to imagine a scenario in which climate change leads to battles. Reid predicted, in a speech in 2006, that rising temperatures would lead to declining natural resources, and inevitable clashes over arable land, clean water and energy. These apocalyptic warnings are based around prolonged droughts in areas such as the Horn of Africa, followed by mass migration in search of clean water. Tol and Wagner argue that this isn’t likely, however. “Drought is only a real problem for the poor; a scenario like this would happen only if warming and drying outpace development,” their study says. “If not, food imports or desalination may be the preferred options. Drought is also a slow-onset disaster. It may exhaust people before they move. Poor and exhausted people are unlikely to take up arms, and if they do, they are probably not very effective. The human suffering would be substantial nonetheless.” A more plausible scenario of climate change leading to war would be a rapid rise in sea level in a large delta in Asia or Africa. Such coastal plains are usually fertile, and well-populated. Rising sea levels could force people to move to higher ground, setting off conflicts inland. “In West Africa, for instance, the situation is already so tense that additional refugees are unlikely to do any good — the coasts of Cameroon, Gabon and Nigeria are particularly vulnerable to sea-level rise,” the study says. “However, these impacts will not be on today’s world. Sixty-six years ago, western Europe was at war. In 2075, south Asia and west Africa may be stable and prosperous.”

### Space Radar

#### Space Radar fails

Day 2007 (Dwayne A, as previously written about the history of space radar programs. See: [“Radar Love: The Tortured History of American Space Radar Programs”.](http://www.thespacereview.com/article/790/1) See also: “Tinker, Tailor, Radar, Spy: Early American Ferret and Radar Satellites,” Spaceflight, July, 2001, pp288-293. “Letter: solar power satellites and space radar,” Space Review July 23rd http://www.thespacereview.com/article/914/1)

Taylor Dinerman’s article about developing solar power satellites to power space radar satellites ([“Solar power satellites and space radar”](http://www.thespacereview.com/article/910/1), The Space Review, July 16, 2007) represents a solution in search of a problem. To date, the most detailed unclassified discussion of the technology and funding choices concerning Space Radar is [a January 2007 report from the Congressional Budget Office](http://www.cbo.gov/ftpdoc.cfm?index=7691&type=1) (CBO). That report discussed the power issue for Space Radar and although it acknowledged that better solar panels are required, it stated (page 14): “The total power required for the solar arrays in CBO’s notional satellite designs should not present a technical challenge. However, those arrays are smaller and lighter than arrays with similar power output on current generation satellites.” The CBO report identified several other technologies as being greater challenges for Space Radar. These include radar bandwidth, Ground Moving Target Indicator processing, and communications bandwidth. It would be a better approach to devote attention to these existing technology challenges than to try and create new ones by pursuing beamed solar power.

#### Sps interferes with radio astronomy

Masatoshi Ohishi 11 - National Astronomical Observatory of Japan (20 Aug. 2011 “Impact to the Radio Astronomy by the Interference caused by the Solar Power Satellite Systems” National Astronomical Observatory of Japan, 2-21-1, Osawa, Mitaka, Tokyo, 181-8588 Japan, http://ursigass2011.org/abstracts/ursi/CHGBDJK-9.pdf Ajones)

Solar power satellite (SPS) systems generate electricity of about Giga Watts in space and to transmit the power to the ground by means of the microwave beam. Since the SPS systems may cause unknown effects not only to the radio services but bio-systems and/or ionosphere, several URSI commissions were incorporated toward the White Paper on SPS Systems[1], which was published in 2007. **One of concerns to radio astronomers would be the compatibility between very sensitive radio astronomy observations and the unwanted emission caused by the SPS transmitters**. Thus we have conducted a preliminary study to assess interference caused by a SPS to radio astronomy observations.

#### Radio astronomy key to asteroid detection – key to solve potential impacts.

Irvine et. al. 05 – (2005, edited by William M. Irvine, PhD from Harvard, Professor of Astronomy at University of Massachusetts at Amherst, Esperanza Carrasco, PhD, researcher at INAOE, and Itziar Aretxaga, astronomer, astrophysicist, researcher at INAOE, written by joint panels and published jointly by Five College Radio Astronomy Observatory at the University of Massachusetts at Amherst and the Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE), “Planetary Science and Astrobiology,” in The Large Millimeter Telescope Book, http://www.lmtgtm.org/book/lmtbook.html Ajones)

However, such transmitters for mm wavelengths are now becoming available. With such equipment, the LMT would open a new era in radar astronomy. It would be capable of probing the topmost part of the surfaces of terrestrial planets, satellites, and small bodies in the solar system. In addition, radar measurements of Near Earth Objects would provide distance and velocity data vastly more accurate than that available from optical images, a critical consideration for the protection of Earth from potentially impacting asteroids and comets. Although the LMT will not initially be instrumented for radar astronomy, such equipment will be obtained in the future. One possibility is to use the LMT as a radar transmitter with the radar echo being observed using ALMA, providing additional collecting area, angular resolution, and transmitting time (since the LMT would not need to cease transmitting in order to monitor the echo).

#### Asteroid impacts cause the extinction of all life—outweighs the aff

Marusek 07 – (James, nuclear physicist and engineer, formerly with the US Navy, American Institute of Aeronautics and Astronautics, “Comet and Asteroid Threat Impact Analysis,” http://www.aero.org/conferences/planetarydefense/2007papers/P4-3--Marusek-Paper.pdf ajones)

A deep impact produces two zones of destruction: one at the point-of-impact and the other on the opposite side of the globe. The destruction at the point-of-impact produces a regional area of great devastation that wrecks havoc for several days. The shock wave from the impacts traveled through the Earth fracturing the Earth’s crust on the opposite side of the planet, producing a jumbled debris field and triggering massive mantle plume volcanism. The area of devastation on the opposite side of the Earth is significantly greater and the devastation is long-term extending thousands of years. It is this component that produces global devastation by releasing massive quantities of volcanic magma, which in turn generates acidic and poisonous gases. The gases combine with moisture to form acids that are primarily responsible for extinguishing life across the entire planet.4 The gas generation is also responsible for the drawdown of oxygen levels below minimally acceptable levels. These deep impacts are not random. Rather they occur with regularity in geological time.5

#### The US is so far ahead that this impact is a joke

**Work 9** (Robert, VP of Strategic Studies @ Center for Strategic and Budgetary Assessments, “Strategy for the Long Haul: the US Navy Charting A Course for Tomorrow’s Fleet”, http://www.csbaonline.org/4Publications/PubLibrary/R.20090217.The\_US\_Navy\_Charti/R.20090217.The\_US\_Navy\_Charti.pdf)

On August 1, 2008, the TSBF numbered 280 ships of all types (see Figure One).3 Predictably, naval advocates fretted that the smaller fleet posed a great risk to US national security. For example, Seth Cropsey, a Deputy Undersecretary of the Navy in the Reagan and George H. W. Bush administrations, cautioned that, “Without intending it, US policy is verging toward unilateral naval disarmament.”4 He went on to say: The Navy’s focus is [unclear]. Its [280] combat ships — a number that House Armed Services Committee Chairman Ike Skelton called “shocking” — comprise a force that is less than half the size achieved during the Reagan years . . . The last time the US possessed so small a fleet was sometime between December 1916 and April 1917, on the eve of the nation’s entry into World War I. While technically true, these dire comments are misleading. Of the many ways to gauge US naval power, comparing the size of the current US battle force to that of past US fleets is the least useful. Past TSBFs are reflections of different strategic environments, federal budgets, national grand strategies, and stages of technological development. They also reflect the state of the contemporary global naval competition. In 1916, although the TSBF numbered only 245 ships of all types, the 36 battleships of the Navy’s battle line placed it second among world navies behind the British Royal Navy. Despite having “only” 245 ships, it could safely assume it would never have to fight the Royal Navy, and be relatively confident that it could fight and defeat any other navy in the world. During the 1980s, even as it grew to a post-Vietnam high of nearly 600 vessels, the Navy was fighting off a concerted effort by the Soviet Navy to knock it out of the top spot.5 In other words, whether today’s TSBF is as big as the US fleets in 1916 or 1987 is utterly irrelevant. Far more important is the answer to the following question: how does the US Navy stack up against its potential contemporary competitors? And the answer to this question paints a very different picture than comparing today’s TSBF with that of past US fleets. SECOND TO NONE The first true indicator of US naval dominance comes from comparing the size of the US battle force with other world navies. What alarmists over fleet size fail to mention is that although the US TSBF is the smallest it has been in over ninety years, so too are the rest of the world’s navies.6 At the height of its naval dominance, Great Britain strove to achieve at least a “two-navy standard.” That is, the Royal Navy aimed to maintain a fleet and battle line that was as large as the combined fleets of the two closest naval powers. Today, counting those ships that can perform naval fire and maneuver in distant theaters — aviation platforms of all types, tactical submarines (nuclear and diesel-electric attack boats and conventional guided-missile submarines), and surface combatants and amphibious ships with full load displacements greater than 2,000 tons7 — the next two largest contemporary navies belong to Russia and the People’s Republic of China (PRC). Together, they operate a total of 215 warships of all types. The US Navy alone operates 203 such warships, very close to, but not quite, a two-navy standard.8 However, when factoring in a second important indicator of naval power — aggregate fleet displacement (tonnage) — the US Navy enjoys considerably more than a two-navy standard. As naval analyst Geoffrey Till explains, “[t]here is a rough correlation between the ambitions of a navy and the size and individual fighting capacity of its main units, provided they are properly maintained and manned.”9 Therefore, full load displacements and aggregate fleet warship displacements are the best proxies available to measure a ship’s and a fleet’s overall combat capability, respectively. Accordingly, both are useful measures for sizing up the contemporary global hierarchy of naval competitors.10 When considering aggregate fleet displacements, the US Navy’s overwhelming advantage in combat capability is readily apparent. Besides the United States, there are only twenty navies in the world that operate fleets with aggregate displacements of 50,000 tons or more. In order of fleet displacement (largest to smallest), these navies are operated by: Russia, the PRC, Japan, the United Kingdom, France, India, Taiwan, Italy, Indonesia, Spain, South Korea, Brazil, Turkey, Australia, Greece, Canada, Germany, the Netherlands, Peru, and Singapore. Together, these twenty navies operate a total of 719 ships with a combined displacement of 3,632,270 tons.11 In comparison, the combined displacement of the US Navy’s 203 fighting warships totals 3,121,014 tons — which exceeds the total tonnage of warships operated by the next thirteen navies combined. In other words, in terms of overall fleet combat capability, the US Navy enjoys a thirteen-navy standard. However, it is important to note that of the twenty countries discussed above, eighteen are formal US allies (Australia, Canada, France, Germany, Greece, Italy, Japan, the Netherlands, South Korea, Spain, Turkey, and the United Kingdom), governments friendly to the United States, (Peru, Brazil, Indonesia, and Singapore), or emerging strategic partners (India). Moreover, all of these nations are either full or partial democracies. The likelihood of the United States ever finding itself in a war or naval confrontation with any of these countries is extremely remote. Indeed, if anything, during times of crisis the US Navy can normally count on receiving important naval contributions from some or all of these nations. At the turn of the twentieth century, the officers of the British Royal Navy concluded that they would never again fight the US Navy, and could remove its rapidly expanding fleet from calculations over the minimal two-navy standard. Similarly, eight years after the turn of the twenty-first century, the US can confidently exclude these eighteen navies from its naval force planning calculations. This is the implicit message of the Navy’s recently published Cooperative Strategy for 21st Century Seapower, which seeks to foster and sustain cooperative maritime relationships with more international partners.12

#### Naval power not key to heg or stability

**Goure 10** [Daniel, Department of Defense Transition Team, “Can the Case be Made for Naval Power?” Lexington Institute, 2 July 2010, http://www.lexingtoninstitute.org/can-the-case-be-made-for-naval-power-?a=1&c=1171]

More broadly, it appears that the nature of the security challenges confronting the U.S. has changed dramatically over the past several decades. There are only a few places where even large-scale conventional conflict can be considered possible. None of these would be primarily maritime in character although U.S. naval forces could make a significant contribution by employing its offensive and defensive capabilities over land. For example, the administration’s current plan is to rely on sea-based Aegis missile defenses to protect regional allies and U.S. forces until a land-based variant of that system can be developed and deployed. The sea ways, sometimes called the global commons, are predominantly free of dangers. The exception to this is the chronic but relatively low level of piracy in some parts of the world. So, the classic reasons for which nations build navies, to protect its own shores and its commerce or to place the shores and commerce of other states in jeopardy, seem relatively unimportant in today’s world.

#### Can’t be deployed effectively

Watts ‘12 (Robert, graduate of the Coast Guard Academy, Captain Watts has served six sea tours with the Navy and Coast Guard, most recently commanding USCGC Steadfast (WMEC 623). A qualified Surface Warfare Officer and Cutterman, he holds advanced degrees from the Naval War College, Old Dominion University, American Military University, and the Naval Postgraduate School, and he is currently a doctoral candidate at the Royal Military College of Canada (War Studies). The New Normalcy-Sea Power and Contingency Operations in the Twenty-First Century, <http://www.usnwc.edu/getattachment/87e866a1-24dd-4e91-9ffa-cb0f64f15144/The-New-Normalcy--Sea-Power-and-Contingency-Operat.aspx>, 2012)

The inherent mobility of sea power means largely what it does in the traditional role—modern technology allows global reach in three dimensions and almost instant operational coordination worldwide. But the primary barrier to mobility in crisis-contingency operations is not technological. If mobility is to be exercised, ships must actually sail, and it is here—in the commitment of resources to a crisis —that things become culturally problematic. Despite the need, the answer to a crisis contingency is not always to employ sea power immediately. This cultural hesitancy has two aspects. The first is so deeply ingrained in the American psyche that it is more a matter of legend than of practical discussion. The United States has a long-standing tradition of rejecting the use of military forces in the domestic context, a rejection that dates back to the Revolution. It was codified in law with the passing of the Posse Comitatus Act of 1878, which directs that military forces (specifically the U.S. Army) cannot engage in domestic law enforcement.18 The legislation is often misinterpreted as meaning that any domestic use of military forces is illegal; that is not the case, but it is nevertheless widely believed in both civilian and military 56 NAVAL WAR COLLEGE REVIEW circles.19 Thus before naval forces can be committed to a crisis, a comprehensive legal review is often demanded, something that takes time—time that is usually not available. Another cultural barrier arises from service ethos. Bluntly, warships are designed and train to fight. In the modern high-tech era, naval warfare is a very specific (and expensive) proposition. It demands very sophisticated and specialized equipment. The radar on an Aegis cruiser, for example, is exceptionally good at tracking and destroying enemy aircraft—but only that. In a crisis contingency that marginalizes that purpose of a platform’s defining systems, the purpose of the platform itself could be called into question. According to this logic, if a vessel is employed (albeit successfully) for a purpose for which it is not designed, the door is opened for its increasing use for that purpose and not its proper one. In the grand scheme of things, warships used for other purposes are not training for war; in the short term this leads to a loss of readiness for combat, while in the longer term it could mean the elimination of platforms altogether in favor of others more suitable for noncombat missions. Although this seems to be a largely philosophical argument, in a shrinking budget environment it is not without a certain politically compelling logic. The effects of these factors are not insignificant. In recent crisis contingencies (the mass migration operations of 1994 and Katrina) the arrival of naval vessels was delayed while legal and operational impact issues were addressed, in the Katrina case so long as to become a national embarrassment.20 Bureaucratic reasons, not materiel, were the culprits, ultimately to the detriment of the response. Hesitancy can be fatal in an operation requiring rapid response, and culture and bureaucracy can conspire to encourage just that.

#### Heg doesn’t solve conflict

**Fettweis 10** – Professor of national security affairs @ U.S. Naval War College (Chris, Georgetown University Press, “Dangerous times?: the international politics of great power peace” 173-75)

Simply stated, the hegemonic stability theory proposes that international peace is only possible when there is one country strong enough to make and enforce a set of rules. At the height of Pax Romana between 27 BC and 180 AD, for example, Rome was able to bring unprecedented peace and security to the Mediterranean. The Pax Britannica of the nineteenth century brought a level of stability to the high seas. Perhaps the current era is peaceful because the United States has established a de facto Pax Americana where no power is strong enough to challenge its dominance, and because it has established a set of rules that a generally in the interests of all countries to follow. Without a benevolent hegemony, some strategists fear, instability may break out around the globe. Unchecked conflicts could cause humanitarian disaster and, in today’s interconnected world economic turmoil that would ripple throughout global financial markets. If the United States were to abandon its commitments abroad, argued Art, the world would “become a more dangerous place” and, sooner or later, that would “rebound to America’s detriment.” If the massive spending that the United States engages in actually produces stability in the international political and economic systems, then perhaps internationalism is worthwhile. There are good theoretical and empirical reasons, however, the belief that U.S. hegemony is not the primary cause of the current era of stability. First of all, the hegemonic stability argument overstates the role that the United States plays in the system. No country is strong enough to police the world on its own. The only way there can be stability in the community of great powers is if self-policing occurs, ifs **states have decided that their interest are served by peace**. **If no pacific normative shift had occurred** among the great powers that was filtering down through the system, then **no amount of** international constabulary **work** by the United States **could maintain stability**. Likewise, if it is true that such a shift has occurred, then most of what the hegemon spends to bring stability would be wasted. The 5 percent of the world’s population that live in the United States simple could not force peace upon an unwilling 95. At the risk of beating the metaphor to death, the United States may be patrolling a neighborhood that has already rid itself of crime. Stability and unipolarity may be simply **coincidental**. In order for U.S. hegemony to be the reason for global stability, the rest of the world would have to expect reward for good behavior and fear punishment for bad. Since the end of the Cold War, the United States has not always proven to be especially eager to engage in humanitarian interventions abroad. Even rather incontrovertible evidence of genocide has not been sufficient to inspire action. Hegemonic stability can only take credit for influence those decisions that would have ended in war without the presence, whether physical or psychological, of the United States. Ethiopia and Eritrea are hardly the only states that could go to war without the slightest threat of U.S. intervention. Since most of the world today is free to fight without U.S. involvement, something else must be at work. Stability exists in many places where no hegemony is present. Second, the limited **empirical evidence** we have **suggests** that there is **little connection between** the relative level of U.S. **activism and** international **stability**. During the 1990s the United States cut back on its defense spending fairly substantially, By 1998 the United States was spending $100 billion less on defense in real terms than it had in 1990. **To** internationalists, defense hawks, and other **believers in hegemonic stability this** irresponsible "peace dividend" **endangered** both national and **global security "**No serious analyst of American military capabilities," argued Kristol and Kagan, "doubts that the defense budget has been cut much too far to meet Americas responsibilities to itself and to world peace."" If the pacific trends were due not to U.S. hegemony but a strengthening norm against interstate war, however, one would not have expected an increase in global instability and violence. The verdict from the past two decades is fairly plain: **The world grew more peaceful** while the United States cut its forces. **No state** **seemed to believe** that its **security was endangered** by a less-capable Pentagon, **or** at least none **took any action** that would suggest such a belief. No militaries were enhanced to address power vacuums; **no** **security dilemmas drove mistrust and arms races; no regional balancing occurred** once the stabilizing presence of the U.S. military was diminished. The rest of the world acted as if the threat ofinternational war was not a pressing concern, despite the reduction in U.S. capabilities. The incidence and magnitude of global conflict declined while the United States cut its military spending under President Clinton, and it kept declining as the Bush Administration ramped spending back up. No complex statistical analysis should be necessary to reach the conclusion that the two are unrelated. It is also worth noting for our purposes that the United States was no less safe. Military spending figures by themselves are insufficient to disprove a connection between overall U.S. actions and international stability. Once again, one could presumably argue that spending is not the only or even the best indication of hegemony, and that it is instead U.S. foreign political and security commitments that maintain stability. Since neither was significantly altered during this period, instability should not have been expected. Alternately, advocates of hegemonic stability could believe that relative rather than absolute spending is decisive in bringing peace. Although the United States cut back on its spending during the 1990s, its relative advantage never wavered. However, even if it is true that either U.S. commitments or relative spending account for global pacific trends, then at the very least stability can evidently be maintained at drastically lower levels of both. In other words, even if one can be allowed to argue in the alternative for a moment and suppose that there is in fact a level of engagement below which the United States cannot drop without increasing international disorder, a rational grand strategist would still recommend cutting back on engagement and spending until that level is determined. Grand strategic decisions are never final; continual adjustments can and must be made as time goes on. Basic logic suggests that the United States ought to spend the minimum amount of its blood and treasure while seeking the maximum return on its investment. And if the current era of stability is as stable as many believe it to be, no increase in conflict would ever occur irrespective of U.S. spending, which would save untold trillions for an increasingly debt-ridden nation. It is also perhaps worth noting that if opposite trends had unfolded, if other states had reacted to news of cuts in U.S. defense spending with more aggressive or insecure behavior, then internationalists would surely argue that their expectations had been fulfilled. If increases in conflict would have been interpreted as proof of the wisdom of internationalist strategies, then logical consistency demands that the lack thereof should at least pose a problem. As it stands, the only evidence we have regarding the likely systemic reaction to a more restrained United States suggests that the current peaceful trends are **unrelated** to U.S. military spending. Evidently **the rest of the world can operate** quite **effectively without the presence of a global policeman**. **Those who think otherwise base their view on faith alone.**

#### No Taiwan war

**Rosenberg 9** (David, Professor of Political Science – Middlebury College and Research Fellow at the Research School of Pacific and Asian Studies – Australian National University, “Dire Straits: Competing Security Priorities in the South China Sea”, The Asia-Pacific Journal, 3-20, http://japanfocus.org/-David-Rosenberg/1773)

**There is a** curious **pattern of accommodation** **in PRC-Taiwan relations**. On the one hand, the PRC views Taiwan as a renegade province while Taiwan views the mainland with cultural empathy but political disdain. **On many South China Sea** **issues**, however, **they are** often **in agreement. They have not had any direct confrontations** in the South China Sea. They make the same claims, use the same definitions, baselines, and maps in stating their interests in the region. There is even some direct cooperation between China and Taiwan on technical issues. Beyond these governmental links, **there are very substantial corporate and personal links between China and Taiwan**. Taiwanese firms have invested over US $100 billion on the mainland, more than any other country. Much of this involves the relocation of Taiwanese industries to the Shanghai-Suzhou and Fujian areas. To a large extent, **Taiwan's continued economic prosperity is tied to reintegration with the mainland**. **These** economic **links** of investment and trade **are reinforced by** **millions of personal visits** as well as mail and email correspondence. Bonds of marriage also strengthen these ties. Nearly 10% of Taiwanese men marry mainland brides, further tying migrant generations to ancestral origins. These deeply-rooted, long-term economic and demographic trends provide a counterbalance to the often strident political clashes. The longer and broader the cross-Strait engagement, the better the prospects for peaceful coexistence. Unfortunately, the cross-Strait issue has become immersed in domestic politics in Taiwan and China. The recent spate of threats and counter-threats over Taiwan's status is linked to maneuvering among domestic political forces seeking popular support. For example, in March 2005, after China passed its anti-secession law, there were widespread protest demonstrations in Taiwan led by Prime Minister Chen Shui-bian's Democratic Progressive Party (DPP). Soon after, a large delegation of Taiwan's main opposition party, the Kuomintang (KMT, Nationalist Party), visited the mainland to encourage trade and political dialogue with China and to pay respects to the memorial shrine of Sun Yat-sen, KMT's founder. This, in turn, was followed in early April by the visit of right-wing Taiwan Solidarity Union party leaders to the Yasukuni shrine, the Japanese war memorial in Tokyo. Clearly issues of national identity and national sovereignty can generate volatile reactions. The big danger across the Taiwan Strait is that misunderstanding and miscalculation, fueled by distrust, xenophobia, and opportunism, may lead to escalating conflict. Senior leaders on both sides of the Strait are beginning to realize the potential consequences if instability erupts into violence. Hu Jintao has recently been signaling that he advocates a long-term policy of stability for eventual reunification. Chen Shui-bian has recently dropped his independence demands. Several Southeast Asian leaders have opposed Taiwan's independence; most explicitly, Singapore's Prime Minister, Lee Hsien Loong. Lee bluntly stated, "If Taiwan goes for independence, Singapore will not recognize it. In fact no Asian country will recognize it. China will fight. Win or lose, Taiwan will be devastated." The prospect of a **military confrontation** between the mainland and Taiwan **is unlikely**, in part **because the consequences** of such a conflict **would be extremely destructive for both sides.** Diplomatic efforts are needed to avoid even this remote risk. In the March/April 2005 issue of Foreign Affairs, Kenneth Lieberthal offered a useful proposal to change the focus of negotiations over "independence" and "reunification" to a pragmatic question: what is needed to achieve long-term stability and peaceful coexistence between China and Taiwan? What confidence building measures are needed to reassure security strategists that defensive military developments are not offensive? What legal and administrative means are necessary to resolve routine conflicts that will inevitably occur as commercial and civil relations thicken? The current U.S. attempts to help Taiwan "contain" China and to mobilize support in its global war on terrorism threaten to complicate if not weaken regional security developments. As Ronald Montaperto notes, "the almost daily manifestations of Chinese economic power, the effort to demonstrate commitment to the 'new' principle that the economic development of individual nations is inseparable from the development of the region as a whole, and the broad perception within the region that the Chinese are willing to engage actively in multilateral, cooperative policies have combined to provide Beijing with an unprecedented measure of influence and even clout."[6] The **Beijing** regime **is obsessed with economic stability**, because it fears that a severe downturn would trigger social and political upheaval. **The last thing it wants is a military confrontation with its biggest trading partner**, the United States, or with Japan or Taiwan, each of which are major trade and investment partners. It may go on playing the nationalist card over Taiwan to curry domestic political favor, but **there has been** **no massive military build-up** **and there is no plausible threat of impending war**. [7] To the contrary, China is investing heavily in creating a regional security framework to pursue its domestic development. The U.S. goal of achieving genuine regional maritime security would best be served through cooperation with China -- one of its most important creditors, suppliers, and markets -- rather than confrontation.

#### No Russian aggression

**Ottens ‘11** (Nick Ottens, editor of the transatlantic news and commentary site the Atlantic Sentinel and contributing analyst for the geostrategic consultancy Wikistrat, “The Myth of Russia’s Resurgence,” August 20 2011, http://atlanticsentinel.com/2011/08/the-myth-of-russias-resurgence/)

Wikistrat‘s Thomas Barnett reminds readers of Russian fears of encirclement in his latest World Politics Review column. After shrugging off its empire in 1991, Russia was denied a “sense of belonging,” Barnett notes, when Europe and the United States refused to consider Russia’s entry to NATO. Instead, America moved in militarily from the south as part of its global War on Terror while China progressively encroached, in an economic sense, on Russia’s “near abroad” in Central Asia and the Far East. Russia has been remarkably reluctant to counter these infringements. Although nearly all former Warsaw Pact members belong to the European Union now, it has made only halfhearted attempts to regain a semblance of hegemony on its western border. Old Eastern Bloc nations may still worry about Russian antagonism, especially if Germany, which is so dependent on Russian gas imports, won’t truly protect them in the EU (which is why they expect security from the United States in NATO)—the likelihood of Moscow deploying force against Poland, Lithuania or even the Ukraine is close to zero. In other parts of its former empire, too, Russia is far from belligerent. Although vying for influence there with nearby greater powers, Russia has refrained from policing Central Asia in Soviet style despite the alluring natural resources that the region possesses. When Kyrgyzstan asked for a Russian troop presence last year to quell political unrest, the Kremlin balked at the request. It had no desire to become entangled in the internal power struggles of its former client state. Russian cultural and political influence pervades especially in the northernmost of former socialist republics in Central Asia but Chinese, Iranian and Turkish attempts at fostering stable relations in the area could set the stage for a greater power confrontation, one from which Moscow stands nothing to gain. Russian governors in the Far East occasionally raise the specter of the “yellow menace” and talk of the danger posed to their underpopulated provinces by unregulated Chinese labor migrants but as Dmitry Gorenburg pointed out here last year, “this kind of talk rarely emanates from Moscow and certainly does not affect troop positioning.” Indeed, “it is stunning how little trouble Moscow has fomented” since the demise of the Soviet Union, writes Barnett, “all while engineering arguably the greatest military demobilization in human history, going from more than two hundred army divisions to less than one hundred brigades.”

#### Zero risk of Russian nuclear escalation

**Graham ‘7** (Thomas Graham, senior advisor on Russia in the US National Security Council staff 2002-2007, September 2007, "Russia in Global Affairs” July - September 2007, The Dialectics of Strength and Weakness

An astute historian of Russia, Martin Malia, wrote several years ago that “Russia has at different times been demonized or divinized by Western opinion less because of her real role in Europe than because of the fears and frustrations, or hopes and aspirations, generated within European society by its own domestic problems.” Such is the case today. To be sure, mounting Western concerns about Russia are a consequence of Russian policies that appear to undermine Western interests, but they are also a reflection of declining confidence in our own abilities and the efficacy of our own policies. Ironically, this growing fear and distrust of Russia come at a time when Russia is arguably less threatening to the West, and the United States in particular, than it has been at any time since the end of the Second World War. Russia does not champion a totalitarian ideology intent on our destruction, its military poses no threat to sweep across Europe, its economic growth depends on constructive commercial relations with Europe, and its strategic arsenal – while still capable of annihilating the United States – is under more reliable control than it has been in the past fifteen years and the threat of a strategic strike approaches **zero probability**. Political gridlock in key Western countries, however, precludes the creativity, risk-taking, and subtlety needed to advance our interests on issues over which we are at odds with Russia while laying the basis for more constructive lon-term relations with Russia.

**No Korea war** – its all posturing and international powers check escalation – history proves

**Fisher ‘3-12**

[Max, the Post's foreign affairs blogger. Before joining the Post, he edited international coverage for TheAtlantic.com, The Washington Post, “ Why North Korea loves to threaten World War III (but probably won’t follow through)”

But is North Korea really an irrational nation on the brink of launching “all-out war,” a mad dog of East Asia? Is Pyongyang ready to sacrifice it all? Probably not. The North Korean regime, for all its cruelty, has also shown itself to be shrewd, calculating, and single-mindedly obsessed with its own self-preservation. The regime’s past behavior suggests pretty strongly that these threats are empty. But they still matter. For years, North Korea has threatened the worst and, despite all of its apparent readiness, never gone through with it. So why does it keep going through these macabre performances? We can’t read Kim Jong Eun’s mind, but the most plausible explanation has to do with internal North Korean politics, with trying to set the tone for regional politics, and with forcing other countries (including the United States) to bear the costs of preventing its outbursts from sparking an unwanted war. Starting World War III or a second Korean War would not serve any of Pyongyang’s interests. Whether or not it deploys its small but legitimately scary nuclear arsenal, North Korea could indeed cause substantial mayhem in the South, whose capital is mere miles from the border. But the North Korean military is antiquated and inferior; it wouldn’t last long against a U.S.-led counterattack. No matter how badly such a war would go for South Korea or the United States, it would almost certainly end with the regime’s total destruction. Still, provocations and threats do serve Pyongyang’s interests, even if no one takes those threats very seriously. It helps to rally North Koreans, particularly the all-important military, behind the leader who has done so much to impoverish them. It also helps Pyongyang to control the regional politics that should otherwise be so hostile to its interests. Howard French, a former New York Times bureau chief for Northeast Asia whom I had the pleasure of editing at The Atlantic, explained on Kim Jong Il’s death that Kim had made up for North Korea’s weakness with canny belligerence: The shtick of apparent madness flowed from his country’s fundamental weakness as he, like a master poker player, resolved to bluff and bluff big. Kim adopted a game of brinkmanship with the South, threatening repeatedly to turn Seoul into a “sea of flames.” And while this may have sharply raised the threat of war, for the North, it steadily won concessions: fuel oil deliveries, food aid, nuclear reactor construction, hard cash-earning tourist enclaves and investment zones. At the risk of insulting Kim Jong Eun, it helps to think of North Korea’s provocations as somewhat akin to a child throwing a temper tantrum. He might do lots of shouting, make some over-the-top declarations (“I hate my sister,” “I’m never going back to school again”) and even throw a punch or two. Still, you give the child the attention he craves and maybe even a toy, not because you think the threats are real or because he deserves it, but because you want the tantrum to stop. The big problem here is not that North Korea will intentionally start World War III or a second Korean War, because it probably won’t. So you can rest easy about that. The big problem is that North Korea’s threats and provocations, however empty, significantly raise the risk of an unwanted war. The United States, South Korea and yes Pyongyang’s all-important ally, China, all have much more to lose in a regional war than does North Korea. It falls to those countries, then, to keep the Korean peninsula from spiraling out of control. Even if they don’t ultimately offer Pyongyang concessions to calm it down, as they have in the past, they’ve still got an interest in preventing future outbursts. Like parents straining to manage a child’s tantrum, it’s a power dynamic that oddly favors the weak and misbehaving.

#### US controls 50% of global naval power – no one else is even close

Crisher ’12 (Brian, Florida State University¶ Department of Political Science, 10/23, How Strong Is the U.S. Navy Really?

<http://themonkeycage.org/2012/10/23/how-strong-is-the-u-s-navy-really/>)

In the last debate, Governor Romney made the claim that the US Navy is the smallest it’s been since 1916 implying that the US Navy is regressing in terms of overall strength. How accurate is this claim? We recently compiled a new data set on naval capabilities and created a measure of state naval strength for all countries from 1865 to 2011. As such, we are in a position to address the claims of the Romney campaign.¶ Broadly stated, our measure of state naval power is based on a state’s total number of warships (non-fighting ships are excluded) and each ship’s available firepower. To make comparisons over time, our annual measure is based on available firepower within the international system in that year. (For more information, see our paper here.)¶ In 1916, the US controlled roughly 11% of the world’s naval power. This is an impressive number that ranks the US third in naval strength behind the UK (34%) and Germany (19%), and just ahead of France (10%). What about the US navy in 2011? In 2011, the US controlled roughly 50% of the world’s naval power putting it in a comfortable lead in naval power ahead of Russia (11%).¶ The US Navy has decreased in absolute size as Governor Romney argues (although this decline has been ongoing since the end of Cold War). U.S. warships are more powerful now than in the past, as President Obama implied. However, neither the number of warships nor the power of our ships is what is most important for understanding military and political influence. It is relative military power that matters most. In this respect, the U.S. navy is far stronger now than in 1916.

# 2nc

## T

### AT: We Meet

#### Violation - The production of electricity occurs in space – THEN its transferred to stations ‘in the United States’

George Dvorsky (serves as Chair of the IEET (Institute for Emerging Ethics and Technology) Board of Directors and also heads our Rights of Non-Human Persons program) November 2012 “How space-based solar power will solve all our energy needs” http://io9.com/5963955/how-space+based-solar-power-will-solve-all-our-energy-needs

Back in the late 1960s, Peter Glaser proposed the idea of solar powered satellites (SPS), what he envisioned as space-based photovoltaics that could transfer energy wirelessly back down to Earth. His design called for a large platform positioned in space in a high Earth orbit that would continuously collect and convert solar energy into electricity. In turn, that power would be used to drive a wireless power transmission (WPT) that beams the solar energy to receiving stations on Earth — what would be comprised of massive receiving dishes.

#### Production of electricity occurs in space – not on the ground – that is simply transmission

The Green Age (alternative energy information organization) no date “Solar Energy from Space” http://www.thegreenage.co.uk/greenfuture/future-power/solar-energy-from-space

Space Based Solar Power captures sunlight in Orbit where it is constant and stronger than on Earth, this then gets converted to coherent radiation and beamed down to a receiver on Earth. The Typical design for this would be a satellite sitting in geostationary orbit with kilometres2 of photovoltaic arrays situated either side capturing the sunlight producing the electricity; this would then be converted to radio frequencies that are best suited to atmospheric transmission and beamed down to a reference signal on earth, where the beam would picked up by a rectifying antenna and converted into electricity for the grid, delivering approx 5-10GW of electrical power to the grid.

#### Specifically – SPS-ALPHA would consist of simply of tons of photovoltaic cells

George Dvorsky (serves as Chair of the IEET (Institute for Emerging Ethics and Technology) Board of Directors and also heads our Rights of Non-Human Persons program) April 2012 “Beaming Solar Power to Earth with Satellites” http://ieet.org/index.php/IEET/more/dvorsky20120419

There’s no question that we need to seriously consider harvesting the sun’s energy in space with massive solar panels. The big question, however, is how to get all that energy back to Earth.NASA believes they have found the answer: Power-beaming solar-power satellites. It’s a plan that was developed by John Mankins, leader of the first NASA solar-power-satellite development team in the 90s. He calls his proposed project SPS-ALPHA, which stands for Solar Power Satellite via Arbitrarily Large PHased Array. Mankins claims that it’s the “first practical solar-power satellite concept” that uses a novel “biomimetic” approach. This project would make possible the construction of huge platforms from tens of thousands of small elements that can deliver remotely and affordably tens to thousands of megawatts using wireless power transmission to markets on Earth, as well as missions in space. It would do this by using a large array of individually controlled thin-film mirrors, outfitted on the curved surface of a satellite. These movable mirrors would intercept and redirect incoming sunlight toward photovoltaic cells affixed to the backside of the solar power satellite’s large array.

#### Those PV cells produce electricity DIRECTLY on the satellite - not after it is transmitted to earth

US Department of Energy 2013 “Photovoltaic Cells - electricity from sunlight” http://www.dasolar.com/solar-energy/photovoltaic-cells

What are photovoltaic cells?

Photovoltaic cells produce electricity directly from sunlight. Photovoltaic cells are also called PV cells or solar cells. Many PV cells are used in remote locations not connected to the electric grid., solar lights, and lighted road signs. Photovoltaic cells comprise the main component in solar panels and are also used to power watches, calculators How do photovoltaic cells work? When sunlight strikes a solar cell, electrons are knocked loose. They move toward the treated front surface. An electron imbalance is created between the front and the back. When a connector, like a wire, joins the two surfaces a current of electricity occurs between the negative and positive sides. These individual solar cells can be arranged together in a PV module and modules can be grouped together in an array. Some arrays are set on special tracking devices to follow sunlight all day long.

### A2 Production Counter Interp

#### in the United States’ excludes energy produced outside of US airspace

Rense (citing US code under the 14th amendment) February 2008 “McCain Not A US Citizen,

Can't Be President?” <http://rense.com/general81/cain.htm>

Excerpted from http://www.state.gov/documents/organization/86755.pdf 7 FAM 1116 KEY PHRASES USED IN THE 14th AMENDMENT AND IN LAWS DERIVED FROM IT 7 FAM 1116.1 "In The United States" 7 FAM 1116.1-1 States and Incorporated Territories (TL:CON-64; 11-30-95) a. The phrase "in the United States" as used in the 14th Amendment clearly includes States that have been admitted to the Union. Sections 304 and 305 of the INA provide a basis for citizenship of persons born in Alaska and Hawaii while they were territories of the United States. These sections reflect, to a large extent, prior statutes and judicial decisions which addressed the l4th Amendment citizenship implications of birth in these and other U.S. territories. Guidance on evidence on such births should be sought from CA/OCS. b. Sec. 101(a)(38) INA provides that, for the purposes of the INA, The term "United States",... when used in the geographical sense, means the continental United States, Alaska, Hawaii, Puerto Rico, Guam, and the Virgin Islands of the United States.In addition, under Pub. L. 94-241, the "approving Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America", (Sec. 506(c)), which took effect on November 3, 1986, the Northern Mariana Islands are treated as part of the United States for the purposes of sections 301 and 308 of the INA. c. All of the aforenamed areas, except Guam and the Northern Mariana Islands, came within the definition of "United States" given in the Nationality Act of 1940, which was effective from January 13, 1941 through December 23, 1952. d. Prior to January 13, 1941, there was no statutory definition of "the United States" for citizenship purposes. Thus there were varying interpretations. Guidance should be sought from the Department (CA/OCS) when such issues arise. Here are the exemptions... 7 FAM 1116.1-4 Not Included in the Meaning of "In the United States" (TL:CON-64; 11-30-95) a. A U.S.-registered or documented ship on the high seas or in the exclusive economic zone is not considered to be part of the United States. A child born on such a vessel does not acquire U.S. citizenship by reason of the place of birth (Lam Mow v. Nagle, 24 F.2d 316 (9th Cir., 1928)). b. A U.S.-registered aircraft outside U.S. airspace is not considered to be part of U.S. territory. A child born on such an aircraft outside U.S. airspace does not acquire U.S. citizenship by reason of the place of birth.

#### production is extraction of the resource, consumption is use

**Ristinen**, professor of physics – University of Colorado, and Kraushaar, professor of physics – University of Colorado, **‘99**

(Robert A. and Jack J., Energy and the environment, p. 21)

The history of consumption and product of energy in the United States since 1950 is shown in Figure 1.8. In this figure, and elsewhere in this text, energy *production* refers to the mining of coal and the bringing of oil and natural gas to the earth’s surface, or to the making of useful energy by nuclear power, hydroelectric power, geothermal power, biomass fuel, solar collectors, and other means. **Energy *consumption* occurs when the fossil fuel is burned or when energy is put to use by the consumer.**

#### Voter for limits—secondary production is a limitless category

Kim **Woodard** (Research Assistant at the Resource Systems Institute of the East-West Center, Chairman and CEO of Javelin Investments) **1980** “The International Energy Relations of China” p. 457

Secondary energy production can most easily be defined as the conversion of one energy fuel to another. As such, it is a catch-all category that can be used to provide a cluster of statistical energy production series that do not easily fall into either primary production or energy consumption categories. The number and variety of secondary energy production statistics could be multiplied indefinitely by an ever sharper differentiation of substages in the flow of energy commodities through society. I have chosen co include just a few forms of secondary energy production in this analysis—coke production, thermal electric power generation, total electric power generation, total refined petroleum production, the differentiated production of petroleum fuels, plant use of energy in energy production, and the use of hydrocarbons in the production of petrochemical and fertilizer feedstocks. These were statistics that were available for the Chinese case or could be generated by inference from primary energy data and a few oversimplified assumptions. All the secondary energy production statistics presented in this section were generated by the computer and then rounded to a reasonable level of approximation. All the statistics presented for various forms of secondary energy production are general estimates, and none have been tested directly against whatever data exist in the Chinese press. Validation of the statistics would require separate in-depth analysis of each secondary energy production industry—a task far beyond the means of this book. These statistics, therefore, should be taken as a point of reference, not the final word.

#### Precision—our definition comes prior to their offense

Sara **Øvergaard** (Senior Executive Officer in the Department on Energy Statistics at Statistics Norway) September **2008** “Issue paper: Definition of primary and secondary energy” <http://unstats.un.org/unsd/envaccounting/londongroup/meeting13/LG13_12a.pdf>

The ability to separate primary and secondary energy is important in energy statistics. The Energy Balance is set up to record the flow of new energy entering the system of national energy supply, its transformation and losses until end use. To avoid double counting, it is important to be able to separate new energy entering the system, (primary) and the energy that is transformed within the system (secondary). Internationally agreed definitions on primary and secondary energy are therefore important in order to compare Energy Balances. A consistent differentiation between primary and secondary energy is also useful in energy planning when developing long-range policies and for energy analysts who are concerned with broader energy or environmental issues, such as conversion losses, transmission losses, distribution, energy efficiency measures and carbon emissions from energy sources. When defining primary and secondary energy, it is important that the definition is operational and founded on the laws of physics. The definitions must be operational, meaning that it should be helpful for statisticians enabling them to make a clear and consistent division between primary and secondary energy based on information about the sources that the energy is embodied in and the processes that it has been part of. The definition of primary and secondary energy should be founded on physics, and not on the ability of statisticians to measure or record it. For example, in the OECD/IEA/Eurostat, Energy Statistics Manual2, the major difference between the Eurostat and the IEA Energy Balance format lies in the presentation of the production of primary and secondary fuels. Statisticians can for example due to measurement problems choose to assume that the actual mechanical energy taken from a hydro source is equal to the electric generated energy, but this should not influence the fact that hydro is a primary energy source, and that the electricity produced from this source is secondary energy.

### at: solar affs

#### inclusion of solar energy is limitless and includes any possible renewable – solar power must occur in the US not energy -- accesses an external precision impact, because conflation of the terms destroys core resolutional meaning – this proves we maintain solar AFF’s on the topic

**Sklar, ‘7** founder and president of The Stella Group, Ltd., in Washington, DC, is the Chair of the Steering Committee of the Sustainable Energy Coalition and serves on the Boards of Directors of the Sustainable Buildings Industry Council, the Business Council for Sustainable Energy, and the Renewable Energy Policy Project. The Stella Group, Ltd., a strategic marketing and policy firm for clean distributed energy users and companies using renewable energy (Scott Sklar, 23 October 2007, “What’s the Difference Between Solar Energy and Solar Power?” http://www.renewableenergyworld.com/rea/news/article/2007/10/whats-the-difference-between-solar-energy-and-solar-power-50358)//CC

Lee, this is a question I get often, and believe it is worth addressing. Solar "power" usually means converting the sun's rays (photons) to electricity. The solar technologies could be photovoltaics, or the various concentrating thermal technologies: solar troughs, solar dish/engines, and solar power towers. Solar "energy" is a more generic term, meaning any technology that converts the sun's energy into a form of energy—so that includes the aforementioned solar power technologies, but also solar thermal for water heating, space heating and cooling, and industrial process heat. Solar energy includes solar daylighting and even passive solar that uses building orientation, design and materials to heat and cool buildings. Now in the early 1980's, I was Political Director of the Solar Lobby, formed by the big nine national environmental groups, that embraced all solar technologies—which we viewed as wind, hydropower, and biomass, along with the long list of traditional solar conversion technologies. The thesis, which is correct, is that the sun contributes to growing plants, wind regimes, and evaporation and rain (hydropower), so that all the renewables are part of the solar family. Now, of course, most would argue that geothermal, and tidal and wave (effected by the gravitational force of the moon) are not solar, but we included these technologies as well.

#### AND, contextual ev proves the “power” portion of the res isn’t done in SPACE, not the US

**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>)

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.30 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.

## Cp

### Solvency Run

#### The counterplan injects sulfate aerosols into the stratosphere to counteract anthropogenic warming- this increases the earth’s reflection of sunlight. Just like carbon warms the planet, sulfates cool it. This solves 100% of the impact- that’s Ikle and Wood- 3 reasons:

#### 1. It reflects heat- the counterplan deflects a tiny but significant fraction of light back into space, preventing heating inside the atmostphere.

#### 2. Nature proves- volcanic eruptions inject sulfate aerosols into the stratosphere, causing major cooling.

#### 3. Best science is on our side- the National Academy of Sciences and a Nobel Prize winning climate scientist support geo-engineering through sulfate aerosols.

#### Counterplan solves warming- natural albedo enhancement and best climate science prove

Ikle, CSIS distinguished scholar, and Wood, Hoover Institute research fellow, 2008

[Fred, undersecretary of defense for policy for President Ronald Reagan and director of the Arms Control and Disarmament Agency for Presidents Richard Nixon and Gerald Ford, and Lowell, "Climatic Engineering," The National Interest, l/n, accessed 9-6-10, mss]

Moreover, climate scientists now warn us we cannot be sure that the envisaged future emission controls would stabilize the climate anywhere close to its present state. Instead, we are told that substantially more warming is “locked in” by what has already transpired. We clearly need to find more promising ways to address the whole global warming issue. The policies discussed to date in the global warming conferences have addressed only half the arena for remedial action—the inside of the “greenhouse.” They seek to end the accumulation of greenhouse gases (principally carbon dioxide and methane) within the atmosphere, where these gasses entrap infrared radiation rising from the Earth-surface and lower atmosphere. This entrapment is akin to the glass cover of a greenhouse that keeps the planted vegetables warmer than if they were left exposed to the open air, by admitting the shorter wavelengths of sunlight while reflecting back into the greenhouse the longer wavelengths of thermal infrared radiation and thus preventing the loss of “trapped” heat. The other arena for action is outside of the “greenhouse.” It offers opportunities for reducing global warming by increasing the fraction of incoming sunlight that is reflected outward by the upper atmosphere back into space. Expressed in the metaphoric language of the “greenhouse effect”, this type of climate geoengineering would put a parasol over the greenhouse to scatter away roughly 2 percent of incoming sunlight, instead of letting this small fraction impinge on our planet’s biosphere through the “greenhouse roof” (which in fact is the Earth’s lower atmosphere). In the language of climate science, such geoengineering would increase by a few percent the Earth’s albedo—the ratio of incoming sunlight reflected back into space relative to the total inbound from the Sun.4 Nature routinely varies the local values of the Earth’s albedo by **substantial** amounts, with clouds being the most familiar and quantitatively most important reflective entities, and ice- and snow-covered regions the next most significant. Episodically, large regions of our planet have been cooled for several years by major volcanic eruptions, which inject millions of tons of fine particulate material—mostly sulfate aerosols—into the stratosphere, where they increase the albedo until they’re slowly removed by natural processes. For instance, the Mount Pinatubo eruption in 1991 caused a cooling of most of the Earth for a few years, of a magnitude which was roughly equivalent to reversing half of the total global warming that occurred during the **entire** twentieth century. The idea of artificially increasing the Earth’s albedo is not new. In 1992, a report by the National Academy of Sciences found the prospect of lower stratospheric-based albedo enhancement to be “feasible, economical, and capable. . . .” And it doesn’t necessarily have unpleasant side effects. Professor Paul Crutzen, who received the Nobel Prize for his work on atmospheric ozone, wrote in 2005 that climate geoengineering with sulfate aerosols sufficient to offset the global warming caused by a doubling of the atmospheric carbon dioxide content (which might occur by 2100) would probably do less damage to the upper stratospheric ozone layer than did the Mount Pinatubo volcanic eruption in 1991.

#### AND- Specific placement and method ensure solvency with no ecological costs- AND don’t evaluate any of their evidence unless its specific our exact mechanism

Crutzen, National Center of Atmospheric Research director and Nobel Prize-winning chemist, 2006

[Paul, "ALBEDO ENHANCEMENT BY STRATOSPHERIC SULFUR INJECTIONS: A CONTRIBUTION TO Resolve a Policy Dilemma," http://www.cogci.dk/news/Crutzen\_albedo enhancement\_sulfur injections.pdf, accessed 9-3-10, mss]

By far the preferred way to resolve the policy makers’ dilemma is to lower the emissions of the greenhouse gases. However, so far, attempts in that direction have been grossly unsuccessful. While stabilization of CO2 would require a 60–80% reduction in current anthropogenic CO2 emissions, worldwide they actually increased by 2% from 2001 to 2002 (Marland et al., 2005), a trend, which probably will not change at least for the remaining 6-year term of the Kyoto protocol, further increasing the required emission restrictions. Therefore, although by far not the best solution, the usefulness of artificially enhancing earth’s albedo and thereby cooling climate by adding sunlight reflecting aerosol in the stratosphere (Budyko, 1977; NAS, 1992) might again be explored and debated as a way to defuse the Catch-22 situation just presented and additionally counteract the climate forcing of growing CO2 emissions. This can be achieved by burning S2 or H2S, carried into the stratosphere on balloons and by artillery guns to produce SO2. To enhance the residence time of the material in the stratosphere and minimize the required mass, the reactants might be released, **distributed over time**, near the **tropical upward branch** of the stratospheric circulation system. In the stratosphere, chemical and micro-physical processes convert SO2 into sub-micrometer sulfate particles. This has been observed in volcanic eruptions e.g., Mount Pinatubo in June, 1991, which injected some 10 Tg S, initially as SO2, into the tropical stratosphere (Wilson et al., 1993; Bluth et al., 1992). In this case enhanced reflection of solar radiation to space by the particles cooled the earth’s surface on average by 0.5 ◦C in the year following the eruption (Lacis and Mishchenko, 1995). Although climate cooling by sulfate aerosols also occurs in the troposphere (e.g., Ramaswamy et al., 2001), the **great advantage** of placing reflective particles in the stratosphere is their long residence time of about 1–2 years, compared to a week in the troposphere. Thus, **much less sulfur, only a few percent, would be required** in the stratosphere to achieve similar cooling as the tropospheric sulfate aerosol (e.g., Dickinson, 1996; Schneider, 1996; NAS, 1992; Stern, 2005). This would make it possible to reduce air pollution near the ground, improve ecological conditions and reduce the concomitant climate warming. The main issue with the albedo modification method is whether it is environmentally safe, without significant side effects.

#### AND- Geo-engineering buys time

Demuth, American Enterprise Institute president, 2008

[Christopher, “Geoengineering: A Revolutionary Approach to Climate Change,” transcription by Matt Struth, <http://www.aei.org/events/eventID.1728,filter.all,type.upcoming/event_detail.asp>, 6-3-2008, transcribed 2008, accessed 9-6-10, mss]

But what **geo-engineering** does, is it potentially **buys** us **time, several decades, to make mitigation work**, and consequently it in fact may be the key to mitigation’s success, not its undoing. Time, above all is what we need to make mitigation work. I do believe it is possible to phase out the use of fossil fuels, but prospects improve dramatically if the goal is to do it over the course century, rather than over half that time or less. Rather than being the death of mitigation therefore, it may be the vital lynchpin that makes its possible. There are many challenges to mitigation, but every one of them can be sufficiently addressed by time. Time, coupled with sufficient dedication and resources is what will produce new clean energy technologies at a price that the developing world can actually afford. If we can solve the technology problem we can solve the cost problem, and from there, the political problems will fall away, I believe.

#### That’s key to tech and clean energy- solves the impact

Bailey, Reason Magazine science correspondent, 6-10-2008

[Ronald, "An Emergency Cooling System for the Planet," http://reason.com/archives/2008/06/10/an-emergency-cooling-system-fo, accessed 9-6-10, mss]

Why consider geoengineering in the first place? As Columbia University economist Jeffrey Sachs wrote in Scientific American in April: "[O]ur current technologies cannot support both a decline in carbon dioxide emissions and an expanding global economy. If we try to restrain emissions without a fundamentally new set of technologies, we will end up stifling economic growth, including the development prospects for billions of people." So if we don't want to perpetuate poverty in the name of preventing climate change, geoengineering may be our way out. Why? Because geoengineering would provide more time for the world's economy to grow while inventors and entrepreneurs develop and deploy new carbon neutral energy sources to replace fossil fuels. Wigley also noted that cutting greenhouse gas emissions is a tremendous global collective action problem. It seems unlikely that fast-growing poor countries like India and China will agree cut back on their use of fossil fuels any time soon. If that's the case, then emissions reductions in rich countries would have almost no effect on future temperature trends. Geoengineering could give humanity more time to resolve this collective action problem, too.

#### Even if it’s dangerous we can easily turn it off quickly before any damage is done

Gregory Benford, Contributing Editor andUniversity of California physics professor, November 1997, "Climate Controls," <http://www.reason.com/news/show/30433.html>

Some geoengineering systems appear possible to deploy now, and at reasonable cost. They could be turned on and off quickly if we got unintended effects. It would be relatively easy to run small-scale experiments to answer questions about how our current atmosphere behaves when one alters the kind of dust, or aerosols, in it. Nuanced knowledge is crucial; the biosphere is a highly nonlinear system, one that has experienced climatic lurches before (glaciation, droughts) and can go into unstable modes, too.

### 2NC- Sequestration Jacks Hegemony

#### Sequestration jacks defense

Wright and Allen ‘12 (Austin Wright and Jonathan Allen, “White House: Sequester 'deeply destructive' to defense”, <http://www.politico.com/news/stories/0912/81224.html>, August 14, 2012)

President Barack Obama on Friday detailed how roughly $120 billion in cuts to the Pentagon and domestic programs will be applied if Congress doesn’t shut off a planned “sequester” before the end of the year, renewing an election-year political brawl over who is to blame for the nation’s budget woes. POLITICO obtained an advance copy of the 394-page White House report, which shed little new light on the sword of Damocles hanging over Washington’s head but sharpened its political point. The report confirms in painstaking detail which budget accounts are subject to cuts — down to the congressional visitors center — and which are exempt. And it is likely to add new urgency to efforts to stop the cuts from taking effect. “No amount of planning can mitigate the effect of these cuts. Sequestration is a blunt and indiscriminate instrument. It is not the responsible way for our nation to achieve deficit reduction,” the Office of Management and Budget wrote. “”The report leaves no question that the sequestration would be deeply destructive to national security, domestic investments and core government functions.” The fight over spending cuts will be unavoidable on the campaign trail. Obama faces the specter of deep reductions to Pentagon accounts — and the layoffs that defense firms say will accompany them — and Republican vice presidential candidate Paul Ryan of Wisconsin is the GOP’s top budget negotiator in the House. If things fall apart, both will be blamed by their political opponents. Republicans agreed with the president that the automatic cuts could have a devastating effect on the nation but accused him of failing to put forward a workable plan to avoid them. ”The release today of a report detailing across-the-board budget cuts—including the cuts to national security that the President demanded during last year’s budget negotiations—highlights the crippling effect these reductions will have on our nation’s security and underscores the urgent need for the President to work with congressional Republicans to replace these destructive cuts,” Senate Majority Leader Mitch McConnell (R-Ky.) said. “[W]hile the report claims that the president has offered ‘balanced and comprehensive deficit reduction’ solutions, his plan was so unserious that it was rejected by every single member of Congress.” The overview: There would be a 9.4 percent cut to most defense programs — except those exempted in the sequestration law — and a 10 percent cut to a handful of other Pentagon accounts that are not subject to annual congressional appropriations. Medicare would get hit with a 2 percent cut, while domestic discretionary programs — such as scientific grants and Education Department programs — would be subject to 8.2 percent cuts. Most mandatory domestic programs — those that are funded based on eligibility — would be slashed by 7.6 percent. The president and his Democratic allies say that Republicans have put at risk the nation’s defenses — and important domestic programs — in the name of preserving Bush-era tax cuts for the wealthiest Americans. Republicans counter that Obama and congressional Democrats insisted on including the Pentagon in the automatic cuts as part of a landmark 2011 debt-limit deal. ”While the Department of Defense would be able to shift funds to ensure war fighting and critical military readiness capabilities were not degraded, sequestration would result in a reduction in readiness of many non-deployed units, delays in investments in new equipment and facilities, cutbacks in equipment repairs, declines in military research and development efforts, and reductions in base services for military families,” the president’s aides wrote.

#### It jacks every internal link

Pellerin ‘12 (Cheryl Pellerin, AFPS Journalist, “Comptroller: Sequestration Would Devastate Defense Spending”, <http://www.af.mil/news/story.asp?id=123319134>, September 21, 2012)

9/21/2012 - WASHINGTON (AFPS) -- Sequestration will devastate every aspect of Defense Department spending, from fighting the war in Afghanistan and supporting troop health and morale to training, maintenance and modernization, and carrying out the defense strategic guidance, Pentagon Comptroller Robert F. Hale said here Sept. 20. Sequestration refers to a mechanism in the Budget Control Act that would trigger an additional $500 billion across-the-board defense spending cut over the next decade, in addition to $487 billion in cuts already programmed, unless Congress identifies equivalent savings by January. Testifying before the House Armed Services Committee, Hale said the only way to avoid bad consequences is for Congress to enact a balanced deficit-reduction plan that the president can sign, a move that would halt sequestration. "If that action is not taken," the comptroller said, "we're faced with the dollar consequences that the Sequestration Transparency Act report spells out." The Office of Management and Budget last week released a report required by the 2012 Sequestration Transparency Act. The document details the financial effects of sequestration. At today's hearing, Hale offered the panel a high-level assessment of sequestration's impact on DOD. "Cuts in the national defense function will total $54.7 billion in discretionary and direct spending in fiscal 2013 under the assumptions of (the OMB) report. Of this amount, $52.3 billion would come out of the DOD budget," the comptroller said. President Barack Obama exercised his authority to exempt military personnel spending from sequestration, Hale said, but each nonexempt budget account will take a hit of 9.4 percent. Funding for overseas contingency operations will be subject to sequestration, he said. "We will protect wartime operating budgets to the extent that we can -- support of our warfighters is our highest priority," Hale said. "But that will mean greater cuts in the base budget portions, especially of the operations and maintenance accounts, and particularly in the Army and the Marine Corps." Such cuts would mean reductions in training, which "would affect our ability to respond to a new warfighting contingency should one occur," the comptroller added. Sequestration almost certainly would force DOD to reduce spending for civilian personnel, leading to hiring freezes and probably unpaid furloughs, he said, affecting weapons maintenance, contracting, and financial management and audit efforts. A sequester also would substantially affect DOD investment programs, Hale added. "While there'd be no impact on prior-year funds already obligated on contracts -- and that's an important point -- there would nonetheless be substantial adverse effects," he said, adding that the 9.4 percent cut would affect each of the budget accounts that fund procurement, military construction, and research, development, test and evaluation. Sequestration would adversely affect military retirees and families, he said, and cause cuts in family housing maintenance and base operating support. "We'd try to protect families wherever we can," Hale added, "but we would have to make some of these cuts." Cuts would also be required in the Defense Health Program, including TRICARE, he said. "These are the consequences that would come into play in fiscal 2013," the comptroller said, noting that the sequestration law that would go into effect on Jan. 2 also would reduce DOD budgets by $50 billion to $55 billion in each year from fiscal 2013 to fiscal 2021. This would double reductions already imposed by the Budget Control Act and accounted for by DOD, forcing the department to make substantial reductions in military personnel and units and giving the department fewer options for responding quickly to emerging crises, Hale said. Hale was joined at the hearing by Gen. Lloyd J. Austin III, Army vice chief of staff; Adm. Mark E. Ferguson III, vice chief of naval operations; Gen. Larry O. Spencer, Air Force vice chief of staff; and Gen. Joseph F. Dunford Jr., Marine Corps assistant commandant. Without exception, the military leaders said the results of sequestration would keep their forces from properly executing requirements of the new defense strategy. Representing the Air Force, Spencer said sequestration would "affect our ability to fulfill current wartime deployments, operational requirements and defense of the homeland, but it would also significantly impact our ability to prepare for future operations and ... make investments in modernization." Such cuts would also impact the future of vital aerospace technology, the general said, "one of our key competitive advantages." Austin said the cuts required by sequestration would "adversely affect just about every aspect of our Army," including that service's readiness and its ability to respond to contingencies. For the Navy, Ferguson said sequestration would translate over time to a smaller force with less presence, longer response times and reduced ability to provide surge forces in support of major operational plans and other emerging needs. "This month I visited the Central Command region," the admiral told the panel. He visited both aircraft carriers in the region, the USS Enterprise and the USS Dwight D. Eisenhower, along with the minesweeper force, patrol craft and other ships. In the process he said he spoke with more than 10,000 forward-deployed sailors. "At every forum," Ferguson said, "sailors from the most junior to our operational commanders expressed concern regarding what sequestration will mean to our Navy and their service. The uncertainty of our fiscal future is increasingly on the minds of our force." For the Marine Corps, Dunford said sequestration would have "a chaotic effect on the force during a time of extraordinary challenges to our nation." For the last 10 years, the nation's Marines, Soldiers, Sailors and Airmen have done everything asked of them, he told the panel. "The competence, responsiveness and flexibility of our force was seen again last week when Marines responded within hours to reinforce (U.S.) embassies in the Middle East and North Africa," the general said, adding that such a response has occurred so often over the past few years that it might be taken for granted. Most of the young men and women in uniform, like those who are part of the Fleet Antiterrorism Support Teams that deployed last week, or those in Afghanistan, are too busy doing their jobs to worry about the details of how the nation's leaders and legislators develop and pass budgets, he said. "Frankly, given all they do for us, they have a right to expect that whatever it is we're supposed to be doing to properly support them, that we're actually doing it," Dunford said. "One of my greatest concerns about sequestration ... is that we will lose the trust and confidence of the all-volunteer force that we have worked so hard to build," the general added. Along with impacts on the budget and the defense strategy, sequestration also puts at risk "the intangible qualities that make our military the very best in the world," he said. "That fact needs to be a key part of the debate as we move forward," the general added.

#### Jacks hard power- kills perception of deterrence- jacks credibility

Singer ‘12 (Peter W. Singer, Peter W. Singer is director of the 21st Century Defense Initiative at Brookings, “Sequestration and What It Would Do to U.S. Military Power”, <http://nation.time.com/2012/09/24/sequestration-and-what-it-would-do-to-u-s-military-power/>, September 24, 2012)

In recent months, concerns over sequestration and its impact on the U.S. military have reached a fever pitch in Washington. Sequestration “would destroy the military” and cause an “inability to defend the nation” argued Senator John McCain, ranking member of the Senate Armed Services committee. “Cuts of this magnitude would be catastrophic to the military,” testified General Raymond Odierno, the Chief of Staff of the U.S. Army, to Congress. “From a pure national security perspective, the gap between the U.S. military and our closest rivals will collapse with sequestration,” wrote the Washington Times. And it would create a U.S. military akin to a “paper tiger…unable to keep up with potential adversaries.” said Secretary of Defense Leon Panetta. “In effect, it invites aggression.” There is no doubt that sequestration would be a terrible mistake. If Congress is unable to reach a compromise on how to solve America’s debt dilemma, almost half a trillion dollars in mandatory cuts to the defense budget over the next decade would initiate in January (meaning roughly $55 billion in the first year). It is un-strategic to hack away at the defense budget in a generalized manner, cutting the good and the bad by the same percentage, like a butcher with a piece of meat. (MORE: A Smarter Way to Trim the Pentagon Budget) Unfortunately, in the effort to fight this scenario with hyperbole, we may be doing a different kind of disservice to U.S. security. While the screams of outrage over sequestration are directed at a domestic American audience, they resonate around the world. Words do matter, especially those said in the capital of the free world about how it sees its own ability to maintain that role. We do know that America’s allies are certainly listening to these statements. For example, at an August 2012 engagement with high level South Korean defense leaders and experts, organized by Brookings and KIDA, the Korean Institute for Defense Analysis, a senior Korean leader said “We hear these statements and have deep, deep concern about what it means for us.” In turn, we don’t know how such predictions of doom and gloom by American leaders are received in capitals like Pyongyang. But one can reasonably conclude that if you don’t want to “invite aggression” then the best tactic is not to go about screaming to the world that you expect to be weak and “toothless.”

### AT Politics

#### Its popular- the counterplan is spun as a research experiment-

Eilperin ’10 (Juliet Eilperin, Washington Post Staff Writer, “Threat of global warming sparks U.S. interest in geoengineering”, <http://www.washingtonpost.com/wp-dyn/content/article/2010/10/03/AR2010100303458.html>, October 4, 2010)

It's come to this: Climate-conscious policymakers are beginning to contemplate the possibility of playing God with the weather in the hope of slowing global warming. For years it was considered downright wacky in official Washington to discuss geoengineering: altering the climate by reflecting sunlight back into the sky, sucking carbon dioxide from the air - or a host of other gee-whiz schemes. But in the past year the wacky has won a following, spurred in part by the recent collapse of climate legislation as well as by growing interest among private entrepreneurs and foreign officials. House Science and Technology Committee Chairman Bart Gordon (D-Tenn.), whose panel will jointly release a report on climate engineering with the British House of Commons this month, said the subject is "just now starting to get some attention" even though people recognize the danger in trying to change a complex weather system. "The more you know about it, the more you're concerned about if we can ever implement it," Gordon said in an interview. "However, there may be a point where we're up against the tipping point, and the consequences of climate change are even worse." Over the next few months, whispering about changing the weather will evolve into written recommendations. Several key groups - including the Government Accountability Office and a bipartisan task force of experts - will issue their thoughts on how best to start a modest federal research program on geoengineering. "We're getting a sense that agencies are interested in this topic and would be open, on a certain level, to letting this program go forward," said Jane Long, who co-chairs the National Commission on Energy Policy's task force. At this point, though, even the experts most seriously looking at climate engineering describe it as a last resort for when climate impacts become a serious threat and the world has yet to wean itself off fossil fuels. "Geoengineering only makes sense - if it makes sense, and that's an important conditional - as a way to bridge this crisis period," said Steven Hamburg, the Environmental Defense Fund's chief scientist. Climate engineering can be divided into two basic categories, both of which are untested on a large scale: solar radiation management, which aims to deflect sunlight away from the Earth, and carbon dioxide removal, which takes already released greenhouse gases out of the atmosphere. The first approach is relatively cheap and easy to deploy - researchers envision spraying small metallic particles or sulfur into the stratosphere, which could be accomplished with jets or even World War II-era howitzers - but this would do nothing to address the root causes of climate change or some of its worst effects, such as ocean acidification. The second method would address the atmospheric concentrations of carbon that can spur climate change, but it would take more time to develop and be much more expensive. At this point, many scientists argue that it is worth scrutinizing different geoengineering techniques to see what could work and what will not. At a conference last week sponsored by Arizona State University, the New America Foundation and Slate magazine, University of Maryland distinguished professor of economics Thomas Schelling said "field experiments are going to be essential" to determine whether humans can manipulate the climate in a responsible and effective way. "If solar radiation management is a bad idea, the sooner we discover that the better," said Schelling, who serves on the National Commission on Energy Policy task force. Ralph J. Cicerone, president of the National Academy of Sciences, has been interested in geoengineering for 20 years, but he said he kept a low profile on it because he didn't want to foster the perception abroad that Americans were looking for a quick fix on climate. Now, however, he said these ideas should be subject to peer review. "It's important for the federal agencies to get involved and at least solicit proposals," Cicerone said. "The best way to handle these issues is to treat it like normal science." Those who have been most skeptical about dire warming forecasts, however, are unlikely to embrace climate engineering. "You'd have to see concrete evidence for the worst case, and that's not there," said Patrick J. Michaels, a senior fellow at the Cato Institute, adding that it was hard to imagine how any proposed project could satisfy a federal environmental impact statement. Other countries are already doing that, in part because, as University of Southampton professor John Shepherd explained, the world needs to reach a consensus on geoengineering "before some nut case does it prematurely." Shepherd oversaw the geoengineering report that the Royal Society issued last year, and he is co-chairing an effort - along with the Environmental Defense Fund and the Academy of Sciences for the Developing World - to look at what rules could govern solar radiation management. This year the British government approved spending $4.5 million over three years on geoengineering research; the German Federal Ministry of Education and Research has a small program, as does the European Union. There has been some pushback on the idea of even doing research at all: Delegates to the Convention on Biological Diversity meeting this month in Nagoya, Japan, may consider a proposed moratorium on all geoengineering actitivities, including studies. In a sense, the geoengineering debate mirrors what happened on the question of adapting to climate change, a once-sensitive subject that is now a standard part of policymaking. For years people were wary of discussing how to adapt to global warming, on the grounds that it would reduce the incentive for cutting greenhouse gases. Now, funding for adaptation is a major part of international climate negotiations, and the Fish and Wildlife Service recently detailed how it plans to modify its operations based on the inevitable warming the United States will face in the coming decades. U.S. officials are reluctant to discuss climate engineering in public: the Office of Science Technology Policy declined to comment on the matter, as did the Energy Department. Gordon, who is retiring from Congress, expressed optimism that staffers would still work on it next year. In fact, starting to investigate the feasibility of deliberately changing the climate won't require a massive allocation of federal dollars, in part because agencies ranging from the Environmental Protection Agency to the National Oceanic and Atmospheric Administration are already conducting related research that could easily be expanded to encompass it. Long, who serves as principal associate director at large at Lawrence Livermore National Laboratory, described it as "a tweak with existing funding and existing programs," but added that administration officials "need to be covered by someone telling them to do it, because it's so controversial."

#### Geoengineering doesn’t link to politics

Bullis ‘9 (Kevin Bullis, Senior Editor, MIT Technology Review, “U.S. Congress Considers Geoengineering”, <http://www.technologyreview.com/view/416187/us-congress-considers-geoengineering/>, November 6, 2009)

Plans to purposefully re-engineer the world’s climate got their first serious committee hearing yesterday. The idea that we might be able to “geoengineer” the planet to purposefully change the climate has clearly moved from the fringes into the mainstream. Momentum has been building in recent years: an essay in an academic journal by a Nobel Prize winning scientist in 2006, articles in the Wall Street Journal and Foreign Policy, a largely private gathering of researchers at Harvard. Recently things have really broken out. In addition to multiple articles and books in the popular media, the United Kingdom’s Royal Society, the authoritative national academy of science there, issued an in-depth review of geoengineering and President Obama’s science advisor, John Holdren, has repeatedly stated that geoengineering must be on the table as a possible approach to addressing climate change. Yesterday, the House of Representatives’ Committee on Science and Technology held a hearing that its chairman, Bart Gordon (D-TN), said was, “the first time that a congressional committee has undertaken a serious review of proposals for climate engineering.” Gordon was quick to say that this doesn’t mean he supported geoengineering, and that the consensus at the hearing seemed to be that no one should deploy geoengineering until we’ve done a lot more research. But the very fact of the hearing confirmed that influential people are starting to take geoengineering very seriously. It’s no longer just a subject for gee-whiz fascination, with science-fiction-like scenarios such a vast parasol launched into space to shield the earth from the sun. Now scientists are formulating detailed research plans, start-ups are inventing new geoengineering technologies, and politicians and foreign policy experts are considering what all of this might mean for international relations. So, why the sudden enthusiasm for proposals to tinker with the climate? These ideas aren’t new, but until recently they’ve been largely kept under wraps while attention has been focused on reducing greenhouse gas emissions. There are probably three main reasons for the change. First, some view geoengineering as a cheap way to avoid costly conversions to zero-emissions technology, a potential technological fix that could help them stave off climate legislation. With geoengineering as an option, they argue, there’s less of a rush. We’ll just cool the planet until we can get around to switching to cleaner forms of energy. But this could be mind-blowingly stupid. One of the most popular geoengineering approaches–shading the earth with a haze of sulfate particles in the upper atmosphere–would very likely lead to severe droughts. There are other potential side effects, but a purposeful act that causes the failure of crops for potentially hundreds of millions or billions of people could also lead to international conflict. Even geoengineering enthusiasts have admitted there’s a chance of war. The second reason why geoengineering is getting a serious hearing is that scientists are growing increasingly concerned that, even if we commit to drastically cutting emissions, we’ve already waited too long. By the time we actually reduce emissions, enough greenhouse gases will have accumulated to cause serious climate disasters. We may need geoengineering, then, in addition to fast cuts in emissions. The third reason is that geoengineering is cheap, so cheap that a wealthy individual could do it. There’s growing concern that unless we develop a science-based international consensus about the real dangers of geoengineering, someone will go off and do it on their own.

### AT: Politics NB

#### Counterplan avoids politics- the defense plan is bipartisan- no Congressman wants sequestration- that’s Nash-Hoff

#### Avoids politics

Knight ’12 (Charles Knight, Charles Knight is the co-director of the Project on Defense Alternatives, a think tank which promotes consideration of a broad range of defense options and advocates resetting America’s defense posture along more sustainable, cost-effective lines, “A Smarter Way to Trim the Pentagon Budget”, <http://nation.time.com/2012/08/24/a-smarter-way-to-trim-the-pentagon-budget/>, August 24, 2012)

With the Afghan war winding down, it's time for a smarter retooling of U.S. defense spending than sequestration's cleaver. As the U.S. economy struggles to recover from the Great Recession, most American families have had to make tough decisions about their current needs and future spending. Similarly, one year ago, Congress passed the Budget Control Act (BCA), which put caps on future government budgets. As a result most federal agencies, including the Department of Defense, will be required to roll back their spending plans. Furthermore, unless Congress can find a way to save $1.2 trillion over the next nine years, an additional $110 billion in “sequestration” cuts will hit federal agencies, including the defense department, on January 2nd. The prospect of this so-called sequestration, which would reduce defense spending by 10% from current levels, has inspired panic within the defense establishment and industry. Some defense and congressional leaders have called the prospect “draconian,” “devastating,” and even “catastrophic.” These public fulminations have helped shaped a growing consensus in Washington that the Budget Control Act must be amended or suspended to prevent sequestration. Indeed, a more reasonable approach to achieving savings is needed. But the type of hyperbole issuing from the defense establishment and defense leaders in Congress does us no good. It impedes clear thinking about the options before us. With the wars in Afghanistan and Iraq drawing to a close, it is sensible to expect what new fiscal constraints require: some significant reduction in defense spending from current levels. We need to ask: how can America’s defense posture and budget change to address security concerns in a more cost-effective and sustainable manner? The first step is to put the prospective savings in context. Unlike most American’s household accounts, the Pentagon’s “base budget” (which excludes the costs of the Iraq and Afghanistan wars) has grown by 40% over the past decade, in inflation-adjusted dollars. It is reasonable to expect some room for significant savings. What would sequestration do to the Pentagon’s base budget? Essentially, it would roll it back to a level equivalent to the budget in 2007 – a year the Pentagon survived without catastrophe, or anything resembling it. Savings of this magnitude should be possible. The real question is, How? And the real issue is, How fast? There are numerous ways to save defense dollars that avoid both institutional disruption and most of the economic pain associated with deep cuts to government spending. An illustrative option is the “Reasonable Defense” plan, which will soon be released in its entirety by the Project on Defense Alternatives. The Reasonable Defense plan would reset and reshape America’s defense posture in response to new strategic challenges and circumstances. Based on a more realistic and cost-effective defense strategy, the new posture would enable a sustainable balance between military power and other elements of national strength. It would allow the United States to reduce the base budget to the same amount as was provided in 2006 (corrected for inflation), but do so gradually in stages that the Pentagon and armed services can readily accommodate. The table and chart that follow illustrate the first five years of the Reasonable Defense plan, comparing it with the Budget Control Act “sequestration” budget, the Administration’s FY2013 plan, and the actual 2012 spending level carried forward with increases for inflation. The first three years of Reasonable Defense savings would be considerably smaller than what the BCA sequester entails. Then, in 2017, when the post-recession economic recovery should be complete, the savings would exceed those dictated by the BCA. They eventually plateau at a level about equal to the 2006 budget, which is somewhat lower than the sequestration level. PDA What does this proposed level of funding mean? The Reasonable Defense budget over 10 years would cost $560 billion less than the 2013 plan submitted by the Pentagon, which envisioned spending $5.76 trillion over the same period. Instead, the Reasonable Defense budget would provide the Pentagon with $5.20 trillion. In comparison, the Budget Control Act would cap defense spending at about $5.18 trillion. Once the drawdown to a Reasonable Defense level is complete, the annual Defense Department base budget would stabilize at approximately $455 billion (2012 dollars), which is 14% below the Fiscal Year 2012 budget. This is quite a modest reduction compared to the 35% cut that followed the end of the Cold War. And, because the reduction would occur gradually over four years, the annual steps down would be comparable to those successfully absorbed by the Defense Department during previous periods of adjustment. Americans understand how difficult it is to make tough decisions about where to spend money and how to save. They send their elected officials to Washington to make the same difficult choices. As many families around the country tighten their belts and learn to live with smaller household budgets, they expect the Pentagon to do the same. The Reasonable Defense plan demonstrates how carefully conceived changes to the Pentagon budget can be consistent with economic recovery and also provide ample military capacity to protect America and our core commitments abroad.

#### Avoids politics

PDA ’12 (Project on Defense Alternatives, “ New PDA report outlines a “Reasonable Defense” – Seeks to slim armed forces by 18% and Save $68 billion yearly”, <http://pda-updates.blogspot.com/>, November 14, 2012)

Washington, D.C., November 14, 2012 – The Project on Defense Alternatives released a study today outlining a new global strategy for addressing security threats that also promises to free hundreds of billions over ten years for debt reduction and economic revitalization. Entitled Reasonable Defense: A Sustainable Approach to Securing the Nation, the report sees the principal challenge to the United States as being economic in nature rather than military. Click here to download a copy of Reasonable Defense Reasonable Defense proposes focusing the US military on those missions and responsibilities for which it is best suited – traditional defense, deterrence, and crisis response – while jettisoning large national-building efforts and counter-insurgency campaigns. It advocates more and better-balanced security cooperation with other nations, but sees “preventive security” initiatives to be largely the job of the State Department. “Our military is a fabulously expensive tool,” said the report’s principal author, Carl Conetta, “and we can no longer afford to misuse it.” With a Reasonable Defense posture in place, the United States could adopt a national security budget similar in size to that which would result under the sequester provisions of the Budget Control Act, according to PDA co-director Charles Knight. However, unlike that budgeting device, the proposed reductions will be introduced gradually over a period of five years. The PDA plan sees the defense budget stabilizing at about $462 billion in today’s dollars. Compared with President Obama’s Fiscal Year 2013 budget, this would save $550 billion over ten years. Under the Reasonable Defense plan: The active component military would comprise 1.15 million personnel – a 19 percent reduction from the 2012 active-component military of about 1.42 million. The Navy will have a battle fleet of 230 vessels: 9 aircraft carriers, at least 23 amphibious warfare ships, and 160 other surface and subsurface combatants. This would allow annual shipbuilding to fall from the current level of 9 ships per year down to 5-6 ships. The United States would field 2,780 combat fighter aircraft – down from the previously planned level of 3,150. The Navy and Marine Corps variants of the F-35 Joint Strike Fighter would be cancelled in favor of additional procurement of F-16 and F/A-18s. Congressman Barney Frank joined Mr. Conetta for a press briefing today. Congressman Frank reviewed the prospects for future reductions in US defense spending and commented, “This latest report makes the case very persuasively that we will save even more and with less stress in some ways, if we rethink our strategic posture and essentially scale back what has been a multi-decade assertion that America needs to be everywhere. And this says, you know, the Cold War is over, and things have gotten a lot better in terms of not having a major enemy. Let’s revise our strategic objectives to a realistic point. And then we can save a great deal of money.” Click here to listen to a recording of the press briefing As Congress returns to Washington this week, it faces a myriad of issues none more alarming than the “fiscal cliff.” A Reasonable Defense offers a clear and credible alternative to the sequestration of defense funds and provides important guidance to those who must manage the forthcoming defense builddown. The report also shows how to best balance the competing requirements of national security with those of national strength.

## Solvo

### Debris

SPS is impossible if we reach critical mass

Dunstan, et al, 9 – practices space and technology law at Garvey Schubert Barer. [Berin Szoka](https://webmail.forbes.com/owa/redir.aspx?C=dcab0273df204568929d8b650ffa6201&URL=http%3a%2f%2fwww.pff.org%2fabout%2fstaff.html) is a senior fellow at [The Progress & Freedom Foundation](https://webmail.forbes.com/owa/redir.aspx?C=dcab0273df204568929d8b650ffa6201&URL=http%3a%2f%2fwww.pff.org), a director of the [Space Frontier Foundation](https://webmail.forbes.com/owa/UrlBlockedError.aspx) 9and member of the FAA's Commercial Space Transportation Advisory Committee (James, 17-17, Beware Of Space Junk, <http://www.forbes.com/2009/12/17/space-junk-environment-global-opinions-contributors-berin-szoka-james-dunstan.html>)

As world leaders meet in Copenhagen to consider drastic carbon emission restrictions that could require large-scale de-industrialization, experts gathered last week just outside Washington, D.C., to discuss another environmental problem: space junk. Unlike with climate change, there's no difference of scientific opinion about this problem--orbital debris counts increased 13% in 2009 alone, with the catalog of tracked objects swelling to 20,000, and estimates of over 300,000 objects in total; most too small to see and all racing around the Earth at over 17,500 miles per hour. Those are speeding bullets, some the size of school buses, and all capable of knocking out a satellite or manned vehicle. At stake is much more than the $200 billion a year satellite and launch industries and jobs that depend on them. Satellites connect the remotest locations in the world; guide us down unfamiliar roads; allow Internet users to view their homes from space; discourage war by making it impossible to hide armies on another country's borders; are utterly indispensable to American troops in the field; and play a critical role in monitoring climate change and other environmental problems. Orbital debris could block all these benefits for centuries and prevent us from developing clean energy sources like space solar power satellites, exploring our Solar System and someday making humanity a multi-planetary civilization capable of surviving true climatic catastrophes. The engineering wizards who have fueled the Information Revolution through the use of satellites as communications and information-gathering tools also overlooked the pollution they were causing. They operated under the "Big Sky" theory: Space is so vast, you don't have to worry about cleaning up after yourself. They were wrong. Just last February, two satellites collided for the first time, creating over 1,500 new pieces of junk. Many experts believe that we are nearing the "tipping point" where these collisions will cascade, making many orbits unusable.

### Solvo invest

#### Procurement makes SPS economically feasible and catalyzes investment

NSSO 7 – National Security Space Office, Report to the Director, October 10, 2007, “Space-Based Solar Power As an Opportunity for Strategic Security; Phase 0 Architecture Feasibility Study” http://www.nss.org/settlement/ssp/library/final-sbsp-interim-assessment-release-01.pdf

FINDING:The SBSP Study Group found that industry has stated that the #1 driver and requirement for generating industry interest and investment in developing the initial operational SBSP systems is acquiring an anchor tenant customer, or customers, that are willing to sign contracts for high‐value SBSP services. Industry is particularly interested in the possibility that the DoD might be willing to pay for SBSP services delivered to the warfighter in forward bases in amounts of 5‐50 MWe continuous, at a price of $1 or more per kilowatt‐hour. o Recommendation: The SBSP Study Group recommends that the DoD should immediately conduct a requirements analysis of underlying long‐term DoD demand for secure, reliable, and mobile energy delivery to the war‐fighter, what the DoD might be willing to pay for a SBSP service delivered to the warfighter and under what terms and conditions, and evaluate the appropriateness and effectiveness of various approaches to signing up as an anchor tenant customer of a commercially‐delivered service, such as the NextView acquisition approach pioneered by the National GeoSpatial‐imaging Agency. FINDING: The SBSP Study Group found that even with the DoD as an anchor tenant customer at a price of $1‐2 per kilowatt hour for 5‐50 megawatts continuous power for the warfighter, when considering the risks of implementing a new unproven space technology and other major business risks, the business case for SBSP still does not appear to close in 2007 with current capabilities (primarily launch costs). This study did not have the resources to adequately assess the economic viability of SBSP given current or projected capabilities, and this must be part of any future agenda to further develop this concept. Past investigations of the SBSP concept have indicated that the costs are dominated by costs of installation, which depend on the cost of launch (dollars per kilogram) and assembly and on how light the components can be made (kilograms per kilowatt). Existing launch infrastructure cannot close the business case, and any assessment made based upon new launch vehicles and formats are speculative. Greater clarity and resolution is required to set proper targets for technology development and private capital engagement. Ideally SBSP would want to be cost‐competitive with other baseload suppliers in developing markets which cannot afford to spend a huge portion of their GDP on energy (4c/kWh), and these requirements are extremely stringent, but other niche export markets may provide more relaxed criteria (35c/kWh), and some customers, such as DoD, appear to be spending more than $1/kWh in forward deployed locations. It would be helpful to develop a series of curves which examine technology targets for various markets, in addition to the sensitivities and opportunities for development. Some work by the European Space Agency (ESA) has suggested that in an “apples‐to‐apples” comparison, SBSP may already be competitive with large‐scale terrestrial solar baseload power. A great range of opinions were expressed during the study regarding the near‐term profitability. It is instructive to note that that there are American companies that have or are actively marketed SBSP at home and abroad, while another group feels the technology is sufficiently mature to create a dedicated public‐private partnership based upon the COMSAT model and has authored draft legislation to that effect. • The business case is much more likely to close in the near future if the U.S. Government agrees to: o Sign up as an anchor tenant customer, and o Make appropriate technology investment and risk‐reduction efforts by the U.S. Government, and o Provide appropriate financial incentives to the SBSP industry that are similar to the significant incentives that Federal and State Governments are providing for private industry investments in other clean and renewable power sources. • The business case may close in the near future with appropriate technology investment and risk‐reduction efforts by the U.S. Government, and with appropriate financial incentives to industry. Federal and State Governments are providing significant financial incentives for private industry investments in other clean and renewable power sources. o Recommendation: The SBSP Study Group recommends that in order to reduce risk and to promote development of SBSP, the U.S. Government should increase and accelerate its investments in the development and demonstration of key component, subsystem, and system level technologies that will be required for the creation of operational and scalable SBSP systems. Finding: The SBSP Study Group found that a small amount of entry capital by the US Government is likely to catalyze substantially more investment by the private sector. This opinion was expressed many times over from energy and aerospace companies alike. Indeed, there is anecdotal evidence that even the activity of this intermim study has already provoked significant activity by at least three major aerospace companies. Should the United States put some dollars in for a study or demonstration, it is likely to catalyze significant amounts of internal research and development. Study leaders likewise heard that the DoD could have a catalytic role by sponsoring prizes or signaling its willingness to become the anchor customer for the product.

#### Their aff asks for the impossible

Mankins 12 – John C. Mankins, President of Artemis Innovation Management Solutions LLC is an internationally recognized leader in space systems and technology innovation, spent 25 years at NASA and CalTech's Jet Propulsion Laboratory. He holds undergraduate (Harvey Mudd College) and graduate (UCLA) degrees in Physics and an MBA in Public Policy Analysis (The Drucker School at Claremont Graduate University). Mr. Mankins is a member of the International Academy of Astronautics (IAA) and Chair of the Academy Commission III (Space Systems and Technology Development); and a member of the International Astronautical Federation (IAF), the American Institute of Aeronautics and Astronautics (AIAA), and the Sigma Xi Research Society. Editor/Authors are :Brian Wang, Director of Research. Sander Olson, Interviews and other articles Phil Wolff, Communications and social technologist. Alvin Wang. Computer, technology, social networking, and social media expert. June 7th, 2012, "A New Paradigm for Space-Based Solar Power," nextbigfuture.com/2012/06/new-paradigm-for-space-based-solar.html

Question: How exactly has the technology evolved since the 1970s? ¶ There have been a number of improvements. The efficiency of solar photovoltaics has improved from less than 10% efficiency to more than 30% efficiency now. I'm confident that within the next decade, solar photovoltaics could achieve efficiencies of up to 50%. There have also been substantial improvements in key electronic components, such as solid-state power amplifiers. The efficiencies have gone from 15% in the 1970s to 70% now. With focused investments, we should be able to get devices with efficiencies approaching 80% by 2020. This will further increase the viability of space-based solar power. A wide range of other technologies have also improved dramatically, including light-weight and high-strength materials, robotics, in-space propulsion and others. ¶ Question: You are the chief architect behind the SPS-ALPHA design. What are the central aspects of this new paradigm? ¶ The SPS-ALPHA concept facilitates the design and development of a very large solar power satellite out of a large number of very small pieces. Each piece weighs perhaps 25-100 kilograms, but there are tens of thousands of pieces in the final product. The beauty of this system is that all of the parts of the design can be manufactured readily in a standard factory – resulting in very low costs for the system hardware. ¶ Question: So the power satellite would be composed of vast numbers of identical modules? ¶ Yes, the modules would be stackable – like pizza boxes – for ease of transportation to space, and then unstacked and assembled once they reach the operational orbit for the satellite. There might be about 6 or 8 different types of modular elements, and each type would be mass produced with from hundreds to tens of thousands of copies. They would initially be launched into a low Earth orbit, and from there transferred to a higher orbit for integration into the SPS platform. We are looking at using robotic systems to assemble the panels. ¶ Question: So your plan employs robots for most of the construction? ¶ Yes. The SPS-ALPHA architecture would only employ people on the ground to supervise the robots operating in space. The goal would be to assume the intervention of astronauts only in the event of a problem that could not be resolved using robots. As a rule of thumb, we expect that it may cost from 100-times to 1000-times more to have a suited astronaut perform a task in a high Earth orbit than to have a remotely-supervised robot do it. This field of technology has advanced rapidly in the past decade, and so we plan to employ robots extensively. ¶ Question: How long would it take to get a prototype system up and running? ¶ With sufficient funding, we could have a ground based, rudimentary prototype up and running by 2014. An early prototype in orbit could be built by 2017-2018. And in about a decade, a larger pilot plant could be in geosynchronous Earth orbit, generating 10 megawatts. The total cost for this roadmap could be several billion dollars, with most of the cost coming in the last few years. As a point of comparison, the pilot plant would be approximately the same size as the International Space Station, which cost $100 billion to manufacture, launch into space and assemble. The cost savings would result from using standard, mass-produced pieces, standard launch systems and robotic assembly in space.

### xt – No Tech

**No risk of short term solvency – early years will go to research, and development**

**Fan et al. 11** – M.A. from California Institute of Technology (William, Harold Martin, James Wu, Brian Mok, “Space Based Solar Power: Industry and Technology Assessment”, <http://www.pickar.caltech.edu/e103/Final%20Exams/Space%20Based%20Solar%20Power.pdf>,) Jacome

The objective is to create a space based solar power system that will be able to provide enough power to offset a more traditional power plant. Due to the developing nature of space based solar, most short term goals will be to progress in research and development. Within 10 years, the business should send a preliminary pilot satellite into low earth orbit to determine the viability of the incorporated wireless power transmission technique. Longer term goals will concentrate on making the company into a viable alternative energy provider and encouraging further investment into the industry. In 2530 years, the business should to launch a satellite that could satisfy the needs of the niche markets such as energy generation for forward military installations. Shortly after, the business should follow up with additional launches to create a satellite capable of outputting 0.5-1 GigaWatts.

**Don’t have the tech in the short term**

**a.) No energy transmission methods**

**Fan et al. 11** – M.A. from California Institute of Technology (William, Harold Martin, James Wu, Brian Mok, “Space Based Solar Power: Industry and Technology Assessment”, <http://www.pickar.caltech.edu/e103/Final%20Exams/Space%20Based%20Solar%20Power.pdf>,)

While hard to estimate, we believe currently that SBSP is not feasible for the next 30 years. There must first be a large decrease in launch costs, and significant adoption of solar technology before SBSP would be a plausible large scale energy source. Efficiency levels are still not yet at a level where the large added cost of a space launch can justify SBSP. Furthermore, the difficulties in large scale wireless energy transmission is paramount, and have large scale demonstrations have not yet occurred over significant distances. We have also not yet seen a large boom in large scale wireless energy transmission that would allow us to project an efficiency trend for this technology. We conclude that it is still too early for SBSP, barring any large scale technological disruptions within the next 30 years.

**Beam Diversion means it fails**

**Cowing 2k –** is trained as a biologist (M.A. and B.A. degrees) and has a multidisciplinary background with experience and expertise that ranges from spacecraft payload integration and biomedical peer review to freelance writing and website authoring. (Keith, " Congress Gets an Update on Solar Power Satellites", September 7, 2000, <http://www.spaceref.com/news/viewnews.html?id=210>.)

Another concern in earlier SPS studies has been the efficiency with which power is transmitted from one point to another. Recent laser and microwave research has shown additional improvements in efficiency - this also lends support to the economic and engineering viability of the SPS concept. Mankind added that in addition to the power generating capabilities of SPS systems, large amounts of space-based, beamed power might also be required if large solar sail propulsion technologies are to be used for interstellar probes at the end of this century. The SPS concept was originally envisioned as being a relay system for power generated in space with microwaves used as the means of relaying power. This concept has expanded over the years to include the use of lasers instead of microwaves. One reason being that microwave beams tend to diverge as they traverse large distances whereas coherent sources such as lasers exhibit much less divergence. The more divergence in an energy beam, the larger the antennas need to be at the reception/reflection locations and the greater the potential for lost power during transmission. Use of lasers would tend to minimize this concern. The SPS concept has also expanded to use space based satellites to relay power generated on Earth from one location to another - perhaps from an equatorial desert region to a large city further from the equator. Ralph Nansen, President, Solar Space Industries, Inc. said that Use of SPS as a relay point of power from one region on earth to another may served an interim step in demonstrating the technical and economic viability of beamed power systems. He suggested that primary development of an SPS system should be commercial. But since this would be such large an effort, it should start as government/industry partnership. The government's role would be to set regulatory environment, provide loans and other funding for basic research, and be willing to accept the risk of buying the first SPS satellite. A lead agency should be designated according to Nansen. He felt that DOE is a natural choice with NASA providing support. Nansen said that a ground test program should be funded to demonstrate separate technologies and develop a small prototype of the system on the ground. Efforts should also be made obtain frequency allocation for microwave transmission systems and that support be given to developing a more efficient launch infrastructure including loan guarantees for RLV (Reusable Launch Vehicle) systems. Jerry Grey, from the American Institute of Aeronautics and Astronautics (AIAA) spoke about a study nearing completion by the AIAA. The AIAA has had a continuing interest in the SPS concept since its first description in 1968. The AIAA study looked at SPS work being done outside the US; the prospects for multiple uses of SPS technology; and a technical assessment of SPS work done by NASA. According to Grey, the study does not address economic or environmental considerations since these are being handled by other research groups. While the draft AIAA assessment is still under review, Grey was able to say that the AIAA feels that SPS is a viable concept, and that it is one key area requiring an enhanced focus upon advanced launch system. He also said that the AIAA group has expressed a particular interest in using SPS concepts to augment the existing terrestrial power grid. This would involves relaying energy. Reflection of sunlight; reflection of sunlight and conversion to/from microwaves; and the use of lasers were all examined. It was felt that geostationary satellites are preferred over satellites in lower orbits for control reasons. Sunlight and microwave reflection via geostationary orbit is not feasible because of beam diversion. Lasers, however, have far less beam diversion and are very efficient.

**Tests proves it fails**

**Evans 09** – contributor to Gizmag (Paul, Feb 23,“Solar power beamed from space within a decade?”, <http://www.gizmag.com/solar-power-space-satellite/11064/>)

February 23, 2009 The concept of [Space-Based Solar Power](http://www.gizmag.com/the-solar-power-satellite-broadcasts-energy-to-earth/10290/) (SBSP) has been doing the rounds for decades with fantastic claims of 24 hour a day solar power beamed from space via microwave to any point on earth. A start up company called Space Energy, Inc says it plans to develop SBSP satellites to generate and transmit electricity to receivers on the Earth's surface. To do this, the company plans to create and launch a prototype satellite into low earth orbit (LEO). The hitch: this concept is based on as yet unproven technology. SBSP was theorized over 40 years ago by renowned scientist Dr. Peter Glaser. Since then, in response to periodic energy crises, the idea has been re-evaluated from time to time by the U.S. Department of Energy, NASA, major aerospace companies and countries such as Japan and India. Solar power satellites are large arrays of photovoltaic panels assembled in orbit, which use microwave radio waves to transmit solar power to large receiving antennas on Earth. The resulting power can either supplement, or be a substitute for, conventional electricity sources. The advantage of placing solar collectors in geosynchronous Earth orbit (GEO), about 36,000 kilometres (22,500 miles) above Earth, is that it uses the constant and unobstructed output of the Sun, unaffected by the Earth's day/night cycle. By contrast, ground-based solar power provides a vital and valuable addition to the Earth's energy needs, but is limited by these factors: Weather Variable seasons Atmospheric blocking of sunlight Poor direct sunlight at higher and lower latitudes Because none of these factors applies in outer-space, an orbiting SBSP station can supposedly provide an estimated 6-8 times more power than a comparable solar cell on the Earth's surface. Here’s where the entire concept falls flat. [Space Energy, Inc](http://www.spaceenergy.com/s/Home.asp) claims that a successful long-range wireless power transmission test was conducted in mid-2008, that supposedly transmitted a microwave beam (similar to the kind that would be used to transmit energy from space to Earth) between two Hawaiian Islands across 148 kilometres - more than the distance from the surface of the Earth to the boundary of space. They claim this test demonstrated the technical feasibility of transmitting SBSP to Earth. Less than 1/1000th of 1% received Unfortunately for Space Energy, Inc and the entire concept of space based solar power, the actual test results conducted for a Discovery channel documentary proved **a total failure**. The former NASA executive and physicist who organized the experiment, John Mankins, admitted in a [press conference](http://www.nss.org/news/releases/pc20080912.html) that the $1 Million budget spent of the experiment resulted in less than 1/1000th of 1% of the power transmitted being received on the other island. The most successful test of wireless power transmission over any distance at high efficiency was conducted by Bill Brown in 1975. Using a NASA deep space tracking dish they transmitted 30kw over 1.6 km (1 mile) at 82.5% efficiency at the Goldstone Deep Space Communication Complex. A Since Geostationary orbit is 36,000 km (22,500 miles) away from earth the space based power station needs to efficiently transmit power over twenty thousand times further than has ever been achieved to date.

**b.) Launch infrastructure**

Rouge 07 – Bachelor of Science degree in aerospace engineering, University of Southern California, Master of Science degree in aerospace engineering, University of Southern California, Master of Science degree in business administration, Auburn University, Program Management Course, Defense Systems Management College, Fort Belvoir, Va., Distinguished graduate, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C., Executive Program Management Course, Defense Systems Management College, Fort Belvoir, Va. National Security Space Office, the Pentagon, Washington, D.C. He is responsible for leading a multiagency unit tasked to create unity of effort across all of National Security Space. (Joseph, 10/10, National Space Society, Report to the National Security Space Office, “Space-Based Solar Power As an Opportunity for Strategic Security”, <http://www.nss.org/settlement/ssp/library/final-sbsp-interim-assessment-release-01.pdf>) Jacome

Space Solar Power Satellites are very large structures and require substantially greater lift and in space transportation than has ever previously been attempted. Consequently, they also require a significantly expanded supporting infrastructure. The International Space Station is currently the largest structure in space with a mass of 232 MT, at an orbit of only 333 km. It has the largest solar arrays in space, with a total power of approximately 112 kW. In contrast, a single Space Solar Power Satellite is expected to be above 3,000 MT, several kilometers across, and most likely be located in GEO, at 42,124km, likely delivering between 1 to 10 GWe From the perspective of today’s launch infrastructure, this may seem unimaginably large and ambitious, but in another sense it is well within the relative scale of other human accomplishments which at their time also seemed astounding creations the Eiffel Tower is 8,045 Tons; the Sear’s Tower 222,500 tons; the Empire State Building 365,000 – 392,000 tons, the largest of our supertankers is 650,000MT, and the Great Pyramid at Giza is 5,900,000 MT. Contemplating a space solar power satellite today is probably analogous to contemplating the building of the large hydro‐electric dams, which even today cause observers to marvel. Today the United States initiates less than 15 launches per year (at 25MT or less). Construction of a single SBSP satellite alone would require in excess of 120 such launches. That may seem like an astounding operations tempo until one considers the volume of other transportation infrastructure. For instance, in 2005, Atlanta International Airport saw 980,197 takeoffs & landings alone, an average of 1,342 takeoffs/day, or about 1 every minute 24 hours a day. In the same year, Singapore’s 41 ship cargo berths served 130,318 vessel arrivals (about 15 per hour), handling about 1.15 billion gross tons (GT), and 23.2 million twenty foot equivalent units (TFUs).

**c.) Protection Tech – or else radiation destroys the satellites**

**Taylor 07** – Chief of the Space and International Law Division at Headquarters United States Air Force Space Command; B.A, Berry College; J.D. University of Georgia; LL.M. (Air and Space Law), McGill University (Michael W. “Trashing the Solar System One Planet at a Time: Earth’s Orbital Debris Problem,” Georgetown International Environmental Law Review, Fall, 2007, Gale)

<Without Earth's atmosphere to protect them, satellites are exposed to the full force of solar radiation, including ultraviolet rays, X-rays, positively charged protons and negatively charged electrons. n16 Ultraviolet rays and X-rays can damage satellites by degrading solar panels, which many satellites use as a source of energy, thus shortening their useful life. n17 When solar activity increases, the number of damaging rays also increases. The charged particles can cause even [\*5] more damage than the rays because the particles penetrate the outer layers of the satellite and directly degrade its electronic systems. Unlike the rays, which are generally evenly distributed around Earth, the particles become trapped in Earth's magnetic field and concentrate in two doughnut-shaped (torus) areas around the equator. n18 These regions are called the Van Allen radiation belts. n19 The Van Allen radiation belts significantly limit the operation of satellites.>

d.) No chemical efficiency, mass production methods, or orbiting platforms

Wegeng and Mankins 07 – Pacific Northwest National Laboratory AND Artemis Innovation Management Solutions (Rovbert and John, December 5, 2009, Mankins, “Space power systems: Producing transportation (and other chemical) fuels as an alternative to electricity generation,” ScienceDirect)

5.1. Technology development issues The technologies that are needed in order to realize Solar Fuels, via a thermochemical approach, vary in their readiness for commercialization. With regard to solarconcentrators, we note that much work has been performed, in the USA and abroad, over the last few decades, and solar reforming reactors have been demonstrated both in dish and central receiver configurations. More work is needed, however, in order to realize either economies of mass production or economies of scale with solar concentrators. Accordingly, we consider solar concentrators to be of moderate to high technology readiness. A significant technical question is the chemical efficiency of the overall system. As noted earlier, our assumption of 40% may be conservatively low; if higher efficiencies can be achieved/maintained, such as has been suggested from previous work, the productivity and financial viability of solar thermochemical processing is enhanced beyond that suggested by our productivity calculations. For systems that utilize methane as a feedstock, the chemistry is well known; in fact, steam reforming is currently the industrially-preferred method of producing hydrogen. For application within dish concentrators, we note that compact chemical reactors and heat exchangers have been demonstrated for other applications, using process intensive hardware such as microchannel reactors and heat exchangers which also can achieve high energy efficiencies. Microchannel reactors and heat exchangers have been previously demonstrated for unit operations such as steam production, recuperative heat transfer, the methane steam reforming reaction, the water–gas-shift and reverse-water–gas shift reactions, and for the Fischer–Tropsch reaction. These systems are of moderate to high technology readiness; work is still needed, in particular, to develop mass production methods in order to reduce hardware capital costs. Thermochemical technologies and systems that utilize feedstocks that bring no chemical energy, such as thermochemical water-splitting processes, are currently of low technology readiness. However, significant work is currently underway within the Department of Energy's Hydrogen Program to understand the chemistries and the chemical process flowsheets. The effort has included the screening of over 300 potential water-splitting cycles [22], [23] and [24] and work is progressing on several that were deemed to be most promising. At the current time, the chemistries and process flowsheets appear to be quite challenging; however, worthwhile technology demonstrations will soon be underway. For example, a dish system, using one of the metal oxide processes, is currently being assembled at Sandia National Laboratory and is scheduled to begin testing later this year [4]. Technologies and systems that provide supplemental heat through the use of one or more orbiting platforms are also of low technology readiness, despite having initially been proposed decades ago. After its initial proposal in the 1960s [8] and [11] development efforts were initiated, then halted, in the 1970s [17] and again in the 1990s [6], [7], [13] and [18]. For Space Solar Power to be developed to the point where it can be used to produce transportation fuels, critical areas include the design of, and assembly approach to, the orbiting platform that intercepts solar energy and converts it beamed power directed at the ground receiver as well as the launch systems that would place hardware in orbit at reasonable costs.

**Prefer our claims, they wildly exaggerate the feasibility and are disconnected from actual expert opinion**

**Day 09** - program officer at the Space Studies Board of the [National Research Council](http://en.wikipedia.org/wiki/United_States_National_Research_Council) in Washington, D.C, [American](http://en.wikipedia.org/wiki/United_States) [space](http://en.wikipedia.org/wiki/Space) [historian](http://en.wikipedia.org/wiki/Historian) and policy analyst, doctorate degree in political science from [The George Washington University](http://en.wikipedia.org/wiki/The_George_Washington_University)[[1]](http://en.wikipedia.org/wiki/Dwayne_A._Day#cite_note-nasabio-0) where he specialized in space policy and management of the national security bureaucracy (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.

**Its fantasy – the tech does not exist**

Nelder 09 – Author, journalist, publisher, media talent and expert on energy issues, project manager with technical skills in the solar and software industries, Twelve years as a writer on energy issues. Recognized expert in the broad domain of energy, including oil, natural gas, coal, nuclear, solar, wind, geothermal, marine, and efficiency, wrote two book on peak oil and renewable energy (Chris, April 25th, <http://turn.org/article.php?id=850>)

Wild Claims And Hard Realities Then there are all the other niggling questions about how exactly the power transmission to earth works without, for example, inadvertently frying a plane that happened across its path, or running the risk of destruction on the ground should anything go awry with the system. Or how the company is so confident that we can deploy as-yet unproven technology at a scale far beyond man's most ambitious space program to date, and do it by 2016. Oh and I almost forgot to mention: Solaren's director of energy services Cal Boerman claims that after four rocket launches to place the equipment into space, it would not require assembly by astronauts, but instead would unfold on its own. Anyone who has watched the evolution of cutting edge space projects like the Hubble Telescope and indeed, the International Space Station itself, knows of the many problems they have faced with systems that didn't work according to plan. Now Solaren wants us to believe that they can make something 240 times bigger than the ISS with no astronauts needed? The best comment I found on the Solaren project was from the Motley Fool: "As far as technology commercialization timelines go, space-based solar is likely somewhat ahead of nuclear fusion powered by a rare fuel that's mined on the moon." The whole plan is pure fantasy as far as I'm concerned. But it's sexy space energy technology, so people just gobble it up. Those inclined to excitement about such developments view PG&E's proposed contract as verification that there is something real about the project. But I have an alternate interpretation. PG&E is desperate to contract for enough renewable energy to meet the state's renewable portfolio standard, which currently requires it to produce 20% of its electricity from clean sources by 2010, with a possible new standard of 33% by 2020 in the offing. However, the available supply of renewable energy is nowhere close to that, nor is it growing nearly quickly enough to meet such an ambitious target in an environment of tight credit. My guess is the utility would be willing to sign a contract with space aliens in pink tutus at this point, if they would guarantee in writing that they would deliver megawatt-hours of clean power before 2020. Mark Toney, head of The Utility Reform Network watchdog group, called the Solaren announcement "remote" and "an act of desperation," preferring that PG&E spend "more time on proven technologies closer to home that we can really count on." For all the doubts surrounding it, there are a few things about space based solar power that I can virtually guarantee. One, if the Solaren project fails to round up financing, which is already a problem for earth-based utility-scale systems, or is deployed but fails to meet expectations, no one will publish its failure in big, bold headlines. Two, it will never scale or be cost-effective on par with existing ground-based solar technology. Three, if it ever

gets off the ground, it will be plagued with technical problems, and in a post-fossil fuel world, it will become impossible to maintain. Four, the net energy of the whole project will be ridiculously low, and the energy payback period on it will be measured in decades.

### \*\*\*\*A2 sat

Debris removal tech needs at least 5-10 years in development.

Ansdell 2010 [Megan Ansdell is a second year graduate student in the Master in International Science and Technology Policy program at the George Washington University’s Elliott School of International Affairs, where she focuses on space policy., “Active Space Debris Removal: Needs, Implications, and Recommendations for Today’s Geopolitical Environment”, <http://www.princeton.edu/jpia/past-issues-1/2010/Space-Debris-Removal.pdf>, pg. 15]

There are substantial technical, economic, political, and legal barriers to developing, deploying, and operating active debris removal systems. Many current concepts rely on unproven technology, which means they will require substantial time and money to develop and deploy. The quantity of time and money required will vary with each concept, and detailed estimations are not publicly available because of the nascent state of the field. However, as a rough point of reference, it costs around $10,000 per kilogram to launch anything into orbit, making the cost of merely launching many of the aforementioned systems on the order of millions of dollars. Moreover, flagship missions at NASA, depending on their size, take five to ten years to plan, develop, and launch

Solar storms can be deflected and change direction

NASA Science News – 10, “Solar Storms can Change Directions, Surprising Forecasters” 9/21/10, http://science.nasa.gov/science-news/science-at-nasa/2010/21sep\_zigzag/

"This really surprised us," says co-author Peter Gallagher of Trinity College in Dublin, Ireland. "Solar coronal mass ejections (CMEs) can start out going one way—and then turn in a different direction." The result was so strange, at first they thought they'd done something wrong. After double- and triple-checking their work on dozens of eruptions, however, the team knew they were onto something. "Our 3D visualizations clearly show that solar storms can be deflected from high solar latitudes and end up hitting planets they might otherwise have missed," says lead author Jason Byrne, a graduate student at the Trinity Center for High Performance Computing.

### Exts – Costs

**Costs debate**

**a.) Launch Costs**

**Launch costs alone prevent successful development even if the technology works**

**Brown 09** - author focused on political, economic, and military strategy for the medium of space (Trevor, June 1, The Space Review, “SSP: a spherical architecture,” [http://www.thespacereview.com/article/1383/1)](http://www.thespacereview.com/article/1383/1)RK)

As SSP advocates are painfully aware, **the high expense of launching numerous payloads into space for the assembly of satellites large enough to transmit meaningful amounts of energy to Earth is cost prohibitive.** While very large structures in space are theoretically within the realm of the technically possible for legitimate SSP interests, the launch costs associated with the construction of a satellite a few kilometers in length, as would be necessary for large scale energy transmission, are exorbitant. Additionally, the expense of space systems and operations—robotic technologies and the supporting space and Earth-based infrastructure—are extremely high and must be dramatically reduced. While proponents hope that large-scale space infrastructure projects will achieve certain economies of scale that will bring down the cost of each individual launch, component, and support system, the prevailing price tag for the whole of such a project would doubtless be enormous, making it very difficult to compete in the broader energy marketplace.

Accordingly, SSP has been criticized for requiring large numbers of breakthroughs to become feasible. It has long been held that before a critical mass of interest from the private sector can be forthcoming there must be drastic improvements in space transportation, on-orbit construction techniques, and power transmission capabilities. The common wisdom has traditionally been that these developments must be attained before SSP can become commercially viable and competitively brought to energy markets en masse.

**Lack of reusable launch system means solvency is doomed – plan can’t solve**

**Nansen 10**-- led the Boeing engineers in the Satellite Power System Concept Development and Evaluation Program for the Department of Energy and NASA, and President Solar Space Industries (Winter 2010, Richard, Online Journal of Space Communication, “Low Cost Access to Space is Key to Solar Power Satellite Deployment”, Issue No. 16, <http://spacejournal.ohio.edu/issue16/nansen.html> )

The barrier to their development is still the lack of a low-cost space transportation system for launching the satellite hardware. Without a reusable launch system there is little hope to deploying a significant capability to generate competitive cost electric energy from space. The problem is not technology; it is the up-front investment money and understanding of what is required. In the 21st century, **NASA's goals and approaches are no longer compatible with those of a commercial development program such as S**olar **P**ower **S**atellites.

**SBSP not ready - launch and manufacturing infrastructure**

Rouge 07 – \*this is the NSSO article, Bachelor of Science degree in aerospace engineering, University of Southern California, Master of Science degree in aerospace engineering, University of Southern California, Master of Science degree in business administration, Auburn University, Program Management Course, Defense Systems Management College, Fort Belvoir, Va., Distinguished graduate, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C., Executive Program Management Course, Defense Systems Management College, Fort Belvoir, Va. National Security Space Office, the Pentagon, Washington, D.C. He is responsible for leading a multiagency unit tasked to create unity of effort across all of National Security Space. (Joseph, 10/10, National Space Society, Report to the National Security Space Office, “Space-Based Solar Power As an Opportunity for Strategic Security”, <http://www.nss.org/settlement/ssp/library/final-sbsp-interim-assessment-release-01.pdf>) Jacome

FINDING: The SBSP Study Group found that the nation’s existing EELV based space logistics infrastructure could not handle the volume or reach the necessary cost efficiencies to support a cost effective SBSP system. America’s existing space manufacturing base is not suitably aligned at present for full scale SBSP deployment. • Some participants argued that at high enough launch rates some of the newer expendable concepts might be able to get close to the target, however in general, most participants felt that while expendables could get an SBSP to a demo, it could not reach the economic efficiencies necessary for SBSP. Some participants also emphasized that expendable launch - 32 -systems will not be able to achieve the desired level of safety needed for routine and frequent passenger transport to space or the operation of terrestrial launch sites in the interior of the country.

**b.) Maintenance Costs**

**Ditto 08 -** 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.

c.) Transportation Costs

Mankins 6 - Artemis Innovation Management Solutions LLC (22 December 2006, “New directions for space solar power,” ScienceDirect)

5.2. Space transportation Very low cost access to space, including transportation from Earth to Space as well as transportation in space, is a fundamental barrier. Even using the most aggressive assumptions regarding technological advances in the field of materials, the mass associated with meaningful SPS, both an individual satellite and a global constellation will be such that transportation costs will make a substantial contribution to total installed cost for the system. Transportation in space poses a conundrum: systems that have high thrust and move quickly from orbit to orbit are not fuel-efficient. Conversely, highly fuel-efficient propulsion systems have low thrust and long transit times. As a result, the SPS architect must confront either high costs to launch fuel for fast in space transport or must deal with long transit times and poor utilization of the fixed transport capacity.

### Exts – Military Application Fails

**We don’t have the tech – we would need to construct receivers 3 kilometers long**

Desanti et al. 11 – Professor at the Georgia Institute of Technology (2011, Brendan Desanti, Nicholas Picon, Carlos Rios, Shaan Shah, Narayanan Komerath,

Daniel Guggenheim – all students at the Georgia Institute of Technology, “A US-INDIA POWER EXCHANGE TOWARDS A SPACE POWER GRID,” <http://www.nss.org/settlement/ssp/library/2011-US-IndiaPowerExchange.pdf>)

The 1979 NASA/DOE studies concluded [4] that SSP was technically feasible but required large investment, and that the US government would eventually fund it by about Year 2050. The technical difficulties and the magnitude of the cost make this prediction look rather optimistic. A very simple calculation shows why. The full AM0 (Air Mass Zero) spectrum delivers 1366 watts per square meter [22] of collector area in Earth’s orbit in space. With possible future conversion efficiency of 60% to electric power, 90% to a beam reaching Earth’s surface with another 10% loss, this means that 1GWe delivered to the terrestrial grid means a collector area of 1.67 square kilometers. Today the possible efficiency is at best half of the above, so that the area per GWe is over 3 square kilometers. Looking at it another way, the ambitious target for the specific power (electric power per unit mass in orbit) of SSP is 1KWe per kg, which implies well over 1 million kilograms in orbit for a 1GWe system. Present architectures promise less than 0.3 KWe/kg, so that a 1GWe SSP craft requires over 3 million kilograms in orbit. The launch cost alone to GEO is over $5000 and probably over $10,000 per kilogram, so that just launch cost exceeds $30B. Viewed another way, a general thumb rule in renewable energy resource development is that the installed cost must approach $1 per watt. Wind plants approach $2 per watt. Contemporary terrestrial photovoltaic (PV) systems cost from $4 to $6 per watt, installed. Just the minimum launch cost of SSP systems is in the range of $15 to $30 per watt, putting them out of competition except for very special applications.

### Exts – Launch Infrastructure

**Also need a method to launch that we don’t have**

**Fan et al. 11** – M.A. from California Institute of Technology (William, Harold Martin, James Wu, Brian Mok, “Space Based Solar Power: Industry and Technology Assessment”, <http://www.pickar.caltech.edu/e103/Final%20Exams/Space%20Based%20Solar%20Power.pdf>,)

Right now, SPSP is not viable as a mainstream source of energy. In fact, even when accounting for the most optimal effects, we would need to wait at least 30 more years before beginning a large attempt at adopting space based solar power. In order for SBSP to be feasible before then, we would require some sort of disruptive technology in orbital launch, such as a space elevator. Another case might be where the Earth’s atmosphere suddenly prevented more of the sunlight from reaching the Earth, increasing the efficiency gains from using SBSP.

## Warming

SPS alone can’t cover the world’s energy needs – won’t create a complete shift

Mankins, 2007, October 12, 2007 (John C., former manager of NASA’s Advanced Concepts Studies Office of Space Flight,, 10-12-07, “Leading Scientists and Thinkers on Energy,” from an interview with Mankins conducted by David Houle, an analyst who advises companies on new developing technology, http://www.evolutionshift.com/blog/2007/10/12/leading-scientists-and-thinkers-on-energy-–-john-c-mankins/ )

Mankins: Solar power satellites will be very, very large. Of course, all solar power systems are enormous. On the ground, it’s hard to see because the solar arrays are spread across thousands of rooftops. However, the overall systems is still of tremendous size. In the case of solar power satellites, if each satellite were to provide about 4,000 megawatts of power, then five of them would be needed to provide about 20 GW – which is approximately 2 percent of the U.S. demand for electricity. World demand for energy is currently about 4-times U.S. demand, but is growing fast! By 2100, huge new sources of renewable energy will be critical to our civilization, including hydroelectric (already in place), wind, ground solar, appropriate nuclear power—and space solar power. Evolutionshift.com: It sounds to me as though SSP is the one form of alternative energy that can supply a significant percentage of the energy needs of the planet. So it sounds like the vision needs to be forged into a multi-national will and then receive the necessary funding. Is that correct? If so, care to comment on the probability of this starting up in the next 2-3 years? Mankins: Actually, even if space solar power were fully developed, the global economy should have more than just one option: a prudent scenario would also involve a portfolio of current energy options—and a “quiver” full of new energy technologies ready to be deployed if, or when they are needed. Certainly, however, space solar is one of very few options to provide a substantial fraction of the truly vast amount of renewable energy that is needed to support human civilization.

SPS can’t compete with other energy

David Boswell, 2004, speaker at the 1991 ISDC, International Space Development Conference, August 30, 2004, (The Space Review, Whatever happened to solar power satellites?, <http://www.thespacereview.com/article/214/1>)

Competing with other options Even if a solar power system was built and launched there would still be the economic problem of producing electricity at a cost that is comparable to other options. Government subsidies can help get this new industry on its feet but it will need to compete in the market in order to survive. This is a challenge for all emerging renewable energy solutions.

Can’t convert the energy

Donald Rapp, former professor, Fellow of the American Physical Society, and independent contractor for NASA, 2/18/07, “Assessment of Concepts for Utilizing Lunar Resources”, [http://home.earthlink.net/~drdrapp/Space.solar.power.pdf](http://home.earthlink.net/%7Edrdrapp/Space.solar.power.pdf),

Several technologies could be employed for converting electric power to microwave power. All of these require further development but one way or another, conversion to microwaves can probably be accomplished. A huge phased array antenna with high efficiency must steer the power beam to a small rectenna target on the ground with a precision of 0.0005 degrees. It is expected that the size will be of the order of a 1 or 2 km to transmit 1 to 2 GW at 2.45 GHz. It is typically assumed that the overall DC-RF conversion efficiency, including all losses (e.g. in phase shifters, power circuits, and isolators) will be > 80%. Various types of antennas on SPS have been considered. The total number of antenna elements could be of the order of several hundred million (this number can be substantially reduced if single klystrons of more than 1 kW output power are used to feed one antenna element). Such a large phased array has neither been developed nor constructed up to now, even on Earth. It is uncertain if simple scaling of already realized arrays is possible or whether it may lead to unexpected problems. Hence, realizing the SPS system will require overcoming many engineering challenges, such as phased arrays with an RF-DC conversion efficiency higher than 80%, a phase-shifting system with very low rootmean- square errors for accurate beam control, phase synchronization over millions of elements, and very-low-cost mass production of these elements.

Water Power Solves

Loose 11 [Verne W. Loose works for Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy’s National Nuclear Security Administration January 2011, http://mydocs.epri.com/docs/corporatedocuments/sectorpages/pdu/hydropower/Role%20of%20Hydropower%20in%20Existing%20Markets.pdf]

The electrical power industry is facing the prospect of integrating a significant addition of variable generation technologies in the next several decades, primarily from wind and solar facilities. Overall, transmission and generation reserve levels are decreasing and power system infrastructure in general is aging. To maintain grid reliability modernization and expansion of the power system as well as more optimized use of existing resources will be required. Conventional and pumped storage hydroelectric facilities can provide an increasingly significant contribution to power system reliability by providing energy, capacity and other ancillary services. However, the potential role of hydroelectric power will be affected by another transition that the industry currently experiences—the evolution and expansion of electricity markets. This evolution to market-based acquisition of generation resources and grid management is taking place in a heterogeneous manner. Some North American regions are moving toward full-featured markets while other regions operate without formal markets. Yet other U.S. regions are partially evolved. This report examines the current structure of electric industry acquisition of energy and ancillary services in different regions organized along different structures, reports on the current role of hydroelectric facilities in various regions, and attempts to identify features of market and scheduling areas that either promote or thwart the increased role that hydroelectric power can play in the future. This report is part of a larger effort led by the Electric Power Research Institute with purpose of examining the potential for hydroelectric facilities to play a greater role in balancing the grid in an era of greater penetration of variable renewable energy technologies. Other topics that will be addressed in this larger effort include industry case studies of specific conventional and hydro-electric facilities, systemic operating constraints on hydro-electric resources, and production cost simulations aimed at quantifying the increased role of hydro.

### a/t: Spillover – Mountainbrook

**They don’t solve spillover – their author recommends actions – they do none of them – here are three separate quotes from their author**

**Kammen 7 – Professor of Public Policy @ UC Berkeley,** (Daniel, "Green Jobs Created by Global Warming Initiative," September 25th, <http://www.unep.org/civil_society/GCSF9/pdfs/karmen-senate.pdf>) Jacome

Raise Clean Energy Research, Development, and Deployment Spending to Reasonable Levels

Provide Research Support Jointly to the Departments of Energy and Agriculture, and the Environmental Protection Agency to Study a Federal Low Carbon Fuel Standard

Build Jobs Across Socioeconomic Groups – the Green Jobs Program in the U. S. and Overseas

**Now don’t buy any of their ‘logical’ claims – the aff and their card are radically different – they just demonstrate the feasibility of a power system – we’ve done that with every single renewable technology to date – that doesn’t equate to creating the thousands of clean jobs their evidence is talking about**

**Default negative – even if you think their analysis is logical – they need evidence indicates that china or ANY other country perceives the plan as a sufficient expansion of the united states renewable commitment – this is equivalent to us reading a disad and asserting a link – if it is missing, they need evidence**

**Prefer our evidence – it at least talks about the aff - [more necessary analysis]**

### Exts – Environment Turn

The launch emissions cause a gap in the ozone

Howard, 9 – chapter head of the National Space Society (1/30, George, “A Position Paper on Space Solar Power Satellite Technology”, National Space Society—Heart of America, <http://www.nssheartofamerica.org/sspskc.html>)

Each carrier vehicle with a 100 ton payload would be about the size of an Apollo Saturn 5 rocket, the Apollo program required 15 to 18 Saturn 5 boosters to be built. The SSPS program would require over 1000 of this size booster to be built. This is a tall order to say the least. There is no real world comparison to launch one Saturn 5 sized rocket everyday for three years. However it is known what happens when one Saturn 5 rocket is launched or a Space Shuttle or Energia booster. The launch results in an approximately 150 mile wide disruption of the ozone layer for several days. If you launch one rocket this size each day it would result in a persistent disruption that would extend over several thousand miles. If as an example the ozone hole persisted for 15 days before ozone completely recovered you may end up with the following result. A rough calculation would be 150 miles multiplied by 15 equaling a 2250-mile long disruption area. If you do this for three years it may result in a wider disruption area. The affected area will vary based on the fuels and oxidizers used.

That turns warming

Thomas 6 – Investigative Journalist (William, 8-7, “Scientist Says Chemtrails, Shuttle Launches Endangering Earth,” Chem Trails, http://www.chemtrails911.com/docs/Space%20Shuttle%20Launch-Ozone%20Layer.htm)

Onboard a plant that is mostly seawater, the microscopic plants that underpin all life in the oceans are being starved as global warming halts the vital up welling of nutrients from the deep sea. Now, increased solar radiation streaming through the holes left rocket launches and airline flights are also frying the oceanic plankton that provide most of our spaceship’s oxygen, while scrubbing huge amounts of carbon out of the atmosphere. “Reducing the world's populations of phytoplankton would significantly impact the world's carbon cycle,” warns the Guardian, by leaving more carbon in the air. [Independent Jan 19/06; Guardian Apr 27/05]

Independently leads to extinction

Thomas 6 – Investigative Journalist (William, 8-7, “Scientist Says Chemtrails, Shuttle Launches Endangering Earth,” Chem Trails, http://www.chemtrails911.com/docs/Space%20Shuttle%20Launch-Ozone%20Layer.htm)

A Canadian atmospheric scientist warns that chemtrails, airliners and shuttle launches are weakening the stratosphere and destroying Earth’s ozone layer—threatening all life on Earth. It was one of those messages that phones are notorious for delivering—the kind of call that cancels the sleep and makes flu symptoms worse. But this time, the health of the entire planet was at stake. A concerned Canadian scientist named Neil Finley was on the line to inform me that high-altitude jet traffic, space launches and chemtrails are threatening to destroy not only Earth’s protective radiation shielding—but the stratosphere itself. take over the job of Moon exploration, so now's the time to use private enterprise know-how to tap into resources beyond those of the Earth. There have been some

Also turns case, space becomes unusable

Foust 9 – editor and publisher of The Space Review (Jeff, 6-15, “Space and (or versus) the environment,” The Space Review, <http://www.thespacereview.com/article/1395/1>)

In an op-ed in last week’s issue of Space News, Ross urged the space industry to address this issue head-on rather than avoid it in the hopes it might go away on its own. “It is clear that the risk of regulation that would cap or even tax space systems according to the amount of ozone depletion they cause is small, but it is real,” he wrote. He added: “Historically, technical activities with high visibility—such as space operations—often excite unpredictable public and regulatory attention. Combined with a lack of scientifically reliable environmental effects data, the risk of idiosyncratic and overly restrictive regulation is high.”

## Radar

Timeframe too long

Day 2007 (Dwayne A, as previously written about the history of space radar programs. See: [“Radar Love: The Tortured History of American Space Radar Programs”.](http://www.thespacereview.com/article/790/1) See also: “Tinker, Tailor, Radar, Spy: Early American Ferret and Radar Satellites,” Spaceflight, July, 2001, pp288-293. “Letter: solar power satellites and space radar,” Space Review July 23rd http://www.thespacereview.com/article/914/1)

The article also states that an initial test satellite could be launched immediately and an even more sophisticated one can be launched by 2010. Considering that the modern incarnation of Space Radar was initiated about a decade ago and has yet to result in a launch, this schedule seems optimistic. It also seems odd to refer to 2010 as “long term” for *any* space platform. That is only two and a half years away, much less than the typical development time for even a small satellite using existing technology, not technology that has not been developed yet, like a space-based Airborne Moving Target Indicator. The rule of thumb is: large satellites with new technology take at least seven to ten years to develop (the James Webb Space Telescope will take at least 15 or more), while small satellites with current technology take three to five years to develop NASA has stated that building even a small satellite in three years increases risk and four years is better. We apparently do not even have the less challenging Ground Moving Target Indicator technology yet, and it therefore seems prudent to walk before we skip.

#### Too many alt causes to the space radar – solar power is miniscule

Day 7 (Dwayne, July 23rd, 2007 American Space Historian and Policy Analyst, Investigation Board for the Columbia Accident, The Space Review, “Letter: Solar Power Satellites and Space Radar”)

Taylor Dinerman’s article about developing solar power satellites to power space radar satellites ([“Solar power satellites and space radar”](http://www.thespacereview.com/article/910/1), The Space Review, July 16, 2007) represents a solution in search of a problem. To date, the most detailed unclassified discussion of the technology and funding choices concerning Space Radar is [a January 2007 report from the Congressional Budget Office](http://www.cbo.gov/ftpdoc.cfm?index=7691&type=1) (CBO). That report discussed the power issue for Space Radar and although it acknowledged that better solar panels are required, it stated (page 14): “The total power required for the solar arrays in CBO’s notional satellite designs should not present a technical challenge. However, those arrays are smaller and lighter than arrays with similar power output on current generation satellites.” The CBO report identified several other technologies as being greater challenges for Space Radar. These include radar bandwidth, Ground Moving Target Indicator processing, and communications bandwidth. It would be a better approach to devote attention to these existing technology challenges than to try and create new ones by pursuing beamed solar power.

#### The cost is prohibitive – SPS is irrelevant

Day 7 (Dwayne, July 23rd, 2007 American Space Historian and Policy Analyst, Investigation Board for the Columbia Accident, The Space Review, “Letter: Solar Power Satellites and Space Radar”)

Finally, it is worth noting that Space Radar has experienced significant programmatic upheaval in past years not because of a “power problem,” but because the Air Force and the intelligence community have been at odds about what it should actually do and how different requirements drive the design and the cost. In addition, the Air Force has done a poor job of explaining why such a maddeningly expensive system is necessary. The CBO report is fascinating reading and recommended for anybody interested in the subject.

#### Difficulties with imagery distribution limit usefulness of radar

Taylor **Dinerman**, 3-28-**2005**, The Space Review, “Space Based Radar: the dilemma,” http://www.thespacereview.com/article/344/1

One source claims that intelligence analysts find it very difficult to deal with the data that is transmitted from these spacecraft. Either in digital or in picture form, the imagery is hard to interpret. It certainly is not as user friendly as the pictures from the optical or infrared cameras on the Keyhole satellites. Software that can enhance the final product has probably been developed but, even that may not be enough to provide the quality of information which high-level decision makers demand. The Lacrosse satellites certainly helped during the first “March to Baghdad” phase of the Iraq war. They negated the Baathist Army’s ability to hide in the great sandstorm, but since then, there has not been a public occasion when these very expensive satellites have proven themselves. In fact, because they are so large and because an adversary can know when they are overhead—and thus refrain from doing anything they don’t want the US to know about—they may give the US false sense that it knows what is and is not happening in areas of interest. The Space Based Radar (SBR) project is supposed to get around this problem by having a constellation of at least nine satellites in orbit. America’s foes will find it hard to do anything if they are under nearly constant surveillance. If the SBR spacecraft turn out to be smaller, harder to detect, and more maneuverable in orbit than the Lacrosse ones, they will be far more useful on both operational and tactical levels. If the program works as advertised, it will help cement US space information superiority for the 2015–2025 decade, a time when the US may find itself faced with new challenges in Asia and elsewhere. Such a capability will be just as important for crisis management as for actual warfighting. SBR is supposed to be equipped with a Ground Moving Target Indicator (GMTI) capability at least as good as that onboard today’s JSTARS radar surveillance aircraft. This is going to require a lot of onboard power. If SBR has the kind of huge solar arrays that are found on the Lacrosse, this will to some extent negate its ability to remain inconspicuous. It will be interesting to see how the contractors propose to deal with this problem. In the recent past, they have developed some extremely efficient photovoltaic panels, but these may not be mature enough for use on an operational system. As reported in Defense News, the Air Force hopes to launch a quarter-scale demonstration satellite in 2008 as a tool for helping to mature some of the needed technologies, such as antennas and transmission relays. This is a step in the right direction. However, it will do little to show how the power problem can be resolved. The best way to do that may be to place a similar, if not identical, power package on other spacecraft to be designed, built, and launched well before the final plans for the SBR are set in stone: say, sometime around 2010 or 2011. The Air Force should look for an opportunity to fly the SBR power package, either on another DoD spacecraft (perhaps a testbed for GPS 3), or on one that NASA or NOAA are planning to put into low Earth orbit. There is also the problem of imagery distribution. The new national intelligence structure is supposed to facilitate the distribution of useful information to those who need it at the tactical levels. If SBR is to be a success the data will have to flow in an easily comprehensible form to deployed forces, in near real-time. If the problems that some claim exists with the Lacrosse are still happening, **there is no reason to believe that SBR will be any better.** One hopes that these are the sorts of questions that Congress is asking behind closed doors.

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## CIR

### Overview

#### Reform controls the internal link to the economy – more jobs, innovation, and market demand.

Krudy 13. [Edward, correspondent, "Analysis: Immigration reform could boost U.S. economic growth" Reuters -- January 29 -- www.reuters.com/article/2013/01/29/us-usa-economyimmigration-idUSBRE90S06R20130129]

The sluggish U.S. economy could get a lift if President Barack Obama and a bipartisan group of senators succeed in what could be the biggest overhaul of the nation's immigration system since the 1980s.¶ Relaxed immigration rules could encourage entrepreneurship, increase demand for housing, raise tax revenues and help reduce the budget deficit, economists said.¶ By helping more immigrants enter the country legally and allowing many illegal immigrants to remain, the United States could help offset a slowing birth rate and put itself in a stronger demographic position than aging Europe, Japan and China.¶ "Numerous industries in the United States can't find the workers they need, right now even in a bad economy, to fill their orders and expand their production as the market demands," said Alex Nowrasteh, an immigration specialist at the libertarian Cato Institute.¶ The emerging consensus among economists is that immigration provides a net benefit. It increases demand and productivity, helps drive innovation and lowers prices, although there is little agreement on the size of the impact on economic growth.¶ President Barack Obama plans to launch his second-term push for a U.S. immigration overhaul during a visit to Nevada on Tuesday and will make it a high priority to win congressional approval of a reform package this year, the White House said.¶ The chances of major reforms gained momentum on Monday when a bipartisan group of senators agreed on a framework that could eventually give 11 million illegal immigrants a chance to become American citizens.¶ Their proposals would also include means to keep and attract workers with backgrounds in science, technology, engineering and mathematics. This would be aimed both at foreign students attending American universities where they are earning advanced degrees and high-tech workers abroad.¶ An estimated 40 percent of scientists in the United States are immigrants and studies show immigrants are twice as likely to start businesses, said Nowrasteh.¶ Boosting legal migration and legalizing existing workers could add $1.5 trillion to the U.S. economy over the next 10 years, estimates Raul Hinojosa-Ojeda, a specialist in immigration policy at the University of California, Los Angeles. That's an annual increase of 0.8 percentage points to the economic growth rate, currently stuck at about 2 percent.

#### Obama’s reform bill solves STEM workers.

Migration Expert 1-22-13. www.migrationexpert.com/visa/us\_immigration\_news/2013/Jan/0/679/obama\_calls\_for\_u.s.\_highly\_skilled\_immigration\_reform

The freshly reelected President Barack Obama in his inaugural address on January 21, 2013 called for U.S. immigration reform, particularly changes in legislation to facilitate immigrants with well education and high skills in Science, Technology, Engineering, and Mathematics, also known as STEM.¶ In his previous Presidential term, Obama advocated for high-skilled immigration reform. There were some bills raised by House Republicans as well as Democrats in the Senate and House on the STEM visa issues, but efforts to pass these changes were tangled up in large immigration debates.¶ In his inaugural address at the United States Capitol on Monday, the President continued to call for comprehensive immigration reform, highlighting that passing immigration legislation would be a policy priority during his second term. Coming immigration legislation is expected to include a measure that will boost the number of U.S. visas available to overseas graduates of U.S. universities with master's degrees and Ph.D in STEM fields.¶ According to Obama, overseas engineers and graduates with advanced degrees should be able to live and work in the U.S. rather than be forced to return to their home countries.¶ "Our journey is not complete until we find a better way to welcome the striving, hopeful immigrants who still see America as a land of opportunity; until bright young students and engineers are enlisted in our workforce rather than expelled from our country," said Obama.¶ The idea of bringing more highly skilled immigrants into the U.S. will be beneficial to the country's economy, according to Sen. Marco Rubio (R-Fla.). It is expected to help technology companies attract foreign-born applicants with high skills, especially tech giants such as Microsoft and Intel, amid arguments that these companies find it difficult to fill positions because most applicants don't have the requisite skills.

#### Turns the internal links for the Aff – any space ventures are impossible without immigratnts

Pollack, 5 (Susan W., Ms. Pollack graduated as a member of the Industrial College of the Armed Forces class of 2005. Some of her assignments prior to attending ICAF include contracts specialist at the Space and Naval Warfare Systems Command and deputy director of the acquisition support cadre at the Missile Defense Agency. She has a Bachelor of Arts degree in international rela­tions from Saint Joseph’s University and has completed the Advanced Program Management Course at the Defense Systems Management College., THE FUTURE OF OUR NATION’S SPACE INDUSTRY WORKFORCE, http://www.dtic.mil/cgi bin/GetTRDoc?AD=ADA449454&Location=U2&doc=GetTRDoc.pdf)

**“**The harsh fact is that the US need for the highest quality human capital in science, mathematics, and engineering is not being met . . . .In a knowledge-based future, only an America that remains at the cutting edge of science and technology will sustain its current world leadership.”82 Introduction: There is a crisis looming in America’s science, technology, engineering, and mathematics (STEM) workforce base that has serious implications for the future of America’s space industry, and our nation’s economic and national security. Today, trends indicate other nations are on the verge of passing the US in scientific excellence and technological innovation.83 This comes at a time when the US is more dependent on its military, civil, and commercial-supporting space assets than any other nation. To maintain American preeminence in space, our nation must reinvigorate and inspire a new generation of STEM talent, as well as increase investments in research and development (R&D) and infrastructures. Troubling Trends of STEM Education and the R&D Connection: The Council on Competitiveness found that innovation is the single most important factor in determining America’s success through the 21st century.84 While the report recommends increased funding in R&D, the US government has reduced funding in national R&D over the past ten years, including cuts in the President’s FY 2006 R&D budget. Studies link a strong correlation between reduced R&D funding to the decline in the number of graduates in the STEM subjects.85 Over the past decade, our nation has lost more than 600,000 scientific and technical aerospace jobs which have also adversely impacted the number of students earning degrees in STEM. Meanwhile, nearly 30 percent of the aerospace workforce will be eligible to retire in 2008. 86 The current US educational system will not provide enough students with the needed STEM skills to fill the critical positions being vacated by the retiring baby-boomers.87 Concurrently, other nations are building up their science and technology (S&T) infrastructures and capabilities. A disturbing trend is the low performance of American students in the math and science subjects. Math and science achievement scores of US students fall below international averages.88 The results of a recent international survey, conducted by the Program for International Student Assessment in the spring of 2003, indicate the learning gap between the US and its competitors in Europe and Asia is widening in basic math and science skills at the eighth through twelfth grade levels. This is alarming since technology and innovation in the space industry depends on high tech skills in the STEM subjects, yet this is precisely where the best US students are not excelling. Space science education gets taught within the Earth science curriculum in the grades K-9.

#### Turns Navy

Council on Competitiveness 9. [ “Mobilizing a World Class Energy Workforce” December -- <http://www.compete.org/images/uploads/File/PDF%20Files/CoC_-_Pillar_6_Handout_-_Mobilizing_a_World-Class_Energy_Workforce,_Dec09.pdf>]

America currently lacks an energy workforce of sufficient size and capabilities to meet the needs ¶ of a sustainable, secure energy system.1¶ With increasing demand come abundant job ¶ opportunities in both traditional and emerging energy industries. Unfortunately, U.S. workers are ¶ neither aware nor sufficiently prepared to take them. Moreover, with an aging population and the ¶ retirement of the baby boomers well under way, there is an inadequate pipeline of replacement ¶ workers, technicians and managers to succeed them. ¶ The United States stands to lose half of its electric power industry workforce within the next five to ten ¶ years due to retirement. America’s oil and gas workforce averages 50 years in age; half are likely to retire ¶ soon. Workers in these conventional energy sector jobs, from power plant operators to transmission line ¶ and pipeline workers, are retiring at a much faster rate than they are being replaced. The introduction of ¶ any new energy technologies will not compensate for this workforce shortage. For example, in the nuclear ¶ industry, the fact that there has been no new construction of a nuclear facility in the United States in over ¶ 30 years has led to the atrophy of skills, the loss of technicians, the dearth of American students in ¶ nuclear engineering and a national security risk for the primarily nuclear-powered U.S. Navy. 2 The development, installation and ¶ maintenance of new technologies ¶ require skills at all levels of educational ¶ training. Many of these jobs, such as ¶ building new power plants, cannot be ¶ exported and will remain in the United ¶ States. So-called “green collar” jobs ¶ could fill this gap over time and provide ¶ for significant domestic employment ¶ growth, but capitalizing on this ¶ opportunity will require government ¶ being proactive in developing programs ¶ to provide the necessary skills. ¶ Government should provide a 21st ¶ century education to match the 21st ¶ century job opportunities, requirements ¶ and needs. ¶ There is growing global competition for ¶ scientific and engineering talent today,¶ and the U.S. pipeline of students is ¶ slowing.3¶ The private sector, where the overwhelming majority of careers will be, knows best the current ¶ opportunities that are not being met. Executives cite the lack of scientific, engineering and skilled talent as¶ among the most serious challenges facing their businesses today.4¶ They know what skills will be required ¶ and can assist in developing the workforce of the future by working closely with educational institutions as ¶ well as within their own organizations.

#### Immigration key to clean tech – turns warming.

**Herman and Smith ‘10** (Richard T. Herman is the founder of Richard T. Herman & Associates, law firm in Cleveland, Ohio, also the co-founder of a chapter of TiE, a global network of entrepreneurs started in 1992 in Silicon Valley. He has appeared on National Public Radio, FOX News, and various affiliates of NBC, CBS, and ABC. He has also been quoted in such publications as USA Today,InformationWeek, PCWorld, ComputerWorld, CIO, Site Selection and National Lawyers Weekly, Robert L. Smith is a veteran journalist who covers international cultures and immigration issues for the Cleveland Plain Dealer, Ohio’s largest newspaper. Bob He has written extensively about immigration issues and has interviewed people at all points of the immigrant experience, from undocumented field workers to hugely successful entrepreneurs, Parts of this paper were excerpted from the book “Immigrant Inc.: Why Immigrant Entrepreneurs are Driving the New Economy (and how they will save the American worker)” (John Wiley & Sons, 2009) by Richard T. Herman & Robert L. Smith.  Available wherever books are sold, “Why Immigrants Can Drive the Green Economy,” Immigation Policy Center)

Raymond Spencer, an Australian-born entrepreneur based in Chicago, has a window on the future—and a gusto for investing after founding a high-technology consulting company that sold for more than $1 billion in 2006. “I have investments in maybe 10 start-ups, all of which fall within a broad umbrella of a ‘green’ theme,” he said. “And it’s interesting, the vast majority are either led by immigrants or have key technical people who are immigrants.” It should come as no surprise that immigrants will help **drive the green revolution**. America’s young scientists and engineers, especially the ones drawn to emerging industries like alternative energy, tend to speak with an accent. The 2000 Census found that immigrants, while accounting for 12 percent of the population, made up nearly **half of the all scientists and engineers** with doctorate degrees. Their importance will only grow. Nearly 70 percent of the men and women who entered the fields of science and engineering from 1995 to 2006 were immigrants. Yet, the connection between immigration and the development and commercialization of alternative energy technology is rarely discussed. Policymakers envision millions of new jobs as the nation pursues renewable energy sources, like wind and solar power, and builds a smart grid to tap it. But Dan Arvizu, **the leading expert** on solar power and the director of the National Renewable Energy Laboratory of the U.S. Department of Energy in Golden, Colorado, warns that **much of the clean-technology talent lies overseas**, in nations that began **pursuing alternative energy** sources **decades ago.** Expanding our **own clean-tech industry will require working closely with foreign nations and** foreign-born **scientists**, he said. Immigration restrictions are making collaboration difficult. His **lab’s** **efforts to work with a Chinese energy lab**, for example, **were** **stalled due to U.S. immigration barriers**. “We can’t get researchers over here,” Arvizu, the son of a once-undocumented immigrant from Mexico, said in an interview in March 2009, his voice tinged with dismay. “It makes no sense to me. We need a much more enlightened approach.” Dr. Zhao Gang, the Vice Director of the Renewable Energy and New Energy International Cooperation Planning Office of the Ministry of Science and Technology in China, says that America needs that enlightenment fast. “The Chinese government continues to impress upon the Obama administration that **immigration restrictions are creating major impediments to U.S.-China collaboration on clean energy** development,” he said during a recent speech in Cleveland. So what’s the problem? Some of it can be attributed to national security restrictions that impede international collaboration on clean energy. But Arvizu places greater weight on immigration barriers, suggesting that national secrecy is less important in the fast-paced world of green-tech development. “We are innovating so fast here, what we do today is often outdated tomorrow. Finding solutions to alternative energy is a complex, global problem that requires global teamwork,” he said. **We need** an **immigration** system **that prioritizes** the attraction and retention of **scarce, high-end talent** needed **to invent and commercialize alternative energy technology** and other emerging technologies. One idea we floated by Arvizu was a new immigrant “Energy Scientist Visa,” providing fast-track green cards for Ph.D.s with the most promising energy research, as reviewed by a panel of top U.S. scientists. Arvizu enthusiastically responded, “Wow, that’s a brilliant idea.” As the recent submission of the Startup Visa Act bill suggests, there’s really no shortage of good ideas of leveraging immigration to jumpstart the economy. The challenge is getting the American people to understand that high-skill immigration creates jobs, that the current system is broken, and that action is required now.

#### Immigration reform solves cybersecurity preparedness

McLarty 9 (Thomas F. III, President – McLarty Associates and Former White House Chief of Staff and Task Force Co-Chair, “U.S. Immigration Policy: Report of a CFR-Sponsored Independent Task Force”, 7-8, http://www.cfr.org/ publication/19759/us\_immigration\_policy.html)

We have seen, when you look at the table of the top 20 firms that are H1-B visa requestors, at least 15 of those are IT firms. And as we're seeing across industry, much of the hardware and software that's used in this country is not only manufactured now overseas, but it's developed overseas by scientists and engineers who were educated here in the United States.¶ We're seeing a lot more activity around **cyber-security**, certainly noteworthy attacks here very recently. It's becoming an increasingly dominant set of requirements across not only to the Department of Defense, but the Department of Homeland Security and the critical infrastructure that's held in private hands. Was there any discussion or any interest from DOD or DHS as you undertook this review on the security things about what can be done to try to generate a more effective group of IT experts here in the United States, many of which are coming to the U.S. institutions, academic institutions from overseas and often returning back? This potentially puts us at a competitive disadvantage going forward.¶ MCLARTY: Yes. And I think your question largely is the answer as well. I mean, clearly we have less talented students here studying -- or put another way, more talented students studying in other countries that are gifted, talented, really have a tremendous ability to develop these kind of technology and scientific advances, we're going to be put at an increasingly disadvantage. Where if they come here -- and I kind of like Dr. Land's approach of the green card being handed to them or carefully put in their billfold or purse as they graduate -- then, obviously, that's going to strengthen, I think, our system, our security needs.

#### That deters and solves the impact to cyberattacks

**Saydjari 8** (O. Sami, Cyber Defense Agency, LLC, “Structuring for Strategic Cyber Defense: A Cyber Manhattan Project Blueprint”, 2008 Annual Computer Security Applications Conference, http://www.acsac.org/2008/program /keynotes/saydjari.pdf)

As a step toward a security research plan that includes such capabilities, we should identify endstates— goals in terms of how we want our systems to ideally operate. This fresh perspective includes the overall strategic picture and connects clearly with strategic actions that significantly mitigate strategic vulnerabilities. If, for example, the nation has a capability to quickly recover its critical information infrastructure, then the end-state is that strategic attack damages are mitigated and critical services are restored quickly, possibly deterring adversaries from attempting a future attack. Desired End-States. The National Cyber Defense Initiative (NCDI) Opening Moves Workshop [4] identified important end-states, the outcome of a 10- year research effort to create critical capabilities. The following end-states appear in the workshop proceedings: --Continuity of Critical Information Infrastructure Operations. Create technology that would be the basis for a resilient US cyber infrastructure that would sustain critical functions in the face of attacks, including those that could be affected by determined adversaries. --Well-Defended Critical Assets. Make it economically prohibitive for an adversary to cause strategic damage to critical US infrastructures. Currently, adversaries can attack critical systems without investing substantial resources.

#### External from their no war args- causes extinction

**Fritz 9** (Jason, BS – St. Cloud, “Hacking Nuclear Command and Control”, Study Commissioned on Nuclear Non-Proliferation and Disarmament, July, www.icnnd.org/Documents/Jason\_Fritz\_Hacking\_NC2.doc)  
*Direct control of launch*   
The US uses the two-man rule to achieve a higher level of security in nuclear affairs. Under this rule two authorized personnel must be present and in agreement during critical stages of nuclear command and control. The President must jointly issue a launch order with the Secretary of Defense; Minuteman missile operators must agree that the launch order is valid; and on a submarine, both the commanding officer and executive officer must agree that the order to launch is valid. In the US, in order to execute a nuclear launch, an Emergency Action Message (EAM) is needed. This is a preformatted message that directs nuclear forces to execute a specific attack. The contents of an EAM change daily and consist of a complex code read by a human voice. Regular monitoring by shortwave listeners and videos posted to YouTube provide insight into how these work. These are issued from the NMCC, or in the event of destruction, from the designated hierarchy of command and control centres. Once a command centre has confirmed the EAM, using the two-man rule, the Permissive Action Link (PAL) codes are entered to arm the weapons and the message is sent out. These messages are sent in digital format via the secure Automatic Digital Network and then relayed to aircraft via single-sideband radio transmitters of the High Frequency Global Communications System, and, at least in the past, sent to nuclear capable submarines via Very Low Frequency (Greenemeier 2008, Hardisty 1985). The technical details of VLF submarine communication methods can be found online, including PC-based VLF reception. Some reports have noted a Pentagon review, which showed a potential “electronic back door into the US Navy’s system for broadcasting nuclear launch orders to Trident submarines” (Peterson 2004). The investigation showed that cyber terrorists could potentially infiltrate this network and insert false orders for launch. The investigation led to “elaborate new instructions for validating launch orders” (Blair 2003). Adding further to the concern of cyber terrorists seizing control over submarine launched nuclear missiles; The Royal Navy announced in 2008 that it would be installing a Microsoft Windows operating system on its nuclear submarines (Page 2008). The choice of operating system, apparently based on Windows XP, is not as alarming as the advertising of such a system is. This may attract hackers and narrow the necessary reconnaissance to learning its details and potential exploits. It is unlikely that the operating system would play a direct role in the signal to launch, although this is far from certain. Knowledge of the operating system may lead to the insertion of malicious code, which could be used to gain accelerating privileges, tracking, valuable information, and deception that could subsequently be used to initiate a launch. Remember from Chapter 2 that the UK’s nuclear submarines have the authority to launch if they believe the central command has been destroyed. Attempts by cyber terrorists to create the illusion of a decapitating strike could also be used to engage fail-deadly systems. Open source knowledge is scarce as to whether Russia continues to operate such a system. However evidence suggests that they have in the past. Perimetr, also known as Dead Hand, was an automated system set to launch a mass scale nuclear attack in the event of a decapitation strike against Soviet leadership and military. In a crisis, military officials would send a coded message to the bunkers, switching on the dead hand. If nearby ground-level sensors detected a nuclear attack on Moscow, and if a break was detected in communications links with top military commanders, the system would send low-frequency signals over underground antennas to special rockets. Flying high over missile fields and other military sites, these rockets in turn would broadcast attack orders to missiles, bombers and, via radio relays, submarines at sea. Contrary to some Western beliefs, Dr. Blair says, many of Russia's nuclear-armed missiles in underground silos and on mobile launchers can be fired automatically. (Broad 1993) Assuming such a system is still active, cyber terrorists would need to create a crisis situation in order to activate Perimetr, and then fool it into believing a decapitating strike had taken place. While this is not an easy task, the information age makes it easier. Cyber reconnaissance could help locate the machine and learn its inner workings. This could be done by targeting the computers high of level official’s—anyone who has reportedly worked on such a project, or individuals involved in military operations at underground facilities, such as those reported to be located at Yamantau and Kosvinksy mountains in the central southern Urals (Rosenbaum 2007, Blair 2008) Indirect Control of Launch Cyber terrorists could cause incorrect information to be transmitted, received, or displayed at nuclear command and control centres, or shut down these centres’ computer networks completely. In 1995, a Norwegian scientific sounding rocket was mistaken by Russian early warning systems as a nuclear missile launched from a US submarine. A radar operator used Krokus to notify a general on duty who decided to alert the highest levels. Kavkaz was implemented, all three chegets activated, and the countdown for a nuclear decision began. It took eight minutes before the missile was properly identified—a considerable amount of time considering the speed with which a nuclear response must be decided upon (Aftergood 2000). Creating a false signal in these early warning systems would be relatively easy using computer network operations. The real difficulty would be gaining access to these systems as they are most likely on a closed network. However, if they are transmitting wirelessly, that may provide an entry point, and information gained through the internet may reveal the details, such as passwords and software, for gaining entrance to the closed network. If access was obtained, a false alarm could be followed by something like a DDoS attack, so the operators believe an attack may be imminent, yet they can no longer verify it. This could add pressure to the decision making process, and if coordinated precisely, could appear as a first round EMP burst. Terrorist groups could also attempt to launch a non-nuclear missile, such as the one used by Norway, in an attempt to fool the system. The number of states who possess such technology is far greater than the number of states who possess nuclear weapons. Obtaining them would be considerably easier, especially when enhancing operations through computer network operations. Combining traditional terrorist methods with cyber techniques opens opportunities neither could accomplish on their own. For example, radar stations might be more vulnerable to a computer attack, while satellites are more vulnerable to jamming from a laser beam, thus together they deny dual phenomenology. Mapping communications networks through cyber reconnaissance may expose weaknesses, and automated scanning devices created by more experienced hackers can be readily found on the internet. Intercepting or spoofing communications is a highly complex science. These systems are designed to protect against the world’s most powerful and well funded militaries. Yet, there are recurring gaffes, and the very nature of asymmetric warfare is to bypass complexities by finding simple loopholes. For example, commercially available software for voice-morphing could be used to capture voice commands within the command and control structure, cut these sound bytes into phonemes, and splice it back together in order to issue false voice commands (Andersen 2001, Chapter 16). Spoofing could also be used to escalate a volatile situation in the hopes of starting a nuclear war. “ \*\*[they cut off the paragraph]\*\* “In June 1998, a group of international hackers calling themselves Milw0rm hacked the web site of India’s Bhabha Atomic Research Center (BARC) and put up a spoofed web page showing a mushroom cloud and the text “If a nuclear war does start, you will be the first to scream” (Denning 1999). Hacker web-page defacements like these are often derided by critics of cyber terrorism as simply being a nuisance which causes no significant harm. However, web-page defacements are becoming more common, and they point towards alarming possibilities in subversion. During the 2007 cyber attacks against Estonia, a counterfeit letter of apology from Prime Minister Andrus Ansip was planted on his political party website (Grant 2007). This took place amid the confusion of mass DDoS attacks, real world protests, and accusations between governments.

#### Solves US-India relations --- builds trade relationships

LA Times 12, 11/9/2012 (Other countries eagerly await U.S. immigration reform, p. http://latimesblogs.latimes.com/world\_now/2012/11/us-immigration-reform-eagerly-awaited-by-source-countries.html)

"**C**omprehensive **i**mmigration **r**eform will see expansion of skilled labor visas," predicted B. Lindsay Lowell, director of policy studies for the Institute for the Study of International Migration at Georgetown University. A former research chief for the congressionally appointed Commission on Immigration Reform, Lowell said he expects to see at least a fivefold increase in the number of highly skilled labor visas that would provide "a significant shot in the arm for India and China."¶ There is widespread consensus among economists and academics that skilled migration fosters new trade and business relationships between countries and enhances links to the global economy, Lowell said.¶ "Countries like India and China weigh the opportunities of business abroad from their expats with the possibility of brain drain, and I think they still see the immigration opportunity as a bigger plus than not," he said.

#### Relations are k2 solve every major impact, including US primacy in Asia, China rise, and Asian instability

Armitage et al 10. Richard is the President of Armitage International and former Deputy Secretary of State. R. Nicholas Burns is a Professor in the Practice of Diplomacy and International Politics, Kennedy School of Government, Harvard University. Richard Fontaine is the President of the Center for New American Security. “Natural Allies: A Blueprint for the Future of U.S.-India Relations,” October, Center for New American Security, http://belfercenter.ksg.harvard.edu/files/Burns%20-%20Natural%20Allies.pdf

A strengthened U.S.-India strategic partnership is thus imperative in this new era. The transformation of U.S. ties with New Delhi over the past 10 years, led by Presidents Clinton and Bush, stands as one of the most significant triumphs of recent American foreign policy. It has also been a bipartisan success. In the last several years alone, the United States and India have completed a landmark civil nuclear cooperation agreement, enhanced military ties, expanded defense trade, increased bilateral trade and investment and deepened their global political cooperation.¶ Many prominent Indians and Americans, however, now fear this rapid expansion of ties has stalled. Past projects remain incomplete, few new ideas have been embraced by both sides, and the forward momentum that characterized recent cooperation has subsided. The Obama administration has taken significant steps to break through this inertia, including with its Strategic Dialogue this spring and President Obama’s planned state visit to India in November 2010. Yet there remains a sense among observers in both countries that this critical relationship is falling short of its promise.¶ We believe it is critical to rejuvenate the U.S.- India partnership and put U.S. relations with India on a more solid foundation. The relationship requires a bold leap forward. The United States should establish a vision for what it seeks in the relationship and give concrete meaning to the phrase “strategic partnership.” A nonpartisan working group of experts met at the Center for a New American Security (CNAS) over the past eight months to review the main pillars of the U.S.-India relationship and we articulate here a specific agenda of action.¶ In order to chart a more ambitious U.S.-India strategic partnership, we believe that the United States should commit, publicly and explicitly, to work with India in support of its permanent membership in an enlarged U.N. Security Council; seek a broad expansion of bilateral trade and investment, beginning with a Bilateral Investment Treaty; greatly expand the security relationship and boost defense trade; support Indian membership in key export control organizations, a step toward integrating India into global nonproliferation efforts; and liberalize U.S. export controls, including the removal of Indian Space Research Organization (ISRO) subsidiaries from the U.S. Entity List.¶ These and the other actions outlined in this report will require India to make a number of commitments and policy changes, including taking rapid action to fully implement the Civil Nuclear Agreement; raising its caps on foreign investment; reducing barriers to defense and other forms of trade; enhancing its rules for protecting patents and other intellectual property; further harmonizing its export control lists with multilateral regimes; and seeking closer cooperation with the United States and like-minded partners in international organizations, including the United Nations. ¶ The U.S. relationship with India should be rooted in shared interests and values and should not be simply transactional or limited to occasional collaboration. India’s rise to global power is, we believe, in America’s strategic interest. As a result, the United States should not only seek a closer relationship with India, but actively assist its further emergence as a great power.¶ U.S. interests in a closer relationship with India include:¶ • Ensuring a stable Asian and global balance of power.¶ • Strengthening an open global trad[e]ing system.¶ • Protecting and preserving access to the global commons (air, sea, space, and cyber realms).¶ • Countering terrorism and violent extremism.¶ • Ensuring access to secure global energy resources.¶ • Bolstering the international nonproliferation regime.¶ • Promoting democracy and human rights.¶ • Fostering greater stability, security and economic prosperity in South Asia, including in Pakistan, Afghanistan, Nepal, Bangladesh and Sri Lanka.¶ A strong U.S.-India strategic partnership will prove indispensable to the region’s continued peace and prosperity. Both India and the United States have a vital interest in maintaining a stable balance of power in Asia. Neither seeks containment of China, but the likelihood of a peaceful Chinese rise increases if it ascends in a region where the great democratic powers are also strong. Growing U.S.-India strategic ties will ensure that Asia will not have a vacuum of power and will make it easier for both Washington and New Delhi to have productive relations with Beijing. In addition, a strengthened relationship with India, a natural democratic partner, will signal that the United States remains committed to a strong and enduring presence in Asia.¶ The need for closer U.S.-India cooperation goes well beyond regional concerns. In light of its rise, India will play an increasingly vital role in addressing virtually **all major global challenges**. Now is the time to transform a series of bilateral achievements into a lasting regional and global partnership.

#### Global nuclear war

Landay 00. (Jonathon, National Security and Intelligence Correspondent with 15 Years of Experience for Knight Ridder, “Top administration officials warn stakes for US are high in Asian conflicts,” March 11th, Lexis)

Few if any experts think China and Taiwan, North Korea and South Korea, or India and Pakistan are spoiling to fight. But even a minor miscalculation by any of them could destabilize Asia, jolt the global economy and even start a nuclear war. India, Pakistan and China all have nuclear weapons, and North Korea may have a few, too.Asia lacks the kinds of organizations, negotiations and diplomatic relationships that helped keep an uneasy peace for five decades in Cold War Europe. "Nowhere else on Earth are the stakes as high and relationships so fragile**,"** said Bates Gill, director of northeast Asian policy studies at the Brookings Institution, a Washington think tank. "We see the convergence of great power interest overlaid with lingering confrontations with no institutionalized security mechanism in place. There are elements for potential disaster**."**

#### high skilled workers key to defense industrial base.

Guay 7. [Terrence, Clinical Assistant Professor of International Business at The Smeal College of Business, The Pennsylvania State University, where he teaches international business and the business environment of Europe, “GLOBALIZATION AND ITS IMPLICATIONS FOR THE DEFENSE INDUSTRIAL BASE” Strategic Studies Institute -- http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB756.pdf]

Globalization has impacted labor, too. **Highly skilled workers are sought by** technology and other high-value-added firms, especially those in **the defense sector**. In many cases, globalization has made these workers more mobile than ever before, and in those cases where mobility is restricted, companies have come to them. There is considerable debate over the extent to which the United States is experiencing a skills gap. According to the National Science Foundation, **more than 40 percent of scientific and engineering talent will leave the U.S. workforce in the next decade** or so.91 More then 50 percent of U.S. computer scientists and nearly a quarter of its science and engineering workforce are from abroad. Entrepreneurs from China and India accounted for almost one-third of high-tech start-ups in Silicon Valley in the 1990s. Currently more than half the graduate students in engineering in the United States are foreign born.92 Half of China’s college graduate earn degrees in engineering, compared with only 5 percent in the United States. South Korea, with one-sixth the population of the United States, graduates about the same number of engineers as U.S. universities do.93 Results from the 2003 Trends in International Mathematics and Science Study showed U.S. fourthgraders were outperformed by only three countries (Taiwan, Japan, and Singapore) in both math and science, but that eighth-graders were outperformed in both fields by seven countries (Chinese Taipei, Japan, Singapore, Hong Kong, South Korea, Estonia, and Hungary).94 U.S. eight-graders ranked 15th (out of 45 countries) in math and tied for ninth in science. **There seems to be no shortage of reports that the United States is falling behind in its ability to educate and train its own citizens for the high-tech workplace** of the 21st century. Part of the explanation behind the “falling behind” scenario is that developing countries have devoted large amounts of resources in recent years to bring up the average education level of their citizens, so U.S. students have not so much been doing more poorly than previous generations of U.S. students, but students in other countries are catching up quickly to U.S. levels. But the consequence of this shift is that workers in **other countries will soon become as skilled** and trained **as U.S. workers**, thereby **reducing labor advantages that the United States has long held**. On the other hand, other studies suggest that the skills shortage may be less severe. For example, in proportion to its population, the United States conferred 55 percent more computer science, information technology (IT), and engineering degrees than China, and almost four times more than India.95 A survey by the consultancy McKinsey revealed that the pool of Chinese engineers suitable to work for multinationals is about 160,000, less than one-third of the graduates.96 Similarly, while three million students graduate from Indian universities each year, only about 25 percent of engineering graduates and 10-15 percent of general college graduates are considered suitable for direct employment in the offshore IT and business process outsourcing industries, according to a study by India’s National Association of Software and Service Companies. The consequence of such shortages is that highly skilled workers, particularly in engineering and the sciences, are in high demand everywhere—the United States, Europe, China, and India. The competition among companies to hire and retain such workers is likely to be fierce in the short to medium term. Regardless of where the United States stands in its ability to generate a highly skilled workforce, it is clear that such talent is in high demand throughout the world. Other developed countries, such as Australia and Canada, have become aggressive acquirers of talented immigrants and students. Developing countries, including Taiwan, Korea, India, and China are trying to retain talented workers and lure expatriates back home by increasing investments in science and offering better pay and opportunities.97 However, in the United States and most European countries, there has been a backlash against immigration in recent years. Indeed, the “immigration debate” almost certainly has been the most discussed domestic policy issue in the United States in 2006. According to the National Science Board, onefourth of all college-educated workers in science and engineering occupations in 2003 were foreign born.98 This figure rises to 40 percent for doctorate degree holders in these occupations, and even higher in some fields like computer science (57 percent), electrical engineering (57 percent), and mechanical engineering (52 percent). Despite these high numbers, **it often is difficult for U.S. firms to hire foreign workers in engineering and the sciences**, given the procedures implemented since the 9/11 attacks. Hiring foreign workers, including those attending U.S. universities, is important particularly to technology-oriented firms, since numerous studies show serious math and science deficiencies among native-born U.S. students. Craig Barrett, chairman of Intel, argues that it is increasingly difficult to get foreign students into our universities because of security concerns and improved education options in their own countries.99 Those **foreign students** who are allowed into the United States and complete their studies **are returning home in ever greater numbers because of** visa issues or better employment opportunities. The H1-B visa program, which provides a process for granting admission or permanent residency to foreign engineers and scientists, currently is capped at 65,000 people per year and is oversubscribed. Intel’s Barrett, among other technology leaders including Microsoft’s Bill Gates, have criticized the restrictions on foreign workers, including **a cap** of 140,000 **on the number of green cards that allow permanent employment**, and long processing delays meaning waits up to 7 years.100 The defense industry is insulated partly from some of these problems. Many high-tech companies, if faced with a lack of engineering and science workers in the United States, can simply go to those locations where such workers are more abundant. But given the national security concerns associated with the defense sector, it is more difficult (although not impossible) to move research and development (R&D) abroad. In any case, **if there is a limited talent pool within U.S. borders, defense industry firms** at the least **will be forced to** allocate greater resources to **attract and retain such workers**. Yet statistics show that where and how R&D funds are spent can be a critical source of economic competitiveness. According to the National Science Foundation (NSF), federally funded R&D totaled $127.6 billion in 2006, of which $74.8 billion, or 58.6 percent, was allocated for national defense (including DoD’s military activities, Department of Energy’s [DoE] atomic energy defense programs, and defense-related R&D of Department of Homeland Security [DHS]).101 In its most recent projections, the NSF expected total R&D in the United States to amount to $312.1 billion in 2004, with $199.0 billion coming from industry, $93.4 billion from the federal government, $11.1 billion from colleges and universities, and $8.6 billion from other nonprofit institutions.102 R&D expenditures as a percentage of gross domestic product (GDP) have ranged between 2.5-2.7 percent annually over the past decade. As a percentage of GDP over the period 2000- 03, the United States ranks sixth (behind Israel, Sweden, Finland, Japan, and Iceland) and slightly ahead of South Korea, Switzerland, Denmark, and Germany. The increasing economic influence of Asia is evident in R&D spending. According to a United Nations Education, Scientific, and Cultural Organization (UNESCO) 2005 report, Asia’s share of global research spending rose from 27.9 percent in 1997 to 31.5 percent in 2002, the most recent year for which reliable figures were available.103 Over the same period, Europe’s share fell from 28.8 percent to 27.3 percent, and North America’s from 38.2 percent to 37.0 percent. Finally, according to the European Defense Agency, participating member countries (all 25 EU members except Denmark) are expected to spend €2.3 billion on defense research and technology in 2006—about 1.3 percent of total defense expenditure.104 While the international comparisons are favorable toward the United States, one important element is where the R&D funds are being spent. Increasingly, U.S. dollars are being spent overseas in centers in China and India, according to an annual report by the Battelle Memorial Institute and R&D Magazine.105 While U.S. companies can deduct expenses for R&D to reduce their U.S. tax obligations, actual research and development can take place anywhere in the world. Thus, companies can deduct expenses for R&D undertaken at overseas offices and laboratories. IBM opened an “innovation center” in China during 2004 that will double the size of its existing IBM China Research Lab, and about one-third of Microsoft’s 700-person research division are located outside the United States. Data on the offshoring of R&D is anecdotal at this point, since data are not available on how much R&D U.S. companies are conducting abroad. For companies in the defense industry, this trend is a potential problem since they will be under competitive pressure to utilize foreign research knowledge but will face significant restrictions by DoD. To the extent that national economic competitiveness in general, and **a thriving defense industry** in particular, **is built upon a well-educated and skilled workforce, governments** and companies will **need to** devise policies that **ensure they have** among **the best pool of talent in the world**. While the international mobility of workers has yet to catch up to the mobility of companies, globalization gradually is leveling this playing field.

#### That deters war with China and Russia and solves terrorism

Watts 8**.** [Barry D, Senior Fellow @ The Center for Strategic and Budgetary Assessments “The US Defense Industrial Base, Past, Present and Future,” CBA, http://www.csbaonline.org/4Publications/PubLibrary/R.20081015.\_The\_US\_Defense\_In/R.20081015.\_The\_US\_Defense\_In.pdf]

Since the 1950s, **the US defense industrial base has been a source** of long-term strategic advantage for the United States, just as it was during World War II. American defense companies provided the bombers and missiles on which **nuclear deterrence** rested and armed the US military with world-class weapons, including low-observable aircraft, wide-area surveillance and targeting sensors, and reliable guided munitions cheap enough to be employed in large numbers. They also contributed to the development of modern digital computers, successfully orbited the first reconnaissance satellites, put a man on the moon in less than a decade, and played a pivotal role in developing the worldwide web. Critics have long emphasized President Eisenhower’s warning in his farewell television address that the nation needed to “guard against the acquisition of undue influence, whether sought or unsought, by the military-industrial complex.” Usually forgotten or ignored has been an earlier, equally important, passage in Eisenhower’s January 1961 speech: **A vital element in keeping the peace is our military establishment. Our arms must be mighty, ready for instant action, so that no potential aggressor may be tempted to risk his own destruction**. Eisenhower’s warning about undue influence, rather than the need to maintain American military strength, tends to dominate contemporary discussions of the US defense industrial base. While the percentage of US gross domestic product going to national defense remains low compared to the 1950s and 1960s, there is a growing list of defense programs that have experienced problems with cost, schedule, and, in a few cases, weapon performance. In fairness, the federal government, including the Department of Defense and Congress, is at least as much to blame for many of these programmatic difficulties as US defense firms. Nevertheless, those critical of the defense industry tend to concentrate on these acquisition shortcomings. The main focus of this report is on a larger question. How prepared is the US defense industrial base to meet the needs of the US military Services in coming decades? The Cold War challenge of Soviet power has largely ebbed, but **new challenges have emerged. There is the immediate threat of the violence stemming from** Salafi- Takfiri and Khomeinist **terrorist groups** and their state sponsors, that have consumed so much American blood and treasure in Iraq; the longer-term challenge of authoritarian capitalist regimes epitomized by **the rise of China and a resurgent Russia**; and, not least, the worsening problem of proliferation, particularly of nuclear weapons. In the face of these more complex and varied challenges, it would surely be premature to begin dismantling the US defense industry. From a competitive perspective, therefore, the vital question about the defense industrial base is whether it will be as much a source of long-term advantage in the decades ahead as it has been since the 1950s.

### AT: Won’t Pass

#### Will pass – bipart momentum

Xinhua 3-26-13. ["Obama pushes Congress to put forward immigration bill next month" -- news.xinhuanet.com/english/world/2013-03/26/c\_124501794.htm]

Bipartisan groups in both the House and Senate are moving closer to finalize their separate immigration reform proposals.¶ The Senate group, dubbed "Gang of Eight", expect themselves to finalize their detailed package by the end of this month and bring it up when legislators return from a two-week Easter break.¶ The effort by the Senate group of eight has received more attention over the weeks. The group, including top-ranking Democrats and leading Republicans on immigration reform like veteran Senator John McCain and Hispanic Republican star Marco Rubio, announced their framework of principles to guide the immigration reform at the end of January. One day later, U.S. President Barack Obama officially unveiled his own proposals on immigration reform.¶ Both plans to overhaul the immigration system include giving an earned citizenship to illegal immigrants as well as awarding green cards to foreign young high-end workforce.¶ The bipartisan House group has yet to share details of their proposals, but their work has gained support from leaders in both parties, particularly when the Republicans sent an encouraging signal.¶ Last week, U.S. House Speaker John Boehner, who had never endorsed the negotiation previously, voiced support for the group' s plan, calling it "a pretty responsible solution."

#### It’ll pass by July.

Sheets 3-22. [Connor Adams, reporter, "Immigration Reform Bill Suddenly Close: What Made Republicans Change Their Minds?" International Business Times -- www.ibtimes.com/immigration-reform-bill-suddenly-close-what-made-republicans-change-their-minds-1145763#]

But immigration reform is turning out to be one area of policy where action is happening, and experts on the issue say that a landmark law will likely be on the books by the end of this summer.¶ ¶ “People want to get this done well before the August recess, and people are talking about before July 4,” David Koelsch, an attorney and law professor who runs the Immigration Law Clinic at the University of Detroit Mercy, said. “A signing ceremony on the Fourth of July looks really good, there’s nice optics around that.”¶ It’s almost shocking at this point to see members of Congress from both sides of the aisle coming together to support a groundbreaking piece of important legislation.¶ But that’s what’s happening as even Tea Party-backed Republicans like Senator Rand Paul of Kentucky are coming into the fold and endorsing a path to citizenship and other pillars of what is shaping up to be the framework for comprehensive immigration reform.¶ There are still some differences between even the most centrist members of Congress that must be ironed out, but in most cases they are disagreements of scale and specifics, and a consensus about what to include in the bill is taking shape.

#### Obama push key.

Foley 3-25. [Elise, reporter, "Obama On Immigration Reform: 'We've Got To Finish The Job'" Huffington Post -- www.huffingtonpost.com/2013/03/25/obama-immigration-reform\_n\_2949063.html]

President Barack Obama said Monday that he wants to see movement in the Senate on immigration reform next month and passage of a bill “as soon as possible,” continuing his pressure on Congress to move quickly to fix the immigration system.¶ “We are making progress, but we’ve got to finish the job,” Obama said at a naturalization ceremony in the White House. “We’ve all proposed solutions,” he added. “We’ve got a lot of white papers and studies. We’ve just got, at this point, to work up the political courage to do what’s required to be done.”¶ Obama, joined by Homeland Security Secretary Janet Napolitano and Citizenship and Immigration Services Director Alejandro Mayorkas, told the 28 new citizens that witnessing such ceremonies is “one of the best things” about being president. He spoke first about the importance of immigrants and what they bring to the country.¶ “Immigration makes us stronger,” he said. “It keeps us vibrant, it keeps us hungry, it keeps us prosperous. It is part of what makes this such a dynamic country.”¶ Then he turned to immigration reform talks, which are moving forward in the Senate but have not yet resulted in the introduction of a bill. The so-called “gang of eight” in the Senate is working to finish its immigration bill before Congress returns from recess in the second week of April. As of Friday, the bipartisan group of senators still needed to finalize several issues, including how to deal with wages that could be affected by the future flow of guestworkers.¶ Obama said he expects them to meet that timeline and put forward a bill in April. He didn’t put an exact time frame on when he wants to see passage of legislation, although he urged swift movement. During a Jan. 29 speech in Las Vegas, Obama said he would put forward his own bill if Congress failed to act, but for now he is waiting for the efforts in both chambers to move forward.¶ The president quickly laid out his requirements for immigration reform: enhanced border security, a pathway to citizenship for undocumented immigrants, and “modernizing” the legal immigration system. Although many Republicans are still wary of a path to citizenship, a majority of Americans — 63 percent — support one, according to a Public Religion Research Institute poll released last week.¶ Obama, as he has before, said this is the time to finally pass immigration reform.

#### Top of the docket – Obama has the GOP on board.

AFP 3-27. [Agence France-Presse, "Obama expects Senate immigration bill next month" -- www.rawstory.com/rs/2013/03/27/obama-expects-senate-immigration-bill-next-month/]

US President Barack Obama said Wednesday that he expected the Senate would start debating comprehensive immigration reform next month, putting an optimistic spin on the legislation’s prospects.¶ In an interview with the Univision Spanish-language television station, Obama praised a bipartisan group of Democratic and Republican senators working to come up with a joint bill on the issue.¶ “The good news is, it seems like they are actually making progress. My expectation is that we will actually see a bill on the floor of the Senate next month,” he said.¶ In a separate interview with Telemundo, Obama said Congress could pass legislation by this summer.¶ Immigration reform is a centerpiece of Obama’s second-term agenda and would represent a substantial enhancement of his political legacy if he can get it passed.¶ Long-stalled immigration reform efforts gained momentum after the November elections, in which Obama won another term with overwhelming support from Hispanic voters for whom the issue is a motivating one.¶ Obama has courted Republican leaders on the issue and a group of senators from both parties is seeking to wrap up an agreement on a proposed law that would bring 11 million undocumented migrants out of the shadows.¶ The senators say their plan would offer a pathway to eventual citizenship, taking up to 13 years or more.¶ The plan would also include steps to better secure US borders and the introduction of an employee verification program.

### AT: Budget

#### Key framing issue for all thumpers – not card one on any of these thumpers preceding immigration – you have to win that to be relevant or not trade-off

#### Stop gap means no fight – immigration top of the docket.

Lawder 3-23. [David, journalist, "Senate narrowly passes first budget in four years" Reuters -- www.reuters.com/article/2013/03/24/us-usa-fiscal-budget-idUSBRE92M02D20130324]

Passage of a stop-gap government funding measure on Thursday lowered the temperature in the budget debate by eliminating the threat of a government shutdown next week.¶ "We're going to get a breather here. Congress will let things cool off a bit and there'll be other issues that come to the forefront in the spring," said Greg Valliere, chief political strategist at Potomac Research Group, a firm that advises institutional investors on Washington politics.¶ These issues include legislation on gun control, immigration reform and initial work on simplifying the tax code, which is particularly important to Republicans.

### AT: Guns

#### Obama not touching gun control.

Mendte 3/26. [Larry, “Mendte: President Obama And Gun Control” KPLR News -- http://kplr11.com/2013/03/26/mendte-president-obama-and-gun-control/]

NEW YORK, NY. (KPLR) – The nation is divided over gun control laws and congress is split over it too. Larry Mendte asks if President Obama has given up on his fight. Remember this ending to the state of the union last month. The president in front of the world demanding a vote for stricter gun control. It was powerful, it was emotional. And as it turns out it was all just theater as the presidential advocate quickly became a realist. By all accounts that was the last real push the white house made for a ban on assault rifles, bullet heavy magazines and background checks. The reality is the legislation never had a chance and the president bailed on it as soon it was obvious that there wasn`t the will or the votes in congress.

### AT: Perez

#### GOP won’t fight Perez confirmation.

Turner 3-25. [Douglas, News Washington Correspondent, "GOP unlikely to fight Perez's confirmation" Buffalo News -- www.buffalonews.com/Article/20130325/OPINION/130329681]

GOP unlikely to fight Perez's confirmation In nominating Thomas Perez for secretary of labor, President Obama is making his most polarizing, his most confrontational Cabinet choice ever. And there's little Republicans can do about it except grouse.¶ A zealous liberal star raised in Amherst, who worked his way through Canisius High School, Brown University and Harvard, Perez symbolizes every reason the GOP lost the election rolled into one man.¶ Obama's wedge campaign themes, like the Republicans' alleged war on women and purported attempts to discourage blacks and Hispanics from voting, found echoes in the vigorous prosecutions brought by Perez, as assistant attorney general for civil rights.¶ So far, the only obstacle the GOP minority has put in Perez's path has been the “hold” placed against his Senate confirmation by Sen. David Vitter, R-La., who turned up six years ago as a john in a prostitution scandal involving the “D.C. Madam.” While the Senate has received Perez's nomination, a date for his confirmation hearing is pending.¶ Republicans from safe states will ask Perez about an act that signaled the Obama administration's attitude toward black political activism – the suppression of a federal case against the New Black Panthers. Career Justice Department lawyers charged the Panthers, considered by some to be a hate group, with intimidating Philadelphia voters in the 2008 campaign. Under Obama's new attorney general, Eric Holder, and Perez, the case was summarily dropped.¶ Conservatives have charged that Perez prevaricated in testimony in a U.S. Civil Rights Commission probe of the episode. But a White House official told this column, “Perez's statement to the commission was accurate…and Perez had not intentionally misled [the investigators].” A Justice Department Inspector General's report did cite “a troubling history of polarization in the Voting Rights” section, which Perez supervised.¶ A semaphore was sent to Hispanic voters in 2010 when Perez opposed Arizona's tough law permitting police to question people randomly about their immigration status. Arizona passed the law because Republicans believed Obama told federal officers to relax sanctions against illegals, who were almost all Hispanics.¶ Perez said, “You can't have 50 states making immigration law and have a coherent system.” Obama last July followed that up by suspending the deportation of thousands of immigration law violators. Obama won 71 percent of the Latino vote four months later.¶ The White House did not respond to questions about Perez and the Mary Susan Pine case. Justice charged Pine, a Florida pro-life activist, with violating the Freedom of Access to Clinic Entrances. FACE is designed to prevent militants from blocking the entrances to abortion clinics. Perez bragged his section opened 20 civil probes and filed eight complaints under the FACE Act compared to just one over the previous eight years.¶ Justice charged Pine stepped in front of a car and passed a pro-life pamphlet through an open window. The federal judge in West Palm Beach last year threw out the case, wondered aloud why the government prosecuted her and ordered her paid $120,000 for her defense costs. The judge questioned whether the prosecution “was the product of a concerted effort between the government and the [abortion provider] which began well before the incident at issue, to quell Ms. Pine's activities.”¶ The Congressional Hispanic Caucus, the labor movement, and La Raza, the nation's leading Latino advocacy group, have enthusiastically backed Perez's confirmation. With Republicans squirming to win back some of the Hispanic vote, look for the GOP to mount a structured, even muted opposition.

### AT: XO Solves

#### Obama won’t do major immigration changes through XOs

Krikorian 12. [Mark, executive director of the Center for Immigration Studies, "The president's unconstitutional DREAM amnesty gets rolling" Center for Immigration Studies -- cis.org/OpedsandArticles/DREAM-Amnesty-Begins-Krikorian-National-Review]

The president knows what he’s doing is unconstitutional. We don’t have to read his mind to know this — he’s said it repeatedly. In July of last year, he told the National Council of La Raza, “The idea of doing things on my own is very tempting, I promise you, not just on immigration reform. But that’s not how our system works. That’s not how our democracy functions.” In September he told some journalists: I just have to continue to say this notion that somehow I can just change the laws unilaterally is just not true. We are doing everything we can administratively. But the fact of the matter is there are laws on the books that I have to enforce. And I think there’s been a great disservice done to the cause of getting the DREAM Act passed and getting comprehensive immigration passed by perpetrating the notion that somehow, by myself, I can go and do these things. It’s just not true.

#### XO can’t solve the impact

Ben Winograd, Immigration Impact, 8/15/12, Busting Myths About Deferred Action , immigrationimpact.com/2012/08/15/busting-myths-about-deferred-action/

Myth: Deferred action is “amnesty.” As we explained on Monday, deferred action is not “amnesty.” Recipients of deferred action are neither placed on a path to citizenship nor given any formal immigration status. Even though the government has temporarily pledged not to deport them, and they are considered to be lawfully present, they have no legal “right” to remain in the country. They cannot sponsor family members to come to the United States; may not travel abroad without receiving advance permission from the government; and do not receive a “green card.” Myth: Deferred action provides “immunity” from deportation. Many commentators have said that recipients of deferred action will receive “immunity” from deportation, implying that the government may not revoke the protection. In truth, deferred action is a purely discretionary form of relief that can be rescinded at any time by this or any future administration. Myth: Deferred action will allow undocumented immigrants to get jobs that could have gone to unemployed natives. Most of the immigrants who are currently or potentially eligible for deferred action are still in school (K-12) and will not be competing for jobs against anyone. In fact, only around half a million are not currently in school, which amounts to between 0.3% and 0.5% of the total U.S. workforce. Moreover, the DACA initiative will enable more undocumented youth to go to college and then to join the labor force as skilled workers. And economists have found that highly educated immigrant workers are not in job competition with the vast majority of native-born workers.

### AT: Military Shields

#### Plan has to go through Congress

**TAYLOR 2011** [Hunter - staff writer, "The part of Congress where money bills originate", http://www.ehow.com/facts\_5200647\_part-congress-money-bills-originate.html] ttate

Voters often complain that either not enough money or too much money is spent on a national level. [Congress](http://www.ehow.com/facts_5200647_part-congress-money-bills-originate.html) controls how the money is spent. Appropriation bills, also known as "money bills," originate from the House of Representatives. An appropriation is an act of a legislature authorizing money to be paid from the Treasury for a specified use.

#### Military spending causes backlash – energy supercharges the link.

Gholz 12. [Eugene, PhD, Associate Professor of Public Affairs, University of Texas at Austin, senior advisor to the deputy assistant secretary of defense for manufacturing and industrial base policy, “The dynamics of military innovation and the prospects for defense-led energy innovation” in Energy Innovation at the Department of Defense: Assessing the Opportunities, White Paper – March -- http://bipartisanpolicy.org/sites/default/files/Energy%20Innovation%20at%20DoD.pdf ]

The old saw that the Army would rather plan ¶ than fight may be an exaggeration, but it holds more than a grain ¶ of truth. More than most organizations, the U.S. military is well ¶ prepared to deal with the complexity that energy innovation ¶ will inject into its routines, and even if the logistics system seems ¶ Byzantine and inefficient, the organizational culture does not ¶ have antibodies against this aspect of energy innovation.¶ On the other hand, investing in base infrastructure has tended ¶ to be a harder task for the military, because with a few exceptions ¶ the quality of facilities at bases is tangential to the organizations’ ¶ critical tasks. People may rib the Air Force for the priority attached ¶ to making sure that bases have a decent golf course, but the ¶ bases do not really suffer (or benefit) from overinvestment in ¶ what is perceived as “nice to have” luxuries. It is local politics and ¶ their impact on congressional votes that maintains a robust ¶ number of military bases, and the politics feed on the money ¶ that soldiers and their families spend in the community, not ¶ on paying the additional up-front cost of installing efficient or ¶ experimental energy technologies.¶ 96

The military installations ¶ that attract the most innovative spending are the installations ¶ where the spending contributes directly to American forces’ ¶ combat edge—bases like the National Training Center that ¶ allow for highly realistic combat exercises. Advocates of energy ¶ innovation are unlikely to meld their pitch smoothly with that ¶ high-end organizational mission. If, instead, they pitch the energy ¶ innovations as “efficiency-enhancing,” they will face the fate ¶ of every other efficiency-enhancing investment that military ¶ installations could make: energy innovation will be treated as a ¶ low priority somewhere in the mix of desiderata in the budget.

#### Military energy debates are divisive and cause larger energy debates—-zero risk of a link turn even if the plan saves money

Snider 12

(E%26E reporter, 1/16, "Pentagon still can’t define ’energy security,’ much less achieve it," http://www.eenews.net/public/Greenwire/2012/01/16/1-http://www.eenews.net/public/Greenwire/2012/01/16/1)

But this is not a good time to be requesting money at the Pentagon.¶ Military budget planners have spent the past year carving nearly a half-trillion dollars in budget cuts, while top brass have worn out the thesaurus' list of synonyms for "decimate" as they decry the damage that additional looming cuts would do to their forces and weapons.¶ At the same time, no one has yet made the business case for investing in energy security. Current rules require that renewable energy and efficiency projects prove they will bring savings over the long run, even if they carry an added security benefit. In fact, because the Pentagon operates on a five-year budget cycle, projects that pencil out to great investments over the long term often get turned down because they register to the budget as a near-term loss.¶ Microgrids are still in the pilot phase and the military has not yet decided what the business model will be for them. Because the technology would help energy managers use power more efficiently on a day-to-day basis, for instance by bringing unnecessary loads offline during peak demand times, some officials say microgrids may be able to create enough savings to pay for themselves. Not all of industry is convinced, though, and a group of business executives will be suggesting financial models to Robyn's office in a report this spring.¶ Ultimately, many say the military is going to have to decide what "secure energy" is worth to it if it wants to fix its vulnerabilities.¶ "Until someone establishes the value of energy security, I only have the business case to rely on, because right now the value of energy security is apparently zero," said Dan Nolan, a retired Army colonel who writes a defense energy blog.¶ The Navy has made a rough attempt to do this for its Surface Warfare Center in Dahlgren, Va. Like many military installations, the base sits at the end of the power line. Last year it lost electricity 11 times.¶ Capt. Kenneth Branch, the commander for Naval Facilities Engineering Command Washington, estimates that the two days the center was without power during Hurricane Irene this summer cost it $60,000.¶ "That's just lost industrial productivity," he said, noting that the numbers helped him justify infrastructure investments. "I also spend a lot of money on my labor trying to figure what were the problems and get back up and online."¶ A fuller accounting could also count the costs associated with backup generators, including labor required for maintenance, the price of buying and transporting fuel, and the risk of failure.¶ Pentagon officials say they are beginning to think through some of these calculations, but nobody is sure yet whether extra money would follow.¶ "If the military is really serious about this, are we going to have to spend some dedicated funds on energy security?" the Army's Kidd said. "I don't know the answer to that, but I think those are the questions we need to start to ask."¶ Looking to Congress¶ Ultimately, the answers to those questions will come from Capitol Hill, where lawmakers have been bitterly divided on energy policy.¶ Indeed, a military energy issue that has become a symbol of the larger energy policy debate was one of the final points to be resolved in last month's congressional budget deal. Republicans mounted an effort to exempt the military from a 2007 ban on purchasing fuels like liquefied coal that have a higher greenhouse gas content than traditional petroleum, but in the end they acquiesced, leaving the ban intact.

#### GOP frames energy shifts as forcing additional spending cuts in other areas

Davenport 12. [Coral, energy reporter, "Obama Faces Tough Challenge in Virginia Over Energy" National Journal -- July 13 -- http://www.nationaljournal.com/politics/obama-faces-tough-challenge-in-virginia-over-energy-20120713]

But even here, Republicans – including the Romney campaign – have criticized Navy contracts to purchase biofuels that are more expensive than traditional fuels as the Pentagon prepares for spending cuts.¶ Speaking on Thursday to reporters on behalf of the Romney campaign, Former Navy Secretary John Lehman said, “If the president wants the taxpayer to subsidize alternative fuels, it shouldn’t be done on the Navy’s back.”

#### Media spin ensures military energy innovation incentives drawn into hyper partisan climate debate – regardless of political support

Nisbet 10. [Matthew, Prof Comm @ American U, “Eye on 2012: A Post-Partisan Plan to Engage the Public on Climate Change” November 3 --¶ http://bigthink.com/age-of-engagement/eye-on-2012-a-post-partisan-plan-to-engage-the-public-on-climate-change?page=1]

A number of promising climate policy proposals have emerged over the past several months. One example is proposed jointly by the Brookings Institution, the American Enterprise Institute, and the Breakthrough Institute. The detailed plan calls for "increasing federal innovation investment from roughly $4 today to $25 billion annually, and using military procurement, new, disciplined deployment incentives, and public-private hubs to achieve both incremental improvements and breakthroughs in clean energy technologies." The authors point to America's long-history of bi-partisan support for innovation as evidence of the plan's political promise. Another example comes from political scientist Roger Pielke Jr. in his book The Climate Fix. Pielke suggests that a $5 tax be placed on carbon, a level so low that consumers do not feel the effects, but substantive enough to pay for a budget-neutral large scale investment in clean energy development.¶ The challenge for these ideas and others is to gain substantive media and policy attention amidst the pending hyper-partisan noise. For advocates and journalists, the perceived "war" between the left and the right on climate change will be a distracting yet very easy story to tell, one that is likely to be self-serving by rallying the base, selling copy, and avoiding complexity.

### Link Wall

#### Plan’s unpopular – zero Congressional support for SPS – it’s too expensive and tied to unpopular military space programs – that’s Day

#### No political will to pay for the plan

**Boswell 4** [David, was a speaker at the 1991 International Space Development Conference, <http://www.thespacereview.com/article/214/1> (Andrew Giovanny Alvarado)

Another barrier is that launching anything into space costs a lot of money. A substantial investment would be needed to get a solar power satellite into orbit; then the launch costs would make the electricity that was produced more expensive than other alternatives. In the long term, launch costs will need to come down before generating solar power in space makes economic sense. But is the expense of launching enough to explain why so little progress has been made?There were over 60 launches in 2003, so last year there was enough money spent to put something into orbit about every week on average. Funding was found to launch science satellites to study gravity waves and to explore other planets. There are also dozens of GPS satellites in orbit that help people find out where they are on the ground. Is there enough money available for these purposes, but not enough to launch even one solar power satellite that would help the world develop a new source of energy?In the 2004 budget the Department of Energy has over $260 million allocated for fusion research. Obviously the government has some interest in funding renewable energy research and they realize that private companies would not be able to fund the development of a sustainable fusion industry on their own. From this perspective, the barrier holding back solar power satellites is not purely financial, but rather the problem is that there is not enough political will to make the money available for further development.There is [a very interesting discussion on the economics of large space projects](http://www.transhumanist.com/volume4/space.htm) that makes the point that “the fundamental problem in opening any contemporary frontier, whether geographic or technological, is not lack of imagination or will, but lack of capital to finance initial construction which makes the subsequent and typically more profitable economic development possible. Solving this fundamental problem involves using one or more forms of direct or indirect government intervention in the capital market.”

#### Congress perceives power issues

**Dinerman 7** [Taylor, well-known and respected space writer regarding military and civilian space activities, part-time consultant for the US Defense Department., wrote a science textbook, "Solar power satellites and space radar," 7-16, <http://www.thespacereview.com/article/910/1>]

One of the great showstoppers for the Space Radar (SR) program, formerly known as Space Based Radar, is power. It takes a lot of energy to transmit radar beams powerful enough to track a moving target on Earth from space. What is called the Ground Moving Target Indicator (GMTI) is what makes SR so much better than other space radar systems, such as the recently-launched German SAR-Lupe or the NRO’s Lacrosse system. While many of the details are classified, the power problem seems to be the main reason that the US Congress, on a bipartisan basis, has been extremely reluctant to fund this program.

#### Fossil fuel lobbies will backlash

**Glaser, 08** - aerospace engineer, vice president at Arthur D. Little, consulting on consulting projects in aerospace, solar energy, and materials science (Peter, Ad Astra, Interview, “An energy pioneer looks back”, Spring, <http://www.nss.org/adastra/AdAstra-SBSP-2008.pdf>) //DH

Ad Astra: In light of the growing demand for dwindling hydrocarbons and the dangerous increases of greenhouse gases, do you think that the world is now primed to seriously consider space-based power systems?

Glaser: No, because people can still get gas for their cars too easily. Those in the top levels of science and government know what is coming, but the average man on the street will not care unless it impacts his wallet. That is the biggest problem. The basic approach is unchanged from my initial concept. We could have built this system 30 years ago. The technology just keeps getting better. The design and implementation is a small problem compared to the much larger obstacle of getting people to understand the potential benefits. Building such a system could provide cheap and limitless power for the entire planet, yet instead of trying to find a way to make it work, most people shrug it off as being too expensive or too difficult. Of course existing energy providers will fight, too. It only makes sense that coal and oil lobbies will continue to find plenty of reasons for our representatives in Congress to reject limitless energy from the sun.

#### This internal outweighs

**Preble, 06 -** President of the Space Solar Power Institute (Darel, “Introduction to the motion to the National Space Society Board of Directors,” 12/15, <http://www.sspi.gatech.edu/sunsatcorpfaq.pdf>)

Changing our nation and our world’s baseload energy generation sources to introduce SSP is a **massive battle**. The current oil, coal, and gas energy providers, nuclear as well, are not eager to see their baseload investments face competition from SSP, which has zero fuel costs and zero emissions and a billion years of steady supply projected. This is why SSP has been unfunded since it was invented in 1968. Carter pushed through the SSP reference study in 1979-1980, but space transportation costs were far too high, and they were forced to plan to use astronauts to bolt it together. This is too dangerous for astronauts outside the protection of the Van Allen Radiation Belts. (The Space Station is inside the Van Allen Belts) People are also too expensive to use for SSP construction. Telerobotics, the real way to assemble SSP, did not exist in 1979. Now it is used in heart surgery every day worldwide and for a thousand other uses. (The fossil fuel industry has battled environmentalists every inch during our struggle to understand climate change effects. That is their right. Perhaps half the studies are wrong. But half are right.) Most crucially, space transportation costs have stayed too high because there is no market large enough to support a Reusable Launch Vehicle fleet. SSP IS just such a massive market. Robert Zubrin mentions this battle and perspective in “Entering Space”, page 51. He quit space transportation and decided to work on Mars, which has no possibility of commercialization this century. This is detailed in the Space Transportation chapter on the SSPW website also. You can’t make an omelet without breaking a few eggs.

#### Congress opposes – no launch industry

**Arnold, 06** - systems architect and engineer, recently focusing on energy systems and controls, at Silverthorn Engineering (Roger, comments posted to article: “NASA - Wrong mission for the right stuff,” http://www.energypulse.net/centers/article/article\_display.cfm?a\_id=1285)

Having worked at Boeing in the '70s and hung out with the guys who did Boeing's study on SPS, I'm much more receptive to the idea than the average Joe is likely to be. I know it's technically feasible, at some level. But even I have trouble swallowing the idea of a crash program to build solar power satellites as a solution to CO2 emissions. In today's political climate, it has a 0% chance of getting enacted. A massive nuclear energy program would be a lot more credible, and easier to sell.

The only way solar power satellites are likely to get built is if a viable commercial space industry manages to establish itself first. Launch traffic needs to be ramped up, costs brought down, and operations in space made sufficiently commonplace that the leap to SPS is not so much of a leap. That could happen, and I have some ideas about how, but it won't be easy. It certainly can't happen as long as NASA is blocking the road.

#### We have empirics on our side

**Nansen, 95** - led the Boeing team of engineers in the [Satellite Power System Concept Development and Evaluation Program](http://www.nss.org/settlement/ssp/library/doe.htm) for the Department of Energy and NASA, andPresident Solar Space Industries (Ralph, Sun Power,

<http://www.nss.org/settlement/ssp/sunpower/sunpower02.html>)

The time finally arrived when the DOE/NASA contracts were completed and we all assembled in Lincoln, Nebraska, in April of 1980 to report on the results of the numerous studies. Represented were over 200 different organizations: the major aerospace companies and their subcontractor teams, the Environmental Protection Agency and their research scientists from universities and research institutes, concerned citizen groups representing organizations supporting the concept and groups opposing its development, research scientists from technology development companies, and economists. All had been included in the $19.5 million evaluation studies. The conclusion of the conference was that there was no technical reason why the satellite system should not be developed and that the potential benefits were very promising.

There should have been a great festive atmosphere of triumph, for the results of the studies radiated success and optimism. Instead it was like a funeral. The ax of doom hung over the proceedings. There would be no follow-on work. The contract reports were to be submitted to the Department of Energy, and at their direction, there would to be no release of the reports to the public. A new energy system was a serious threat to ongoing funding for nuclear research. The administration and the DOE wanted us out of the picture. I had been very naive to believe we could develop a new energy system that would displace coal and oil and eliminate the need for nuclear power, just because it was the best system and it would be good for the country. The opposition lined up against us was overwhelming. They were too powerful. The forces of greed had won. America and the world would suffer the consequences for years to come.

#### Lobbyists empirically block the plan

John **Gartner** 06.22.**04** Wired Magazine, “NASA Spaces on Energy Solution”

[www.wired.com/science/discoveries/news/2004/06/63913](http://www.wired.com/science/discoveries/news/2004/06/63913)

Neville Marzwell, advanced concepts innovation technology manager at NASA, spent five years researching methods of improving a satellite's ability to collect solar energy before his program was cut. Marzwell claims that politics played a part in the decision to kill the space solar power program. The United States "doesn't have the political will to fund the research" because of pressure from fossil-fuel lobbyists, Marzwell said. "We could have become the Saudi Arabia of the world electricity market," Marzwell said. But because the coal and oil industries don't want threats to their profits, they applied political pressure, causing the program to be scrapped, according to Marzwell.

### AT: No Spillover

#### This is a Neg card – says that budget and sequester don’t poison the well on THOSE SPECIFIC issues – proves thumpers don’t take out the DA

#### Spillover is real – Obama is intimately involved in dealmaking

**Schier 10** – Congdon professor of political science at Carleton College and author of the award-winning "Panorama of a Presidency: How George W. Bush Acquired and Spent His Political Capital" (Steven E, 2/11. “Obama can learn from predecessors,” Politico.com, Lexis.)

Unlike Bush, Obama pushes a vast agenda, reflecting his campaign pledge to do a lot at once, and unlike Bush, Obama's tactical approach to Congress is remarkably nondirective. The signal example of this is the health care bill, in which he spent months giving mere suggestions about its content as congressional sausage-making proceeded. The public distrusts Congress and rejects the tawdry deal making that accompanies its work. Presidents do well to "hover above" such matters. The best way to do that is by laying down clear substantive preferences and avoiding a public reputation as just one of the several deal makers. Obama failed to do this in his first year, and his popularity suffered as a result.

#### Second – Obama’s style guarantees spillover – party lines don’t stay strict

**Reardon 9** **–** Professor, USC Marshall School of Business (Kathleen, 3/24. “What to Do Before the Hope Bubble Bursts.” http://www.huffingtonpost.com/kathleen-reardon/what-to-do-before-the-hop\_b\_178737.html)

Barack Obama, despite the massive problems he faces, is a popular president. Some of it may be the honeymoon of the first one hundred days, though these weeks have hardly deserved the term. It may be his infectious smile and determination and his tendency to come to us rather than to stay within the beltway hunkering down as many Republicans want him to do.

A good part of it may be that hope still lingers. On 60 Minutes Obama himself mentioned "flickers" of it appearing lately in the economy, and that was before the Dow soared 500 points. But it may also be a phenomenon in persuasion, which is that when people publicly commit to an action, they find it uncomfortably dissonant to change their minds. In short, many people who supported Barack Obama did so in very visible ways, often going against their political party, and they simply don't want to now believe or admit that they might have been wrong.

### AT: Infrastructure

#### Immigration reform on top of agenda – will pass – no thumpers.

Berger 3-4. [Judson, journalist, "Recurring budget crises could put squeeze on Obama's second-term priorities" Fox News -- www.foxnews.com/politics/2013/03/04/recurring-budget-crises-could-put-squeeze-on-obama-second-term-priorities/]

Rep. Luis Gutierrez, D-Ill., a vocal advocate for immigration reform, voiced confidence Monday that the administration and Congress could handle the busy agenda. ¶ "The spirit of bipartisan cooperation that is keeping the immigration issue moving forward has not been poisoned by the sequester and budget stalemate, so far," he said in a statement. "The two sets of issues seem to exist in parallel universes where I can disagree with my Republican colleagues strenuously on budget matters, but still work with them effectively to eventually reach an immigration compromise. ... I remain extremely optimistic that immigration reform is going to happen this year." ¶ Immigration reform efforts are still marching along despite the budget drama. Obama met last week on the issue with Sens. John McCain, R-Ariz., and Lindsey Graham, R-S.C., who both are part of a bipartisan group crafting legislation. ¶ However, work on gun control before the Senate Judiciary Committee last week was postponed.

#### This is about agency controversy backlashing vs Obama – not controversy in Congress – zero spillover

#### Doesn’t say top of agenda

### AT: Taxes

#### There’s not even a bill.

Bernstein 3-27. [Jonathan, political scientist and WaPo columnist, "Is tax reform the new “repeal and replace”?" Washington Post -- www.washingtonpost.com/blogs/post-partisan/wp/2013/03/27/is-tax-reform-the-new-repeal-and-replace/]

We’re now one month out from the House Republican announcement that they were reserving H.R. 1 for comprehensive tax reform. So far, H.R. 1 is still empty, waiting for action.¶ That may last for a long time. My bet? There will be no scoreable, revenue-neutral comprehensive tax reform.¶ The most likely scenario is that there won’t even be a bill. Just as the mythical “repeal and replace” did in the previous Congress, tax reform gives Republicans an illusion of a positive agenda. Granted, and to their credit, this time around it’s a little more serious; Dave Camp’s House Ways and Means Committee has this year continued a series of hearings on tax reform.

### AT: Capital Not Key/Winners Win

(Read Yellow)

#### Doesn’t say PC irrelevant just says it’s complex-evaluate our specific arguments

Hirsch ’13 – National Journal chief correspondent, citing various political scientists

[Michael, former Newsweek senior correspondent, "There’s No Such Thing as Political Capital," National Journal, 2-9-13, www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207, accessed 2-8-13, mss]

The point is not that “political capital” is a meaningless term. Often it is a synonym for “mandate” or “momentum” in the aftermath of a decisive election—and just about every politician ever elected has tried to claim more of a mandate than he actually has. Certainly, Obama can say that because he was elected and Romney wasn’t, he has a better claim on the country’s mood and direction. Many pundits still defend political capital as a useful metaphor at least. “It’s an unquantifiable but meaningful concept,” says Norman Ornstein of the American Enterprise Institute. “You can’t really look at a president and say he’s got 37 ounces of political capital. But the fact is, it’s a concept that matters, if you have popularity and some momentum on your side.” The real problem is that the idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get it wrong. “Presidents usually over-estimate it,” says George Edwards, a presidential scholar at Texas A&M University. “The best kind of political capital—some sense of an electoral mandate to do something—is very rare. It almost never happens. In 1964, maybe. And to some degree in 1980.” For that reason, political capital is a concept that misleads far more than it enlightens. It is distortionary. It conveys the idea that we know more than we really do about the ever-elusive concept of political power, and it discounts the way unforeseen events can suddenly change everything. Instead, it suggests, erroneously, that a political figure has a concrete amount of political capital to invest, just as someone might have real investment capital—that a particular leader can bank his gains, and the size of his account determines what he can do at any given moment in history. Naturally, any president has practical and electoral limits**.** Does he have a majority in both chambers of Congress and a cohesive coalition behind him? Obama has neither at present. And unless a surge in the economy—at the moment, still stuck—or some other great victory gives him more momentum, it is inevitable that the closer Obama gets to the 2014 election, the less he will be able to get done. Going into the midterms, Republicans will increasingly avoid any concessions that make him (and the Democrats) stronger.

#### Depends on picking the right issues --- links prove the plan is wrong

Hirsch ’13 – National Journal chief correspondent, citing various political scientists

[Michael, former Newsweek senior correspondent, "There’s No Such Thing as Political Capital," National Journal, 2-9-13, www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207, accessed 2-8-13, mss]

And then there are the presidents who get the politics, and the issues, wrong. It was the last president before Obama who was just starting a second term, George W. Bush, who really revived the claim of political capital, which he was very fond of wielding. Then Bush promptly demonstrated that he didn’t fully understand the concept either. At his first news conference after his 2004 victory, a confident-sounding Bush declared, “I earned capital in the campaign, political capital, and now I intend to spend it. That’s my style.” The 43rd president threw all of his political capital at an overriding passion: the partial privatization of Social Security. He mounted a full-bore public-relations campaign that included town-hall meetings across the country. Bush failed utterly, of course. But the problem was not that he didn’t have enough political capital. Yes, he may have overestimated his standing. Bush’s margin over John Kerry was thin—helped along by a bumbling Kerry campaign that was almost the mirror image of Romney’s gaffe-filled failure this time—but that was not the real mistake. The problem was that whatever credibility or stature Bush thought he had earned as a newly reelected president did nothing to make Social Security privatization a better idea in most people’s eyes. Voters didn’t trust the plan, and four years later, at the end of Bush’s term, the stock-market collapse bore out the public’s skepticism. Privatization just didn’t have any momentum behind it, no matter who was pushing it or how much capital Bush spent to sell it. The mistake that Bush made with Social Security, says John Sides, an associate professor of political science at George Washington University and a well-followed political blogger, “was that just because he won an election, he thought he had a green light. But there was no sense of any kind of public urgency on Social Security reform. It’s like he went into the garage where various Republican policy ideas were hanging up and picked one. I don’t think Obama’s going to make that mistake.… Bush decided he wanted to push a rock up a hill. He didn’t understand how steep the hill was. I think Obama has more momentum on his side because of the Republican Party’s concerns about the Latino vote and the shooting at Newtown.” Obama may also get his way on the debt ceiling, not because of his reelection, Sides says, “but because Republicans are beginning to doubt whether taking a hard line on fiscal policy is a good idea,” as the party suffers in the polls.

#### Capital’s key to comprehensive legislation – breaking it up kills the bill

**Helderman and Nakamura 1/25**, Rosalind S. Helderman covers Congress and politics for the Washington Post, staff writer for The Washington Post “Senators nearing agreement on broad immigration reform proposal,” 1/25, <http://www.washingtonpost.com/politics/senators-nearing-agreement-on-broad-immigration-reform-proposal/2013/01/25/950fb78a-6642-11e2-9e1b-07db1d2ccd5b_story.html>

But obstacles abound. For instance, Rubio has said he thinks immigrants who came to the country illegally should be able to earn a work permit but should be required to seek citizenship through existing avenues after those who have come here legally. Many Democrats and immigration advocates fear Rubio’s approach would result in wait-times stretching for decades, creating a class of permanent legal residents for whom the benefits of citizenship appear unattainable. They have pushed to create new pathways to citizenship specifically available to those who achieve legal residency as part of a reform effort. It is not yet clear whether the Senate group will endorse a mechanism allowing such people to eventually become citizens — something Obama is expected to champion. Schumer said it would be “relatively detailed” but would not “get down into the weeds.” A source close to Rubio said he joined the group in December at the request of other members only after they agreed their effort would line up with his own principles for reform. As a possible 2016 presidential contender widely trusted on the right, Rubio could be key to moving the bipartisan effort. Rubio and other Republicans have said they would prefer to split up a comprehensive immigration proposal into smaller bills that would be voted on separately, but the White House will pursue comprehensive legislation that seeks to reform the process in a single bill. “I doubt if there will be a macro, comprehensive bill,” said Sen. Johnny Isakson (R-Ga.), who supported the 2007 effort. “Anytime a bill’s more than 500 pages, people start getting suspicious. If it’s 2,000 pages, they go berserk.” But Schumer said Friday that a single package will be key for passage. “**We’ll not get it done in pieces**,” he said. “**E**very time you do a piece, everyone says what about my piece, and you get more people opposing it.” Eliseo Medina, secretary treasurer of the Service Employees International Union, which spent millions recruiting Hispanic voters last year, said immigration advocates expect Obama to be out front on the issue. “The president needs to lead and then the Republicans have a choice,” Medina said. “The best way to share the credit is for them to step up and engage and act together with the president.”

#### Obama toeing the line with Congress now – capital key to keep pressure on without politicizing the issue – plan causes Obama to overreach derailing reform.

Shear 2-16. [Michael, reporter, "The White House Continues Working on Immigration Legislation of Its Own" New York Times -- www.nytimes.com/2013/02/17/us/politics/white-house-moves-ahead-on-its-own-immigration-bill.html?\_r=0]

Mr. Obama’s administration has been working on immigration legislation for years. But the issue shot to the top of the president’s second-term agenda after his re-election in November, when Hispanic voters backed him in large numbers. White House officials are betting that Republicans will be eager to embrace immigration changes as a way of repairing their image with an important voting bloc.¶ But getting legislation passed remains tricky, especially in the Republican-controlled House, and Mr. Obama has made it clear he will take a back seat to lawmakers if it will help. Negotiations are taking place among a bipartisan group of senators, a separate group in the House, and labor leaders and the U.S. Chamber of Commerce.¶ Representative Paul D. Ryan, Republican of Wisconsin, praised Mr. Obama’s tone on the issue last week, saying the president “actually doesn’t want to politicize this, which is conducive to getting something done.”¶ On Wednesday, the White House said Mr. Obama met with Democratic senators at the White House to get a status report on the pace of progress on the legislation. In a statement after the meeting, White House officials said the president reiterated his pledge to become more involved if necessary.¶ The statement said Mr. Obama told them “he expects the process to continue to move forward and stands ready to introduce his own legislation if Congress fails to act.”¶ It remains unclear how long the president is willing to wait. In interviews with Spanish-language television stations after his speech last month, Mr. Obama suggested that he wanted to see real progress by March, when lawmakers had said they hoped to have reached an agreement.¶ “If they can get a piece of legislation debated on the floor by March I think that’s a good timeline. And I think that can be accomplished,” he said on Univision last month. “I’m not going to lay down a particular date because I want to give them a little bit of room to debate. If it slips a week, that’s one thing. If it starts slipping three months, that’s a problem.”

#### Bargaining chips are independently limited and key

Bernstein 11. [8/20 - Jonathan Bernstein is a political scientist who writes about American politics, especially the presidency, Congress, parties and elections, http://www.salon.com/news/politics/war\_room/2011/08/20/bernstein\_presidential\_power/index.html]

Moreover, the positions of the president and most everyone else are, to look at it one way, sort of opposites. The president has potential influence over an astonishing number of things -- not only every single policy of the U.S. government, but policy by state and local governments, foreign governments, and actions of private citizens and groups. Most other political actors have influence over a very narrow range of stuff. What that means is that while the president's overall influence is certainly far greater than that of a House subcommittee chair or a midlevel civil servant in some agency, his influence over any specific policy may well not be greater than that of such a no-name nobody. A lot of good presidential skills have to do with figuring out how to leverage that overall influence into victories in specific battles, and if we look at presidential history, there are lots of records of successes and failures. In other words, it's hard. It involves difficult choices -- not (primarily) policy choices, but choices in which policies to fight for and which not to, and when and where and how to use the various bargaining chips that are available.

#### Can’t build capital fast enough – even if it’s about presidential self-perception.

Gura 12. [David, reporter, "A balance sheet of political capital" Marketplace -- November 7 -- www.marketplace.org/topics/elections/campaign-trail/balance-sheet-political-capital]

Political capital can be very valuable. It gives a politician a sense that the public has his back, that he can flex a little more muscle when he is negotiating with Congress.¶ But as President Bush learned, political capital isn’t something a two-term president gets automatically.¶ “It’s not a given, just by winning,” say Brian Brox, a professor of political science at Tulane University. “It’s how you win.”¶ A politician can get political capital if he wins by a lot -- think Ronald Reagan, in 1984, or Bill Clinton, in 1996.¶ President Bush’s margin of victory wasn’t huge, and let’s just say he may have ... mis-underestimated how little political capital he had. His push to revamp Social Security went nowhere.¶ According to Alan Abramowitz, who teaches political science at Emory University, “Political capital is in the eye of the beholder.”¶ That makes it a really risky asset. A politician can spend more than he actually has.

#### Energy policies overload the agenda.

Mann 9 Senior Fellow in Governance Studies at Brookings

(Thomas E., “From Campaigning to Governing: Politics and Policymaking in the New Obama Administration”)

New presidents who get off to a good start almost always have agenda control. They focus on a limited number of issues, keep extraneous matters from stepping on their priorities, and avoid overloading the circuits in Congress. Carter sent a flood of proposals to Capitol Hill with little concern for priority or sequencing. He reaped little in the way of legislative harvest from them and the public began to wonder if he was up to the job. Reagan focused relentlessly on cutting taxes and spending, ultimately succeeding in shifting policy for decades. Clinton allowed the issue of gays in the military to overwhelm his policy priorities at the outset of his administration and then misjudged the market for a small economic stimulus in the Senate and suffered a humiliating defeat. Obama identified stabilizing the financial markets and shortening the recession as his highest initial priority. His early efforts to ensure the release of $350 billion in TARP funds, pass a large economic stimulus bill, and develop a new strategy for dealing with the troubled banking system reflected that priority. Nonetheless, he was widely criticized for diluting his focus on economic crisis management by linking it to reform of health policy, energy and education. Critics argued that his economic recovery leadership and proposals were not up to the seriousness of the crisis, that the staggering costs of the recession and bailout made health, energy and education reform wildly unrealistic, and that his huge agenda would overwhelm the capacity of Congress to deliver on its central components. Obama insisted that the linkage was essential to long-term economic security and prosperity and refused to back down. At his insistence, the stimulus bill contained very generous allocations for health technology, renewable energy and education.

**And energy policy is a no win issue.**

**Light 99** Paulette Goddard Professor of Public Service, New York University; Founding Director, Brookings Center for Public Service; Senior Adviser, National Commission on the Public Service; Senior Adviser, Brookings Presidential Appointee Initiative

(Paul C., “The President’s Agenda: Domestic Policy Choice from Kennedy to Clinton”, 3rd Edition, p. 34)

In the final chapter, I will take a deeper look at recent changes which have altered the domestic agenda process. The Presidency of the 1980s is quite different from the Presidency of the 1960s. The political and economic costs of domestic programs have escalated, with no corresponding increase in the President's ability to absorb the "inflation." At least five explanations arise. First, Congress has become more competitive in the search for scarce agenda space—whether because of changes in congressional membership and norms or because of a steady growth in the institutional resources for program initiation. Second, Congress has become more complex. The evolution of subcommittee government during the late 1960s increased the sheer number of actors who wield influence in the domestic policy process and tangled the legislative road map. Though there are fewer single obstacles to passage of the President's program, there are many more potential dead ends and delays. Third, as Congress has become more competitive and complex, the congressional parties have weakened. The dispersion of congressional power has, in turn, reduced the President's potential influence over domestic legislation. As we shall see, party is no longer the "gold standard" of presidential influence. Unfortunately, Presidents must still cling to their party as the source of their political capital. Fourth, Presidents must now conduct domestic policy under increasing congressional and media surveillance. I will suggest that this atmosphere of suspicion has reduced the opportunities for effective presidential leadership in domestic policy. Finally, and perhaps most important, the basic issues that fuel the domestic policy process have changed since 1960. We have witnessed the rise of a new group of "**constituentless**" issues, issues that generate remarkably little congressional support and considerable single-interest-group opposition. **Energy**, social-security financing, welfare reform, and hospital-cost control are all examples of a new generation of constituentless issues. Separately these five trends have created difficult problems for the President's agenda. Together they have contributed to the rise of a **no- win presidency** in domestic affairs. We will return to the concept of a No Win Presidency in chapter 9. For now, it is important to note that the domestic policy process continues to shift. In the few short years since Kennedy and Johnson occupied the Oval Office the Presidency has undergone a dramatic era of change. As one Johnson aide remarked, "This office is nothing like it used to be. It might look similar, but the relationships have all changed.

#### Can’t get a win

Matthew **Daly and** Dina **Cappiello 12**, AP, “Republicans, Democrats at odds on energy issues”, June 13, http://www.huffingtonpost.com/huff-wires/20120613/us-energy-poll-politics/

Republicans and Democrats seem to be living on different planets when it comes to how to meet U.S. energy needs. Republicans overwhelmingly push for more oil drilling. Democrats back conservation and new energy sources such as wind and solar power. A survey by The Associated Press-NORC Center for Public Affairs Research shows that the polarized positions on energy that have divided Congress and emerged in the presidential campaign also run deep among the public. While majorities in both parties say energy is an important issue, the poll shows that partisan identification is closely tied to people's perceptions of the causes of the country's energy problems and possible solutions. No other demographic factor – not race, age, gender or income level – is as consistently associated with opinions on energy as political party identification. For example: \_Three of four Democrats surveyed report that a major reason for the county's energy problems is that industry does not do enough to support clean energy. By comparison 43 percent of the Republicans questioned believe that. \_Three of four Republicans in the poll cite government limits on drilling as a major reason for energy problems, compared with 34 percent of Democrats. Also, 85 percent say it is a serious problem that the United States needs to buy energy from other countries, but there's disagreement about why. Among Republicans in the poll, 65 percent say the U.S. does not produce enough domestic energy to meet demand. Yet just over half the Democrats say people use too much energy. Even on areas where there's majority agreement, a partisan gap remains. For instance, there is broad backing for programs to help consumers learn to make more energy-efficient choices, but the support is 81 percent among Democrats and 57 percent among Republicans. Paul Bledsoe, a senior advisor with the Bipartisan Policy Center and a former Clinton White House aide, said the results provide an unsettling snapshot of a partisan rift that affects every aspect of policy and politics. He said the big question is whether parties and candidates will acknowledge that they agree on a range of energy solutions and try to make progress, or keep up attacks intended to appeal to their political bases. The poll, made possible by a grant to the AP-NORC Center from the Joyce Foundation, illuminates one driver of this campaign season's divisive political rhetoric: Both parties are playing to their bases. So it's no surprise that presidential candidate Mitt Romney and other Republicans push for more drilling for oil and natural gas, and President Barack Obama emphasizes renewable energy development as part of what he calls an "all-of-the-above" energy strategy. Republicans also are shining a spotlight on the failure of Solyndra, a California solar company that received a half-billion dollar loan from the Obama administration and later went out of business. Just 4 in 10 Republicans support government incentive programs that give money to energy companies to help them develop alternative energy sources. Two-thirds of Democrats support such programs. Overall, about six in 10 people questioned think the government should be deeply involved in finding solutions to the energy problems, with four in 10 saying the government should be "extremely" involved. By 79 percent to 42 percent, Democrats were nearly twice as likely as Republicans to think the government should be involved. About half of Democrats in the poll think government should be "extremely" involved, compared with just one-quarter of Republicans. The survey showed partisans hold different ideas on how the government should be involved. Democrats are more apt to favor incentive programs for consumers or energy companies. Republicans express support for education programs aimed at consumers and allowing more drilling for oil and gas.