# 1AC

## Plan

#### The Department of Defense should acquire electricity from space solar power-produced energy in the United States.

## Hi Pappas

#### The DOD is interested in SPS – power procurement rapidly accelerates commercial development

Lemonick 9 – Michael D. Lemonick is the senior writer at Climate Central, a nonpartisan organization whose mission is to communicate climate science to the public. Prior to joining Climate Central, he was a senior writer at Time magazine, where he covered science and the environment for more than 20 years. He has also written four books on astronomical topics and has taught science journalism at Princeton University for the past decade. August 31st, 2009, "Solar Power from Space: Moving Beyond Science Fiction" e360.yale.edu/feature/solar\_power\_from\_space\_moving\_beyond\_science\_fiction/2184/

But the military’s interest in SBSP could give a major boost to the technology. According to Marine Corps Lt. Col. Paul Damphousse, Chief of Advanced Concepts for the National Security Space Office, the military is interested in SBSP for two main reasons.¶ The first, he said, is that “we’re **obviously interested in energy security**, and we’re also **interested in weaning ourselves off fossil fuels** because climate change could pose national security risks.” By being an early customer, the government can rapidly accelerate development of the technology. But there would also be a **tactical advantage to space-based solar**, Damphousse noted. When the military is operating in remote regions of countries like Iraq or Afghanistan, it uses diesel generators to supply forward bases with power.¶ “We have a significant footprint getting energy in,” says Damphousse, noting the need for frequent convoys of oil tankers, the soldiers to protect them, and air support — all of which is expensive and dangerous.¶ **Being able to tap into power beamed directly down from space would clearly have a lot of appea**l, says Damphousse, even if it were relatively costly. And **it’s not just useful for the battlefield, he says, but also for areas affected by natural disasters**, such as Hurricane Katrina.¶ For those reasons, Damphousse supports the idea of coordinated studies by the Pentagon and other agencies — such as NASA and the Department of Energy — that would have a stake in space-based power.

#### 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** spend**ing 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.

#### **SPS-Alpha can be up and running in a few years with only a few billion dollars – new tech ensures feasibility and low costs**

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.**

#### Recent studies prove that SPS tech exists now – terrestrial solar fails

Garretson 12 – Lt Col Peter Garretson is an airpower strategist currently serving on the CSAF’s Strategic Studies Group (HAF/CK). His previous assignment was at the Institute for Defence Studies and Analyses in New Delhi as an Air Force Fellow examining Indo–US long-term space collaboration under the sponsorship of the Council on Foreign Relations. Prior to that he was the chief of future science and technology exploration for the HQ USAF Directorate of Strategic Planning (AF/A8XC), Spring 2012, "Solar Power in Space?" Strategic Studies Quarterly Spring, <http://www.au.af.mil/au/ssq/2012/spring/garretson.pdf>

As of 2010, the fundamental research to achieve technical feasibility for the SPS [solar-power satellites] was already accomplished. Whether it requires 5–10 years or 20–30 years to mature the technologies for economically viable SPS now depends more on the development of appropriate platform systems concepts and the availability of adequate budgets. —International Academy of Astronautics (IAA), 2011 The world needs a constant supply of uninterrupted electrical power to enable and sustain economic growth; power its cities, factories, and vehicles; and provide energy for heating, cooling, lighting, cooking, and desalination. Long term, it is desirable to transition from an energy system based on fossil fuels—an exhaustible resource which alters the composition of our atmosphere with unknown long-term effects on our climate— to a system based upon renewable sources. Many see solar power as the answer, because the resource is so vast and available. However, traditional solar power has limitations that make it less than a perfect match for our society. It is highly intermittent (only a 20-percent duty cycle) due to weather effects (clouds, rain, dust), and its low density requires vast tracks of land. Worst of all, it is not available at night, requiring vast storage or nonrenewable backup systems. Space-based solar is an innovation designed to retain[s] the advantages of traditional solar power while sidestepping the disadvantages. The basics of the idea are quite simple. Rather than cope with the unpredictability and intermittency of solar power on the ground, go where the sun always shines. In geostationary orbit (GEO), the sun shines constantly and is 36 percent stronger, allowing a solar array to collect almost 10 times the amount of energy as the same array installed at mid latitude on the ground (see fig.1). Power can then be transferred (beamed) directly to where it is needed. The technologies to do this are not magic or unfamiliar—they are the same elements used every day to emplace, power, and communicate with every existing satellite. Building the SBSP system would rely on the same familiar solar cells, radio transceivers, and rockets to propel them to GEO, only assembled on a grand different scale. In a mature system-of-systems, multiple solar-power satellites would reside in geostationary orbit, each collecting vast amounts of power and transmitting it through active electronic beam steering, like routers in a vast orbiting power internet. While appearing to hover above a particular location, each SPS could service multiple markets, providing power on demand to urban centers or remote locations. For example, a single satellite south of Baja California could service markets across most of North and South America; a satellite over the Indian Ocean could service markets as far apart as Africa and Indonesia, and from Diego Garcia to as far north as Russia. 1 Power in this system-of-systems would be transmitted using a technique called retrodirective phased array, where an encrypted pilot signal from the ground handshakes with the satellite’s active electronic beam-steering system to link transmitter and receiver. The beam itself would be in the ISM band (typically 2.45 or 5.8 GHz), so that it passes nearly full strength through the atmosphere, clouds, and rain. Because of low atmospheric losses (<2 percent), extremely efficient reconversion (>80 percent), and most of all, constant illumination, the beam can be safely kept at an amazingly low intensity (only one-sixth the intensity of sunlight) and yet be significantly more energy productive than a comparably sized terrestrial solar plant. The location and diameter of the beam are predictable and well confined. Unlike communications satellites—which, because of their small-aperture antennas, cast continent-sized footprints and must be separated by degrees (and thousands of miles) on orbit to deconflict signals—SPSs have very large apertures and therefore can send very narrow beams, allowing them to be spaced much closer together. The beam itself terminates on a receiver called a rectenna, with peak intensity in its center and tapering to nearly nothing at the periphery. The rectenna, about the size of a municipal airport, is a mesh of dipole antennas that capture all the incident energy from the beam. It is nevertheless 80 percent transparent to sunlight, allowing the land beneath to remain available for agricultural uses.

#### SPS is resilient, cost-effective, and efficient

Reed & Willenberg 4 – Head of the Welsom Space Consortium, and Harvey, PhD, Independent Review Team Leader for Space Power Research for NASA, Former Chief Scientist of the ISS (Kevin and Harvey, , "Early commercial demonstration of space solar power using ultra-lightweight arrays,” Acta Astronautica, Volume 65, Issues 9-10, accessed on Science Direct)

Future systems will be even more sensitive to specific power. A number of conceptual design architecture studies have been performed that offer promise for terrestrial electrical power generation by [SSP] space solar power, i.e. a constellation of large Earth-orbiting spacecraft that collect solar power, convert it to laser or microwave beams, and beam that power to terrestrial collectors that, in turn, convert that power to electricity.[1-3] To make this concept economically attractive, they must compete with current large power plants by economically generating Gigawatts (GW) of power. At 100 W/kg, such a power station must weigh 2-5 ∙ 107 kg or more – a tall order for launch vehicles that currently place no more than 2-3 ∙ 103 kg into geosynchronous orbit. Recent technology advances in the area of thin film photovoltaic arrays offer a solution to the mass limitations of high power arrays. Thin film arrays, while the efficiency is only around 9-12%, are so lightweight that they offer specific powers in excess of 1,000 W/kg - a factor of ten or more above the current state of the art. Since these arrays are deployable, they can be packaged with minimum mass and volume, and readily deployed in space with **near-term demonstrable technologies**. This section provides an introduction to this possibility. The next section will discuss the specific advantages of lightweight arrays. Section 3 will describe near-term applications in the 50-500 kWe power range, both in space and in the high altitude atmosphere, as well as future directions for space power satellites and high-power electric thrusters. Section 4 discusses recent and ongoing plans for prototype testing of thin-film arrays in civil and military applications as well as commercial "NewSpace" applications. In Section 5, we discuss some key process steps required for commercial development of space solar power and wireless power transmission, with specific focus on the development pathway for these solar arrays. A development Roadmap is described in Section 6. A short summary is presented in Section 7, followed by references. 2. ADVANTAGES OF ULTRALIGHTWEIGHT ARRAYS Since the beginning of Earth-orbiting satellites, solar array technology has gone through two or three generations, and is on the verge of a new generation. Most early satellites were powered with crystalline silicon arrays, with power levels generally below about 6 kilowatts (kWe). These silicon arrays were heavy and operated at low efficiency, i.e. the amount of power produced per unit area of solar array started around 10-12% at beginning of life. These crystalline silicon arrays also degraded rapidly, dropping to 8-10% efficiencies after several years in space, as a result of radiation-induced degradation of the photovoltaic silicon and atomic oxygen-induced discoloration of the cover glass which protects the silicon from these environmental factors. In the 1990s, the technology for many, if not most, satellite solar arrays converted from these original silicon arrays to compound semiconductors, which generally used gallium arsenide plus a second or third semiconductor to capture a greater share of the solar spectrum and convert it to electricity. These compound dual-junction and triple-junction semiconductors are much more resistant to radiation and more efficient, with efficiencies of 20-24%. More recently, the ability to separate different wavelengths of the solar spectrum and tailor the incident light onto a stretched lens of selected semiconductors (separating red, yellow, green, and blue wavelengths) has shown indications of efficiencies as high as 40-50%.[4-5] Yet even at this nearly theoretical limit of efficiency, the power density level will reach only 300 W/kg. Until recently, the focus of most solar array technology development has been toward more efficient, more radiation-resistant arrays. This focus has been driven primarily by the challenge of deployment of large arrays. This challenge has limited the total array area that can be launched into space, and therefore the way to higher power arrays has been higher efficiencies. These rigid, higher efficiency solar arrays come at the cost, however, of relatively high mass - with the best rigid arrays able to produce about 80-100 Watts per kilogram (W/kg) at 30% efficiency, and the stretched lens arrays promising about 150 W/kg but limited to a total of around 10 kW by deployment considerations. Two dominant performance metrics in the selection of solar array technologies are this power/mass ratio (i.e. the amount of power that can be produced for each kilogram of total mass) and the volume of the stowed array as it is launched. These are important because of the mass and volume limitations on the launch vehicle that places the array into space, and the high cost of launching this limited mass and volume. Using launch vehicles available today, these limit the total power available to satellites in geostationary orbit to about 18 kWe. Higher powers will be highly desirable as the user demands for communications services continue to increase. Recent advances in the ability to place photovoltaic materials on very thin film substrates have produced a new generation of solar arrays. These advances allow arrays to be stowed in the launch vehicle in very compact configurations, and easily deployed to much larger arrays than have heretofore been achievable. These new, thin film arrays are much lighter - around 1200 W/kg, including the deployment systems. Laboratory test cells have been produced by Institut de Microtechnique at the University of Neuchatel, Switzerland using LaRCTM-CP1 thin-film substrates produced by SRS Technologies in Huntsville, AL that have the highest power/mass ratio on record - 4300 W/kg![6] These thin film arrays can be stowed in a rolled or folded configuration in the launch vehicle and deployed in space by simple boom extension or roller mechanisms. A well-designed 50 kW space solar array and deployment system using rolled mechanisms with this specific power would weigh 32 kg with a payload volume the size of a suitcase. This low mass and payload volume, combined with high power density, can provide 50 kW+ space solar arrays at 25% of the cost of current rigid solar arrays. There are two approaches to thin film arrays: amorphous silicon (a-Si:H) and polycrystalline Cu(Ga,In)Se2 (CIGS). The Neuchatel partners have developed an array configuration that deposits amorphous silicon on SRS 6 µm-thick CP1TM polymer films, referred to as CP1/a-Si:H arrays. CIGS cells are generally deposited on 30 µm-thick metal foil substrates, a fact that assures that CIGS cells will be heavier than CP1/a-Si:H cells. Some basic comparisons between these solar arrays are summarized in Table 1. Using deployable thin-film arrays with specific powers in excess of 1,000 W/kg opens opportunities for large power levels in space. With current launch vehicles, this means that communications satellites can have 200 kWe or more in geosynchronous orbit, or that commercial platforms such as manufacturing sites or tourist destinations, can approach a MWe. With such possibilities, **this technology might drive the economics of [SSP] space solar power satellites into the profitable arena**, thereby contributing greatly to a non-petroleum-based worldwide electrical power grid. 3. APPLICATIONS Deployable thin-film arrays would have immediate applications with communications satellites and with high altitude aircraft. A 60 kWe array which can be rolled out in 20 kWe segments would greatly extend the useful lifetime of communications satellites – essentially tripling the array lifetime by rolling out 20 kWe of beginning-of-life (BOL) arrays at the end of the array's useful lifetime. An alternative application would be for much higher-power communications satellites, from 50 to 200 kWe, for higher data rates or power. A unique application may also be realized for recharging mobile batteries. Such an orbiting power platform may provide a source of electrical power for very distributed demands, such as for cellular phones and laptop computers. A 200 kWe solar array would have a mass of less than 200 kg. This would make a thin-film array attractive for still higher-power commercial applications, such as orbiting hotels – with expected demands in the 250 kWe to 1 MWe – and manufacturing sites. The latter would be either for sites for in-space construction of larger platforms, or for processing of materials in the microgravity environment of space. As the technology matures to the megawatt range, additional applications appear promising. For example, electric thrusters in the megawatt range would be attractive for human transportation to Mars and its moons. This technology can be developed in stages, perhaps using high altitude airships as platforms to demonstrate megawatt arrays. As the technology for high power thin film arrays matures, the logical next step would be solar power satellites. With a launch vehicle capable of placing 50,000 kg to geosynchronous orbit, 50 MWe platforms can be considered as building blocks for the GWe stations that would be required to provide a primary source of power for the electrical power grid. 4. DEVELOPMENT OF ULTRALIGHTWEIGHT ARRAYS Recent advances in the ability to place photovoltaic materials on very thin film substrates have produced a new generation of solar arrays. These advances allow arrays to be stowed in the launch vehicle in very compact configurations and easily deployed to much larger arrays than have heretofore been achievable. These new, thin film arrays are much lighter - around 1200 W/kg, including the deployment systems. Problematic to most thin-film solar arrays are radiation and atomic oxygen erosion. Test solar cells are made on CP1TM polyimide that is space-rated for 10 years in Geosynchronous Earth Orbit ( GEO), or SRS CORIN which is the only transparent uncoated commercial polyimide that will not erode in LEO. These flexible, 6 micron thick, thin film arrays, can be rolled or folded into a very low stowed volume in the launch vehicle configuration, and then deployed in space by simple boom extension or roller mechanisms. Such a typical 50 kW space solar array and deployment system would weigh 32 kg with a payload volume the size of a suitcase. This low mass and payload volume, combined with high power density, can provide 50 kW+ space solar arrays at 25% of the cost of current rigid solar arrays. The key technologies are ultra-thin, deployable arrays that generate power at acceptable efficiencies with high power density, and are resistant to atomic oxygen and radiation in the operational space environment.

## And Ellis

#### Global race for SPS now---US must catalyze investment quickly to avoid losing out

Wood 12 – Elisa Wood, contributer to Renewable Energy World, April 16th, 2012, "Race for Renewables' Game-changers Heats Up" [www.renewableenergyworld.com/rea/news/article/2012/04/race-for-game-changing-technology-intensifies](http://www.renewableenergyworld.com/rea/news/article/2012/04/race-for-game-changing-technology-intensifies)

Virginia, U.S.A. -- First comes invention then comes prosperity. That's the theory of 'innovation economics,' a relatively new doctrine that underlies today's worldwide race to discover energy's next game changer and is triggering some intriguing tinkering in renewable energy. Will one of these new technologies lead us out of our economic malaise?¶ 'Hurry up with your work.’ That was the message delivered to energy innovators by Arun Majumdar, director of the U.S. government’s Advanced Research Projects Agency-Energy (ARPA-E) at a Washington, D.C. gathering in November. ‘Let there be no illusion that speed is of the essence right now,’ Majumdar said at the energy innovation conference sponsored by the Information Technology and Innovation Foundation, a public policy think tank.¶ **Why the haste?** The last 100 years brought us electricity, air travel, nuclear technology, fibre optics, wireless communication and more. Now the world needs the equivalent breadth and depth of innovation from the energy sector, but this time we don’t have a century to make the transformation. Dependent on a single fuel for transportation, **the US is vulnerable from both a security and an economic perspective**, particularly since it imports half of its oil - as does China. India also is an importer, as are Germany and Japan. ‘This is a global problem and people are looking for technological leadership in trying to solve it,’ Majumdar said.¶ At the same time, prosperity is arriving for large swathes of the undeveloped world, which creates new pressures and opportunities for energy innovators. Rural outposts have no transmission or distribution infrastructure, but they want electric lighting now, and they want it to be clean and affordable. **Energy innovators are being called upon for quick solutions, and** the victory will go to the swift, according to Majumdar.¶ **Clean energy represents the** ‘biggest business opportunity’ of the twenty-first century, Majumdar said, one that Bloomberg New Energy Finance expects to amount to a US$7 trillion investment by 2030. ‘**The question is: Are we going to stand on the sidelines and buy all that stuff? Or are we going to innovate and make it and sell it to the rest of the world? That is the battle**. That’s the fight.’¶ So how is it going on the battlefield? Are the energy innovators advancing? And will they prove that innovation economics is correct? Can we innovate our way out of today’s economic slowdown?¶ Towards the Heavens¶ Some are casting their gaze upward for the answer, very high upward — about 6700 metres where potential exists for space-based solar power or satellite solar. Not so long ago it seemed far-fetched that orbiting satellites could collect solar energy and beam it to earth. **But now,** the chase is on **to master the technology by researchers in the** U.S., U.K., Japan, India and China. If they succeed, solar satellites could become one of the most disruptive energy technologies yet. In theory they could collect solar energy 24 hours per day, with no interruption from weather or darkness, and provide the world with much of the baseload electricity it needs. Because there is nothing to block the sun’s rays in space, satellite solar panels could collect up to 25 times more power than those on earth, according to U.K.-based developer Orbital Power. Equipped with solar panels, the satellites would collect the sun’s energy, convert it to radio waves and then beam the energy to a collector on the earth’s surface where it would be converted to electricity and shipped to homes and businesses over existing transmission and distribution lines.

#### SPS is key to global economic competitiveness – specifically in aerospace and manufacturing

Matai 10 – DK Matai, PhD in Engineering, Chairman of the Asymmetric Threats Contingency Alliance (ATCA), won The Queen’s Award for Enterprise in the category of Innovation for Bespoke Security Architecture in 2003, authority on countering complex global threats; strategic risk management & visualisation; contingency planning; Information Operations (IO); electronic defence; biometric authentication; secure payment systems and Open Source hardened kernel solutions, June 13th, 2010, "Japan Takes Lead in Wireless Power? 21stC Global Energy Supply,” [www.mi2g.com/cgi/mi2g/frameset.php?pageid=http%3A//www.mi2g.com/cgi/mi2g/press/130610.php](http://www.mi2g.com/cgi/mi2g/frameset.php?pageid=http%3A//www.mi2g.com/cgi/mi2g/press/130610.php)

\***note: WPT = wireless power transmission**

Conclusion¶ The demand for power on Earth is growing exponentially, and associated environmental consequences are becoming significant. Global electric power production is about a USD 1 trillion per year market currently, and represents the largest market on Earth. In this new century, Space Solar Power **(SSP) may provide a clean, safe energy source, alleviating some of the problems we would otherwise expect from increasing nuclear and fossil fuel use.** SSP combined with Wireless Power Transmission (WPT), offers the far-term potential to solve major energy problems on Earth. WPT is an enabling technology for utilising renewable and inexhaustible energy sources on Earth and in space to **meet projected electrical energy demands in the 21st century on a global scale**.¶ With few energy resources of its own and heavily reliant on oil imports, Japan has long been a leader in solar and other renewable energies. The current opportunities that Japan's nascent Wireless Power Transmission (WPT) industry is providing will be the basis not only for energy independence domestically from imported energy sources, but as a supplier of "clean" energy, Japan is likely to gain significant political influence and leverage globally. Penetration of this market by gradually substituting WPT to access renewable and inexhaustible energy sources anywhere on Earth and in space is an opportunity that Japan has clearly recognised. The implications of successful developments of WPT systems by the Japanese are profound enough to **merit a deliberate US or European competitive decision either to pursue further coherent development of WPT or to abandon pursuit of WPT markets to other countries**. **The consequences of abandoning WPT may include** adverse impact on Western industrial competitiveness **in the 21st century and beyond.** It is now obvious that:¶ 1. Nikola Tesla and his early 20th century unique work in regard to Wireless Power generation and transmission was extremely far sighted and accurate; ¶ 2. The Japanese government and multi-nationals are committing tens of billions of dollars to the deployment of SSP and WPT because this is a lucrative area; and ¶ 3. **Given the fallout from the Gulf of Mexico oil catastrophe, there is going to be little choice left other than to move towards SSP and WPT type solutions**.¶ The Western nations including the US and Europe are still in a position to lead a Space Solar Power (SSP) and Wireless Power Transmission (WPT) effort but not for long. The question is not whether we harness power from Space**; but rather** who will get there first **to garner first mover advantage** with significant impact on global economic competitiveness. Now is the time to plan for the WPT future that can be discerned in broad outlines only. The inability to see the future except as a continuation of the present and not to plan for asymmetric threats and opportunities will prevent critical technological evolution and progress. Maximising the opportunities to participate in the development and applications of SSP and WPT systems would **provide not only an outlet for the considerable experience and talents residing in the global** aerospace and manufacturing **industries, but ensure that these industries remain** competitive in the markets for environmentally compatible energy sources where carbon based fuels are no longer the essential element for electrical power generation. The evolution of the human species into the cosmos, including harnessing the moon and immediate outer space, appears to provide a viable space solar and wireless power solution. There is no turning back from this final frontier in the 21st century and beyond!

#### Economic benefits occur even before space deployment

SEC 8 – Space Enterprise Council, 2008, NSS, http://www.nss.org/settlement/ssp/library/2008-SECSpaceBasedSolarPowerWhitePaper.pdf

SBSP is unusual among renewable energy options because it might satisfy all four of the following criteria critical to investment decisions: environmental cleanliness, sustainability of supply, flexibility of location, and capacity to generate continuous rather than intermittent power. The cost of SBSP-generated electricity would initially be greater than that provided by fossil fuel or nuclear power but could be comparable to other alternative energy sources, particularly for baseload power. In addition, SBSP might offer an attractive approach, not only for satisfying today's needs but also for meeting tomorrow’s much greater requirements. We cannot accurately predict environmental and other consequences of harvesting energy from natural Earthbound sources (e.g., wind, ocean current, geothermal, biofuels), when these methods are scaled up to considerably higher levels. By providing an additional source of renewable energy, SBSP might help avoid potentially negative consequences if limits to the costeffective expansion of other renewable sources become evident. Beyond enhancement of energy production per se, SBSP might help create new economic opportunities through resultant technology advances in space launch, space utilization, and technological spin-offs applicable to a host of materials and processes. For example, SBSP research might lead to improvements in the efficiency of solar cells that power communications satellites, as well as power management systems for terrestrial solar power systems. Also, to the extent that SBSP is integrated into terrestrial solar power production, development of SBSP ground infrastructure might generate revenue even before deployment of systems in space. In this and related applications, SBSP could emerge as an enhancement for, rather than a competitor with, terrestrial solar power generation.

#### US competitiveness is key to hegemony and independently solves great power war

Baru 9 – Sanjaya Baru is a Professor at the Lee Kuan Yew School in Singapore Geopolitical Implications of the Current Global Financial Crisis, Strategic Analysis, Volume 33, Issue 2 March 2009 , pages 163 - 168

Hence, economic policies and performance do have strategic consequences.2 In the modern era, the idea that strong economic performance is the foundation of power was argued most persuasively by historian Paul Kennedy. 'Victory (in war)', Kennedy claimed, 'has repeatedly gone to the side with more flourishing productive base'.3 Drawing attention to the interrelationships between economic wealth, technological innovation, and the ability of states to efficiently mobilize economic and technological resources for power projection and national defence, Kennedy argued that nations that were able to better combine military and economic strength scored over others. 'The fact remains', Kennedy argued, 'that all of the major shifts in the world's military-power balance have followed alterations in the productive balances; and further, that the rising and falling of the various empires and states in the international system has been confirmed by the outcomes of the major Great Power wars, where victory has always gone to the side with the greatest material resources'.4 In Kennedy's view, the geopolitical consequences of an economic crisis, or even decline, would be transmitted through a nation's **inability to** find adequate financial resources to simultaneously **sustain** economic growth and **military power**, the classic 'guns versus butter' dilemma.

#### SPS is key to technological innovation and leadership

WTC 11 – Want China Times, Online Journal of Space Communication, an international electronic journal, September 2nd, 2011, "China Unveils Plan for Solar Power Station in Space" spacejournal.ohio.edu/issue16/chinaunveils.html

"The development of a solar power station in space will fundamentally change the way in which people exploit and obtain power," Wang **Xiji, a space technology pioneer at the China Academy of Sciences, said** while presenting the results of his team's research on developing such a station.¶ Talking highly about China's ambitious space solar energy program, 90-year-old Wang said such a station could **promote international cooperation**. **"**Whoever takes the lead **in the development and utilization of clean and renewable energy and the space and aviation industry** will be the world leader," Wang said at the fourth China Energy Environment Summit Forum on Aug 28.¶ The program will utilize existing technology to launch solar-collector satellites into geostationary orbit. These satellites will convert the sun's radiation into electricity 24 hours a day, and safely transmit the electricity via microwaves to rectifying antennas on Earth. The concept was first proposed by US space expert Peter Glaser in 1968.¶ Currently, the United States, Japan, Europe and Russia have plans to invest several billion US dollars in establishing their own 1 million-kilowatt power stations to begin operation between 2030 and 2040. China has not yet taken its first step in this regard.¶ A team led by Wang completed research on the development, timelines and policy for space solar power station technology in August. The program offers guidelines for developing such a station. It aims to complete analysis of space solar power applications, detailed design of system solutions and key technologies as well as key technologies for authentication by 2020. Under the plan, a space solar energy station for commercial use will be completed by 2040.¶ Wang believes such a station will trigger a technical revolution in the fields of new energy, new material, solar power and electricity.¶ Wang said the area of space and aviation is an emerging strategic industry and the development of a space solar-energy station requires high-end technology. Such a program would lead to the emergence of several industries, Wang said. He believes it could lead to a technical revolution and possibly even an industrial revolution.¶ China's solar energy stations down on planet Earth have developed rapidly. In 2010, the country's solar photovoltaic power capacity was 800,000 kilowatts, while 168 million square meters of area used solar-powered water heating.¶ The government's 12th five-year plan also proposes increasing the country's solar photovoltaic power generation capacity to 10 million kilowatts by 2015 and 20 million kilowatts by 2020.¶ It is estimated that a solar power station in orbit could harness five times the solar energy captured by stations on the ground.¶ **Li Ming, a space technology expert, said that after 50 years of development, China's space and aviation industry has made significant progress and laid a sound foundation for a space solar power station.**

#### Technological leadership is key to science diplomacy – it creates international cooperation that independently de-escalates every impact and solves failed states

Federoff 8 – ina Fedoroff 8, Science and Technology Adviser to the Secretary of State and the Administrator of USAID, Testimony Before the House Science Subcommittee on Research and Science Education, 4/2, <http://www.state.gov/g/oes/rls/rm/102996.htm>

Chairman Baird, Ranking Member Ehlers, and distinguished members of the Subcommittee, thank you for this opportunity to discuss science diplomacy at the U.S. Department of State. The U.S. is recognized globally for its leadership in science and technology. Our scientific strength is both **a** tool of “soft power” – part of our strategic diplomatic arsenal – and a basis for creating partnerships with countries as they move beyond basic economic and social development. Science diplomacy is a central element of the Secretary’s transformational diplomacy initiative, because science and technology are essential to achieving stability and strengthening failed and fragile states. S&T advances have immediate and enormous influence on national and global economies, and thus on the international relations between societies. Nation states, nongovernmental organizations, and multinational corporations are largely shaped by their expertise in and access to intellectual and physical capital in science, technology, and engineering. Even as S&T advances of our modern era provide opportunities for economic prosperity, some also challenge the relative position of countries in the world order, and influence our social institutions and principles. America must remain at the forefront of this new world by maintaining its technological edge, and leading the way internationally through science diplomacy and engagement. The Public Diplomacy Role of Science Science by its nature facilitates diplomacy because it strengthens political relationships, embodies powerful ideals, and creates opportunities for all. The global scientific community embraces principles Americans cherish: transparency, meritocracy, accountability, the objective evaluation of evidence, and broad and frequently democratic participation. Science is inherently democratic, respecting evidence and truth above all. Science is also a common global language, able to bridge deep political and religious divides. Scientists share a common language. Scientific interactions serve to keep open lines of communication and cultural understanding. As scientists everywhere have a common evidentiary external reference system, members of ideologically divergent societies can use the common language of science to cooperatively address both domestic and the increasingly trans-national and global problems confronting humanity in the 21st century. There is a growing recognition that science and technology will increasingly drive the successful economies of the 21st century. Science and technology provide an immeasurable benefit to the U.S. by bringing scientists and students here, especially from developing countries, where they see democracy in action, make friends in the international scientific community, become familiar with American technology, and contribute to the U.S. and global economy. For example, in 2005, over 50% of physical science and engineering graduate students and postdoctoral researchers trained in the U.S. have been foreign nationals. Moreover, many foreign-born scientists who were educated and have worked in the U.S. eventually progress in their careers to hold influential positions in ministries and institutions both in this country and in their home countries. They also contribute to U.S. scientific and technologic development: According to the National Science Board’s 2008 Science and Engineering Indicators, 47% of full-time doctoral science and engineering faculty in U.S. research institutions were foreign-born. Finally, some types of science – particularly those that address the grand challenges in science and technology – are inherently international in scope and collaborative by necessity. The ITER Project, an international fusion research and development collaboration, is a product of the thaw in superpower relations between Soviet President Mikhail Gorbachev and U.S. President Ronald Reagan. This reactor will harness the power of nuclear fusion as a possible new and viable energy source by bringing a star to earth. ITER serves as a symbol of international scientific cooperation among key scientific leaders in the developed and developing world – Japan, Korea, China, E.U., India, Russia, and United States – representing 70% of the world’s current population. The recent elimination of funding for FY08 U.S. contributions to the ITER project comes at an inopportune time as the Agreement on the Establishment of the ITER International Fusion Energy Organization for the Joint Implementation of the ITER Project had entered into force only on October 2007. The elimination of the promised U.S. contribution drew our allies to question our commitment and credibility in international cooperative ventures. More problematically, it jeopardizes a platform for reaffirming U.S. relations with key states. It should be noted that even at the height of the cold war, the United States used science diplomacy as a means to maintain communications and avoid misunderstanding between the world’s two nuclear powers – the Soviet Union and the United States. In a complex multi-polar world, relations are more challenging, the threats perhaps greater, and the need for engagement more paramount. Using Science Diplomacy to Achieve National Security Objectives The welfare and stability of countries and regions in many parts of the globe require a concerted effort by the developed world to address the causal factors that render countries fragile and cause states to fail. Countries that are unable to defend their people against starvation, or fail to provide economic opportunity, are susceptible to extremist ideologies, autocratic rule, and abuses of human rights. As well, the world faces common threats, among them climate change, energy and water shortages, public health emergencies, environmental degradation, poverty, food insecurity, and religious extremism. These threats can undermine the national security of the United States, both directly and indirectly. Many are blind to political boundaries, becoming regional or global threats. The United States has no monopoly on knowledge in a globalizing world and the scientific challenges facing humankind are enormous. Addressing these common challenges demands common solutions and necessitates scientific cooperation, common standards, and common goals. We must increasingly harness the power of American ingenuity in science and technology through strong partnerships with the science community in both academia and the private sector, in the U.S. and abroad among our allies, to advance U.S. interests in foreign policy. There are also important challenges to the ability of states to supply their populations with sufficient food. The still-growing human population, rising affluence in emerging economies, and other factors have combined to create unprecedented pressures on global prices of staples such as edible oils and grains. Encouraging and promoting the use of contemporary molecular techniques in crop improvement is an essential goal for US science diplomacy. An essential part of the war on terrorism is a war of ideas. The creation of economic opportunity can do much more to combat the rise of fanaticism than can any weapon. The war of ideas is a war about rationalism as opposed to irrationalism. Science and technology put us firmly on the side of rationalism by providing ideas and opportunities that improve people’s lives. We may use the recognition and the goodwill that science still generates for the United States to achieve our diplomatic and developmental goals. Additionally, the Department continues to use science as a means to reduce the proliferation of the weapons’ of mass destruction and prevent what has been dubbed ‘brain drain’. Through cooperative threat reduction activities, former weapons scientists redirect their skills to participate in peaceful, collaborative international research in a large variety of scientific fields. In addition, new global efforts focus on improving biological, chemical, and nuclear security by promoting and implementing best scientific practices as a means to enhance security, increase global partnerships, and create sustainability.

#### Failed states cause nuclear war

AFC 3 – African Studies Centre et al, The Transnational Institute, The Center of Social Studies, Coimbra University, and The Peace Research Center – CIP-FUHEM, December 2007, “Failed and Collapsed States in the International System,” http://www.tni.org/sites/www.tni.org/archives/reports/failedstates.pdf

In the malign scenario of global developments the number of collapsed states would grow significantly. This would mean that several more countries in the world could not be held to account for respecting international agreements in various fields, be it commercial transactions, debt repayment, the possession and proliferation of weapons of mass destruction and the use of the national territory for criminal or terrorist activities. The increase in **failed states would immediately lead to** an increase in **international migration**, which could have a knock-on effect, first in **neighbouring countries** which, having similar politico-economic structures, **could suffer** increased destabilization and collapse as well. Developments in West Africa during the last decade may serve as an example. Increased international migration would, secondly, have serious implications for the Western world. In Europe it would put social relations between the population and immigrant communities under further pressure, polarizing politics. An increase in collapsed states would also endanger the security of Western states and societies. Health conditions could deteriorate as contagious diseases like Ebola or Sars would spread because of a lack of measures taken in collapsed areas. **Weapons of mass destruction could come into the hands of** various sorts of political entities, be they **terrorist groups**, political factions in control of part of a collapsed state or an aggressive political elite still in control of a national territory and intent on expansion. Not only North Korea springs to mind; one could very well imagine such states in (North) Africa. Since the multilateral system of control of such weapons would have ended in part because of the decision of the United States to try and check their spread through unilateral action - a system that would inherently be more unstable than a multilateral, negotiated regime - one could be faced with an arms race that **would** sooner or later **result in** the actual use of these weapons. In the malign scenario, relations between the US and Europe would also further deteriorate, in questions of a military nature as well as trade relations, thus **undercutting any possible consensus on stemming the growth of collapsed states and the introduction of stable multilateral regimes towards matters like terrorism, nuclear weapons and international migration**. Disagreement is already rife on a host of issues in these fields. At worst, even the Western members of the Westphalian system - especially those bordering on countries in the former Third World, i.e. the European states - could be faced with direct attacks on their national security.

#### Technological leadership is key to hegemony

Segal 4 – Maurice R. Greenberg Senior Fellow in China Studies at the Council on Foreign Relations. Foreign Affairs, November 2004 - December 2004, Is America Losing Its Edge?, Adam Segal, Pg. 2 Vol. 83 No. 6, Technology Enterprises in China.

The United States' **global primacy** **depends** in large part **on its ability to** develop new technologies and industries **faster than anyone else.** **For** the last five decades, **U.S. scientific innovation and** technological **entrepreneurship** **have** ensured the country'seconomic prosperity and military power. It was Americans who invented and commercialized the semiconductor, the personal computer, and the Internet; other countries merely followed the U.S. lead.¶ Today, however, **this technological edge**-so long taken for granted-may be slipping, and the most serious challenge is coming from Asia. Through competitive tax policies, increased investment in research and development (R&D), and preferential policies for science and technology (S&T) personnel, Asian governments are improving the quality of their science and ensuring the exploitation of future innovations. The percentage of patents issued to and science journal articles published by scientists in China, Singapore, South Korea, and Taiwan is rising. Indian companies are quickly becoming the second-largest producers of application services in the world, developing, supplying, and managing database and other types of software for clients around the world. South Korea has rapidly eaten away at the U.S. advantage in the manufacture of computer chips and telecommunications software. And even China has made impressive gains in advanced technologies such as lasers, biotechnology, and advanced materials used in semiconductors, aerospace, and many other types of manufacturing.¶ **Although the** United States' **technical dominance** remains solid**, the globalization** of research and development **is exerting** **considerable pressures on the American system**. Indeed, as the United States is learning, globalization cuts both ways: it is both a potent catalyst of U.S. technological innovation and a significant threat to it. **The** United States **will never be able to** prevent rivals from developing new technologies**; it can** remain dominant only **by** continuing to innovate faster **than everyone else.** But this won't be easy; to keep its privileged position in the world, **the** United States **must get better at** fostering technological entrepreneurship at home.

#### Studies prove the effectiveness of US hegemony

Barnett 11 – Thomas P.M. Barnett is Former Senior Strategic Researcher and Professor in the Warfare Analysis & Research Department, Center for Naval Warfare Studies, U.S. Naval War College American military geostrategist and Chief Analyst at Wikistrat., worked as the Assistant for Strategic Futures in the Office of Force Transformation in the Department of Defense, March 7th, 2011, “The New Rules: Leadership Fatigue Puts U.S., and Globalization, at Crossroads,” http://www.worldpoliticsreview.com/articles/8099/the-new-rules-leadership-fatigue-puts-u-s-and-globalization-at-crossroads

It is worth first examining the larger picture: We live in a time of arguably **the greatest structural change in the global order yet endured**, with this historical moment's most amazing feature being its relative and absolute lack of mass violence. That is something to consider when Americans contemplate military intervention in Libya, because if we do take the step to prevent larger-scale killing by engaging in some killing of our own, we will not be adding to some fantastically imagined global death count stemming from the ongoing "megalomania" and "evil" of American "empire." We'll be engaging in the same sort of system-administering activity that has marked our stunningly successful stewardship of global order since World War II. Let me be more blunt: As the **guardian of globalization**, the U.S. military has been the greatest force for peace the world has ever known. Had America been removed from the global dynamics that governed the 20th century, the **mass murder never would have ended**. Indeed, it's entirely conceivable there would now be no identifiable human civilization left, once nuclear weapons entered **the killing equation.** But the world did not keep sliding down that **path of perpetual war**. Instead, America stepped up and changed everything by **ushering in our now-**perpetual great-power peace. We introduced the **international liberal trade order known as globalization** and played loyal Leviathan over its spread. What resulted was the collapse of empires, an explosion of **democracy,** the persistent spread of **human rights**, the liberation of women, the doubling of life expectancy, a roughly 10-fold increase in adjusted global GDP and a **profound** and persistent **reduction in** battle deaths from state-based **conflicts**. That is what American "hubris" actually delivered. Please remember that the next time some TV pundit sells you the image of "unbridled" American military power as the cause of global disorder instead of its cure. With self-deprecation bordering on self-loathing, we now imagine a post-American world that is anything but. Just watch who scatters and who steps up as the Facebook revolutions erupt across the Arab world. While we might imagine ourselves the status quo power, we remain the world's most vigorously revisionist force. ¶ As for the sheer "evil" that is our military-industrial complex, again, let's examine what the world looked like before that establishment reared its ugly head. The last great period of global structural change was the first half of the 20th century, a period that saw **a death toll of about 100 million across two world wars**. That comes to an average of 2 million deaths a year in a world of approximately 2 billion souls. Today, with far more comprehensive worldwide reporting, researchers report an average of less than 100,000 battle deaths annually in a world fast approaching 7 billion people. Though admittedly crude, these calculations suggest a 90 percent absolute drop and a 99 percent relative drop in deaths due to war. We are **clearly headed for a world order characterized by multipolarity**, something the American-birthed system was designed to both encourage and accommodate. But given how things turned out the last time we collectively faced such a fluid structure, we would do well to keep U.S. power, in all of its forms, deeply embedded in the geometry to come.

#### Perception of decline causes US lashout – triggers hegemonic wars

Goldstein 7 – Professor of Global Politics and International Relations @ University of Pennsylvania “Power transitions, institutions, and China's rise in East Asia: Theoretical expectations and evidence,” Journal of Strategic Studies, Volume 30, Issue 4 & 5 August 2007, pages 639 – 682

Two closely related, though distinct, theoretical arguments focus explicitly on the consequences for international politics of a shift in power between a dominant state and a rising power. In War and Change in World Politics, Robert Gilpin suggested that peace prevails when a dominant state’s capabilities enable it to ‘govern’ an international order that it has shaped. Over time, however, as economic and technological diffusion proceeds during eras of peace and development, other states are empowered. Moreover, the burdens of international governance drain and distract the reigning hegemon, and challengers eventually emerge who seek to rewrite the rules of governance. As the power advantage of the erstwhile hegemon ebbs, **it may become desperate enough to resort to** the ultima ratio of international politics, **force,** to forestall the increasingly urgent demands of a rising challenger. Or as the power of the challenger rises, it may be tempted to press its case with threats to use force. It is the rise and fall of the great powers that creates the circumstances under which major wars, what Gilpin labels ‘hegemonic wars’, break out.13 Gilpin’s argument logically encourages pessimism about the implications of a rising China. It leads to the expectation that international trade, investment, and technology transfer will result in a steady diffusion of American economic power, benefiting the rapidly developing states of the world, including China. As the US simultaneously scurries to put out the many brushfires that threaten its far-flung global interests (i.e., the classic problem of overextension), it will be unable to devote sufficient resources to maintain or restore its former advantage over emerging competitors like China. While the erosion of the once clear American advantage plays itself out, the US will find it ever more difficult to preserve the order in Asia that it created during its era of preponderance. The expectation is an increase in the likelihood for the use of force – either by a Chinese challenger able to field a stronger military in support of its demands for greater influence over international arrangements in Asia, or by a besieged American hegemon desperate to head off further decline. Among the trends that alarm those who would look at Asia through the lens of Gilpin’s theory are China’s expanding share of world trade and wealth (much of it resulting from the gains made possible by the international economic order a dominant US established); its acquisition of technology in key sectors that have both civilian and military applications (e.g., information, communications, and electronics linked with to forestall, and the challenger becomes increasingly determined to realize the transition to a new international order whose contours it will define. the ‘revolution in military affairs’); and an expanding military burden for the US (as it copes with the challenges of its global war on terrorism and especially its struggle in Iraq) that limits the resources it can devote to preserving its interests in East Asia.14 Although similar to Gilpin’s work insofar as it emphasizes the importance of shifts in the capabilities of a dominant state and a rising challenger, the power-transition theory A. F. K. Organski and Jacek Kugler present in The War Ledger focuses more closely on the allegedly dangerous phenomenon of ‘crossover’– the point at which a dissatisfied challenger is about to overtake the established leading state.15 In such cases, when the power gap narrows, the dominant state becomes increasingly desperate. Though suggesting why a rising China may ultimately present grave dangers for international peace when its capabilities make it a peer competitor of America, Organski and Kugler’s power-transition theory is less clear about the dangers while a potential challenger still lags far behind and faces a difficult struggle to catch up. This clarification is important in thinking about the theory’s relevance to interpreting China’s rise because a broad consensus prevails among analysts that Chinese military capabilities are at a minimum two decades from putting it in a league with the US in Asia.16 Their theory, then, points with alarm to trends in China’s growing wealth and power relative to the United States, but especially looks ahead to what it sees as the period of maximum danger – that time when a dissatisfied China could be in a position to overtake the US on dimensions believed crucial for assessing power. Reports beginning in the mid-1990s that offered extrapolations suggesting China’s growth would give it the world’s largest gross domestic product (GDP aggregate, not per capita) sometime in the first few decades of the twentieth century fed these sorts of concerns about a potentially dangerous challenge to American leadership in Asia.17 The huge gap between Chinese and American military capabilities (especially in terms of technological sophistication) has so far discouraged prediction of comparably disquieting trends on this dimension, but inklings of similar concerns may be reflected in occasionally alarmist reports about purchases of advanced Russian air and naval equipment, as well as concern that Chinese espionage may have undermined the American advantage in nuclear and missile technology, and speculation about the potential military purposes of China’s manned space program.18 Moreover, because a dominant state may react to the prospect of a crossover and believe that it is wiser to embrace the logic of **preventive war** and act early to delay a transition while the task is more manageable, Organski and Kugler’s power-transition theory also provides grounds for concern about the period prior to the possible crossover.19 pg. 647-650

#### SPS is key to flexible power projection

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

For the DoD specifically, beamed energy from space in quantities greater than 5 MWe has the potential to be a disruptive game changer on the battlefield. SBSP and its enabling wireless power transmission technology could facilitate extremely **flexible “energy on demand” for combat units and installations across an entire theater, while significantly reducing dependence on vulnerable over‐land fuel deliveries**. SBSP could also enable entirely new force structures and capabilities such as ultra long‐endurance airborne or terrestrial surveillance or combat systems to include the individual soldier himself. More routinely, SBSP could provide the ability to deliver rapid and sustainable **humanitarian energy** to a disaster area or to a local population undergoing nation‐building activities. **SBSP could also facilitate** base “islanding” such that each installation has the ability to operate independent of vulnerable ground‐ based energy delivery infrastructures. In addition to helping American and Allied defense establishments remain relevant over the entire 21st Century through more secure supply lines, perhaps the greatest military benefit of SBSP is to **lessen the chances of conflict** due to energy scarcity by providing access to a strategically secure energy supply.

#### Flexible power projection prevents multiple scenarios for nuclear war

Kagan & O’Hanlon 7 – Frederick Kagan and Michael O’Hanlon, Frederick Kagan is a resident scholar at AEI, AND\*\*\* Michael O’Hanlon is a senior fellow in foreign policy at Brookings, “The Case for Larger Ground Forces”, April 2007, <http://www.aei.org/files/2007/04/24/20070424_Kagan20070424.pdf>

We live at a time when wars not only rage in nearly every region but threaten to erupt in many places where the current relative calm is tenuous. To view this as a strategic military challenge for the United States is not to espouse a specific theory of America’s role in the world or a certain political philosophy. Such an assessment flows directly from the basic bipartisan view of American foreign policy makers since World War II that overseas threats must be countered before they can directly threaten this country’s shores, that the basic stability of the international system is essential to American peace and prosperity, and that no country besides the United States is in a position to lead the way in countering major challenges to the global order. Let us highlight the threats and their consequences with a few concrete examples, emphasizing those that involve key strategic regions of the world such as the Persian Gulf and East Asia, or key potential threats to American security, such as the spread of nuclear weapons and the strengthening of the global Al Qaeda/jihadist movement. The Iranian government has rejected a series of international demands to halt its efforts at enriching uranium and submit to international inspections. What will happen if the US—or Israeli—government becomes convinced that Tehran is on the verge of fielding a nuclear weapon? North Korea, of course, has already done so, and the ripple effects are beginning to spread. Japan’s recent election to supreme power of a leader who has promised to rewrite that country’s constitution to support increased armed forces—and, possibly, even nuclear weapons— may well alter the delicate balance of fear in Northeast Asia fundamentally and rapidly. Also, in the background, at least for now, SinoTaiwanese tensions continue to flare, as do tensions between India and Pakistan, Pakistan and Afghanistan, Venezuela and the United States, and so on. Meanwhile, the world’s nonintervention in Darfur troubles consciences from Europe to America’s Bible Belt to its bastions of liberalism, yet with no serious international forces on offer, the bloodletting will probably, tragically, continue unabated. And as bad as things are in Iraq today, they could get worse. What would happen if the key Shiite figure, Ali al Sistani, were to die? If another major attack on the scale of the Golden Mosque bombing hit either side (or, perhaps, both sides at the same time)? Such deterioration might convince many Americans that the war there truly was lost—but the costs of reaching such a conclusion would be enormous. Afghanistan is somewhat more stable for the moment, although a major Taliban offensive appears to be in the offing. Sound US grand strategy must proceed from the recognition that, over the next few years and decades, the world is going to be a very unsettled and quite dangerous place, with Al Qaeda and its associated groups as a subset of a much larger set of worries. The only serious response to this international environment is to develop armed forces capable of protecting America’s vital interests throughout this dangerous time. Doing so requires a military capable of a wide range of missions—including not only deterrence of great power conflict in dealing with potential hotspots in Korea, the Taiwan Strait, and the Persian Gulf but also associated with a variety of Special Forces activities and stabilization operations. For today’s US military, which already excels at high technology and is increasingly focused on re-learning the lost art of counterinsurgency, this is first and foremost a question of finding the resources to field a large-enough standing Army and Marine Corps to handle personnel intensive missions such as the ones now under way in Iraq and Afghanistan. Let us hope there will be no such large-scale missions for a while. But preparing for the possibility, while doing whatever we can at this late hour to relieve the pressure on our soldiers and Marines in ongoing operations, is prudent. At worst, the only potential downside to a major program to strengthen the military is the possibility of spending a bit too much money. Recent history shows no link between having a larger military and its overuse; indeed, Ronald Reagan’s time in office was characterized by higher defense budgets and yet much less use of the military, an outcome for which we can hope in the coming years, but hardly guarantee. While the authors disagree between ourselves about proper increases in the size and cost of the military (with O’Hanlon preferring to hold defense to roughly 4 percent of GDP and seeing ground forces increase by a total of perhaps 100,000, and Kagan willing to devote at least 5 percent of GDP to defense as in the Reagan years and increase the Army by at least 250,000), we agree on the need to start expanding ground force capabilities by at least 25,000 a year immediately. Such a measure is not only prudent, it is also badly overdue.

## And DHeidt if he looks at the speech doc

#### Energy shortages in the Air Force prevent space radar development – SPS is key

David 12 – Leonard David has been reporting on the space industry for more than five decades. He is a winner of last year's National Space Club Press Award and a past editor-in-chief of the National Space Society's Ad Astra and Space World magazines. He has written for SPACE.com since 1999. February 22nd, 2012, "Air Force Eyes Nuclear Reactors, Beamed Power for Spacecraft," [www.space.com/14643-air-force-space-nuclear-reactors-power-beaming.html](http://www.space.com/14643-air-force-space-nuclear-reactors-power-beaming.html)

For example, the Air Force is currently limited to 27 kilowatt (kW) arrays for satellite power. But more power is required for some future space missions, the report states, such as flights currently being eyed by the Air Force, national security organizations and NASA. "Employing larger and more efficient arrays will enable missions that require very high power, **such as** space-based radaror space-based laser missions," the report states.¶ In the long term, the report says, **increased solar cell efficiencies and revolutionary materials foreshadow the potential of 500 kW on-orbit power generation technologies**, "which would be transformational for performing missions from space-based systems."¶ Furthermore, there are other breakthrough space energy technologies that have the potential of achieving up to 70 percent efficiency, the report adds. Examples include quantum dots and dilute nitrides in solar cells. But there are also totally new technologies such as space tethers that could harvest energy from the Earth's geomagnetic field.

#### SPS is key to space radar – it fills in the gaps of existing space situational awareness

Dinerman 7 – Taylor Dinerman, DoD Consultant, senior editor at the Gatestone Institute in New York. He specializes in the areas of space, missile defense and geopolitics affairs, July 16th, 2007, “Solar power satellites and space radar” <http://integrator.hanscom.af.mil/2007/July/07262007/07262007-16.htm>

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.**¶In order to achieve the power levels needed for an effective GMTI system using current technology, very large solar arrays would be needed. Even if these were to use the new Boeing solar cells that, according to the company, are more than 30% efficient, the arrays would still be much bigger than anything on any operational satellite. Such large arrays would make the SR spacecraft easy targets for enemy antisatellite weapons and would also produce so much drag while in LEO that their lifespan would be shorter—perhaps much shorter—than current-generation reconnaissance satellites.¶ Why, then, does such a system need to rely 100% on its own power? If solar power satellites (SPS) were available in geosynchronous orbit and could beam electricity to the SR satellites in LEO, this might **allow the radar satellites to have as much power as their power control systems and heat radiators could handle**. Power could be transmitted by a tightly focused laser or microwave beam to one or two receptors, integrated into the spacecraft’s bus. If the radar antenna were integrated into the skin of the satellite the way it is on a B-2 bomber, such satellite would be difficult to detect and track.¶ **Using power from an SPS, such a satellite would be able to liberally use its ion engines to change its orbit**. These engines would never be powerful enough to make the kind of quick responsive maneuvers that some space operations commanders would like to see in future LEO-based spacecraft, but they would be a step in the right direction.¶ The demise of the E-10 program that had been intended to replace the Air Force’s JSTARS and AWACS surveillance aircraft has left a hole in future US situational awareness capabilities that neither unmanned aerial vehicles (UAVs), such as the Predator and Global Hawk, **nor existing satellite programs can possibly fill**. Space Radar could do so, but only if the program is restructured to make it at once more ambitious in terms of future capability and less ambitious in terms of near-term operations.

#### Space radar is key to early warning systems that solve debris

Marques 5 Marta Marti-Marques, Technical University of Valencia, Spain, "SPACE-BASED RADAR SYSTEM FOR GEOSTATIONARY DEBRIS DETECTION AND TRACKING AT MEO", 2005, www.iafastro.net/iac/archive/browse/IAC-05/B6/1/1965/

Since the first known satellite fragmentation occurred just four years after Sputnik 1 was successfully put into orbit around our planet, it is believed that a total of 173 satellites have broken up, making the scientific community aware of the potential risks that space debris poses. In order to decrease the threat of operational spacecraft colliding with non-functional objects and to assess current and future population of space debris, cost-effective measurement techniques and devices capable of supplying us with the data required to conduct collision avoidance manoeuvres should be developed.¶ Our research aims to design a space-based detection and tracking radar system, which would provide much more accurate measurements of debris size and orbital parameters from densely populated GEO (Geostationary Earth Orbit). The orbiting device should be placed at MEO (Medium Earth Orbit), so that it allows full tracking of the geostationary arc in order to search GEO for non-functional spacecraft as well as for debris fragments and thereby update the current database of catalogued on-orbit debris population.¶ The detection and tracking radar system operating at Ka-band would supply us with valuable information for the characterisation of the near-Earth debris environment and the validation of space debris models. A directive large antenna would be required to generate short wavelengths and achieve high frequencies, as well as to provide a narrow beamwidth (high gain) capable of searching for non-operational spacecraft and debris clouds. Recent advances on microstrip patch antennas nevertheless prove that the building of such high performance radar would be cost-effective using planar technology.¶ Debris data would be collected by means of an electronically steerable phased array antenna, which could have its beam electronically steered in angle by changing the phase of the current at each radiating element, so that the region of constructive interference could be swept from side to side and look for targets. Despite the fact that attenuation of electromagnetic signals when propagating through the atmosphere or in adverse weather conditions can seriously degrade radar performance at high microwave frequencies, our in situ radar system does not have to face this challenge as it is a space-based device. Now then, on-board signal and data processing should be conducted before transmission by radio link to an Earth-based receiving station.¶ As it is not technically feasible to provide accurate enough ground-based measurements of targets located 36,000 km above the Earth surface, a MEO space-based radar would be the perfect solution due to the potential decrease of the distance between the observer and the object. The database built up from ground-based optical and radar facilities by means of traditional measurement techniques would be definitely improved if we update it with the accurate data our space-based radar will acquire. Functional spacecraft could use this database for advance warning of collisions with debris in order to manoeuvre out of the collision path.¶ In the final analysis, we believe that the proposed orbiting radar system would make a significant contribution to achieve a better understanding of the threats posed by the debris environment so that its impact on future space missions is minimised. For this reason, international cooperation is needed to evolve both technically and economically feasible alternatives to debris threats so that future space activities develop in a debris-free orbital environment. In this paper our space-based radar system will be described in detail and its operating parameters will be calculated to prove the feasibility of this new proposal and demonstrate its effectiveness in preserving the orbital environment for future generations.

#### The US is key

Weeden 9-30 – Brian Weeden, Bachelor's in Science (B.S.) in Electrical Engineering from Clarkson University and a Masters in Science (M.S) in Space Studies from the University of North Dakota. He is also a graduate of the International Space University Space Studies Program, has over a decade of professional technical and operations experience in the national and international space security arena. His wealth of technical knowledge has established him as a thought leader for providing critical analysis that supports development of space policy on a global scale. Prior to joining the Foundation, Mr. Weeden served nine years on active duty as an officer in the United States Air Force working in space and ICBM operations. As part of U.S. Strategic Command's Joint Space Operations Center (JSpOC), Captain Weeden directed the orbital analyst training program and developed tactics, techniques and procedures for improving space situational awareness. In his current role as Technical Advisor, Mr. Weeden conducts research on global space situational awareness, space traffic management, protection of space assets, and prevention of conflict in space. September 30th, 2012, "Space Situational Awareness Bigger Than U.S. Military" [www.defensenews.com/article/20120930/DEFFEAT05/309300008/Space-Situational-Awareness-Bigger-Than-U-S-Military](http://www.defensenews.com/article/20120930/DEFFEAT05/309300008/Space-Situational-Awareness-Bigger-Than-U-S-Military)

The February 2009 collision between an active Iridium satellite and a dead Russian satellite was a wake-up call to the world that demonstrated that space weapons and hostile activities in orbit were not the only, or even the most probable, threats to satellites and space-based capabilities.¶ Measures have been taken since to improve the tracking and warning systems to avoid collisions, but **they are not enough**. And these measures are still being managed and conducted largely by the U.S. military; the constraints of this approach are hindering progress.¶ As the country with the greatest reliance on satellites for national security and economic benefits, the United States realizes the dangers of collisions and large amounts of space debris. The United States also possesses the best space situational awareness capabilities, and in the aftermath of the collision was faced with either releasing the highly accurate satellite-location information maintained by the U.S. military so all satellite operators could calculate their own collision warnings or directing the military to provide a collision-warning service for all of the estimated 1,000 active satellites.¶ Largely because of the desire to control the information and hide some of its national security space assets, the U.S. government became the space collision warning agency for the world**.**¶ Three years later, the benefits and consequences of that choice are being felt. The close-approach warnings provided by the U.S. military to all satellite operators, numbering more than 150 a year, have greatly increased the visibility and awareness of the space debris problem and caused many satellite operators to become more responsible. However, everyone who enjoys the benefits derived from a space presence has become reliant on the U.S. military’s space situational awareness capabilities, **which have not been upgraded to deal with the task they are now depended upon to perform**.¶ The foundation of these capabilities **is space surveillance**, and in particular the production and maintenance of a database of objects in orbit and their locations. This database, known as a satellite catalog, is maintained by two computer systems that have been scheduled for replacement for more than a decade. Several programs to replace these systems have been proposed, announced, attempted and subsequently killed with few results.

#### Debris will knock out satellites and cause extinction

Dunstan 9 – James, JD, Space and Technology Lawyer – Garvey Schubert Barer, and Berin Szoka, Senior Feelow – Progress and Freedom Foundation, Director – Space Frontier Foundation, and Member of the Commerical Space Transportation Advisory Committee – Federal Aviation Administration, “Beware Of Space Junk: Global Warming Isn’t the Only Major Environmental Problem”,<http://techliberation.com/2009/1t2/18/beware-of-space-junk-global-warming-isnt-the-only-major-environmental-problem/>

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.[1] 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.  Thoseare speeding bullets, some the size of school buses, and all capable of knocking out a satellite or manned vehicle.  At stake are 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 utterlyindispensable toAmericantroops in the field; and play a critical roleinmonitoring climate change and other environmental problems.  Orbital debris could block all thesebenefits for centuries, and prevent us from developing clean energy sources like space solar power satellites, exploring our Solar System and some day 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 we are nearing the “tipping point”where these collisions will cascade, making many orbits unusable. But the problem can be solved.  Thus far, governments have simply tried to mandate “mitigation” of debris-creation.  But just as some warn about “runaway warming,” we know that mitigation alone will not solve the debris problem.  The answer lies in “remediation”: removing just five large objects per year could prevent a chain reaction.  If governments attempt to clean up this mess themselves, the cost could run into the trillions—rivaling even some proposed climate change solutions.

#### Debris will strike early-warning satellites---causes US Russia nuclear war

Lewis 4 (Jeffrey Lewis, postdoctoral fellow in the Advanced Methods of Cooperative Study Program; worked in the office of the Undersecretary of Defense for Policy, Center for Defense Information, “What if Space were Weaponized?” July 2004, http://www.cdi.org/PDFs/scenarios.pdf)

This is the second of two scenarios that consider how U.S. space weapons might create incentives for America’s opponents to behave in dangerous ways. The previous scenario looked at the systemic risk of accidents that could arise from keeping nuclear weapons on high alert to guard against a space weapons attack. This section focuses on the risk that a single accident in space, such as a piece of space debris striking a Russian early-warning satellite, might be the catalyst for an accidental nuclear war. As we have noted in an earlier section, the United States canceled its own ASAT program in the 1980s over concerns that the deployment of these weapons might be deeply destabiliz- ing. For all the talk about a “new relationship” between the United States and Russia, both sides retain thousands of nuclear forces on alert and configured to fight a nuclear war. When briefed about the size and status of U.S. nuclear forces, President George W. Bush reportedly asked “What do we need all these weapons for?”43 The answer, as it was during the Cold War, is that the forces remain on alert to conduct a number of possible contingencies, including a nuclear strike against Russia. This fact, of course, is not lost on the Rus- sian leadership, which has been increasing its reliance on nuclear weapons to compensate for the country’s declining military might. In the mid-1990s, Russia dropped its pledge to refrain from the “•rst use” of nuclear weapons and conducted a series of exercises in which Russian nuclear forces prepared to use nuclear weapons to repel a NATO invasion. In October 2003, Russian Defense Minister Sergei Ivanov reiter- ated that Moscow might use nuclear weapons “preemptively” in any number of contingencies, including a NATO attack.44 So, it remains business as usual with U.S. and Russian nuclear forces. And business as usual includes the occasional false alarm of a nuclear attack. There have been several of these incidents over the years. In September 1983, as a relatively new Soviet early-warning satellite moved into position to monitor U.S. missile •elds in North Dakota, the sun lined up in just such a way as to fool the Russian satellite into reporting that half a dozen U.S. missiles had been launched at the Soviet Union. Perhaps mindful that a brand new satel- lite might malfunction, the of•cer in charge of the command center that monitored data from the early-warning satellites refused to pass the alert to his superiors. He reportedly explained his caution by saying: “When people start a war, they don’t start it with only •ve missiles. You can do little damage with just •ve missiles.”45 In January 1995, Norwegian scientists launched a sounding rocket on a trajectory similar to one that a U.S. Trident missile might take if it were launched to blind Russian radars with a high altitude nuclear detonation. The incident was apparently serious enough that, the next day, Russian President Boris Yeltsin stated that he had activated his “nuclear football” – a device that allows the Russian president to communicate with his military advisors and review his options for launching his arsenal. In this case, the Russian early-warning satellites could clearly see that no attack was under way and the crisis passed without incident.46 In both cases, Russian observers were con•-dent that what appeared to be a “small” attack was not a fragmentary picture of a much larger one. In the case of the Norwegian sounding rocket, space-based sensors played a crucial role in assuring the Russian leadership that it was not under attack. The Russian command sys-tem, however, is no longer able to provide such reliable, early warning. The dissolution of the Soviet Union cost Moscow several radar stations in newly independent states, creating “attack cor-ridors” through which Moscow could not see an attack launched by U.S. nuclear submarines.47 Further, Russia’s constellation of early-warn-ing satellites has been allowed to decline – only one or two of the six satellites remain operational, leaving Russia with early warning for only six hours a day. Russia is attempting to reconstitute its constellation of early-warning satellites, with several launches planned in the next few years. But Russia will still have limited warning and will depend heavily on its space-based systems to provide warning of an American attack.48 As the previous section explained, the Penta- gon is contemplating military missions in space that will improve U.S. ability to cripple Russian nuclear forces in a crisis before they can execute an attack on the United States. Anti-satellite weapons, in this scenario, would blind Russian reconnaissance and warning satellites and knock out communications satellites. Such strikes might be the prelude to a full-scale attack, or a limited ef- fort, as attempted in a war game at Schriever Air Force Base, to conduct “early deterrence strikes” to signal U.S. resolve and control escalation.49 By 2010, the United States may, in fact, have an arsenal of ASATs (perhaps even on orbit 24/7) ready to conduct these kinds of missions – to coerce opponents and, if necessary, support preemptive attacks. Moscow would certainly have to worry that these ASATs could be used in conjunction with other space-enabled systems – for example, long-range strike systems that could attack targets in less than 90 minutes – to disable Russia’s nuclear deterrent before the Rus- sian leadership understood what was going on. What would happen **if a piece of space debris were to disable a Russian early-warning satellite** under these conditions? Could the Russian military distinguish between an accident in space and the first phase of a U.S. attack? Most Russian early-warning satellites are in elliptical Molniya orbits (a few are in GEO) and thus dif•cult to attack from the ground or air. At a minimum, Moscow would probably have some tactical warn-ing of such a suspicious launch, but given the sorry state of Russia’s warning, optical imaging and signals intelligence satellites there is reason to ask the question. Further, the advent of U.S. on-orbit ASATs, as now envisioned50 could make both the more dif•cult orbital plane and any warning systems moot. The unpleasant truth is that the Russians likely would have to make a judgment call. No state has the ability to de•nitively deter-mine the cause of the satellite’s failure. Even the United States does not maintain (nor is it likely to have in place by 2010) a sophisticated space surveillance system that would allow it to distinguish between a satellite malfunction, a debris strike or a deliberate attack – and Russian space surveillance capabilities are much more limited by comparison. Even the risk assessments for col-lision with debris are speculative, particularly for the unique orbits in which Russian early-warning satellites operate. During peacetime, it is easy to imagine that the Russians would conclude that the loss of a satellite was either a malfunction or a debris strike. But how con•dent could U.S. planners be that the Russians would be so calm if the accident in space occurred in tandem with a second false alarm, or occurred during the middle of a crisis? What might happen if the debris strike oc-curred shortly after a false alarm showing a mis-sile launch? False alarms are appallingly common – according to information obtained under the Freedom of Information Act, the U.S.-Canadian North American Aerospace Defense Command (NORAD) experienced 1,172 “moderately seri-ous” false alarms between 1977 and 1983 – an average of almost three false alarms per week. Comparable information is not available about the Russian system, but there is no reason to believe that it is any more reliable.51 Assessing the likelihood of these sorts of co- incidences is dif•cult because Russia has never provided data about the frequency or duration of false alarms; nor indicated how seriously early- warning data is taken by Russian leaders. More- over, there is no reliable estimate of the debris risk for Russian satellites in highly elliptical orbits.52 The important point, however, is that such a coincidence would only appear suspicious if the United States were in the business of disabling satellites – in other words, there is much less risk if Washington does not develop ASATs. The loss of an early-warning satellite could look rather ominous if it occurred during a period of major tension in the relationship. While NATO no longer sees Russia as much of a threat, the same cannot be said of the converse. Despite the warm talk, Russian leaders remain wary of NATO expansion, particularly the effect expan- sion may have on the Baltic port of Kaliningrad. Although part of Russia, Kaliningrad is separated from the rest of Russia by Lithuania and Poland. Russia has already complained about its decreas- ing lack of access to the port, particularly the uncooperative attitude of the Lithuanian govern- ment.53 News reports suggest that an edgy Russia may have moved tactical nuclear weapons into the enclave.54 If the Lithuanian government were to close access to Kaliningrad in a •t of pique, this would trigger a major crisis between NATO and Russia. Under these circumstances, the loss of an early-warning satellite would be extremely suspi-cious. It is any military’s nature during a crisis to interpret events in their worst-case light. For ex- ample, consider the coincidences that occurred in early September 1956, during the extraordinarily tense period in international relations marked by the Suez Crisis and Hungarian uprising.55 On one evening the White House received messages indicating: 1. the Turkish Air Force had gone on alert in response to unidentified aircraft penetrat- ing its airspace; 2. one hundred Soviet MiG-15s were •ying over Syria; 3. a British Canberra bomber had been shot down over Syria, most likely by a MiG; and 4. The Russian fleet was moving through the Dardanelles. Gen. Andrew Goodpaster was reported to have worried that the confluence of events “might trigger off … the NATO operations plan” that called for a nuclear strike on the Soviet Union. Yet, all of these reports were false. The “jets” over Turkey were a flock of swans; the Soviet MiGs over Syria were a smaller, routine escort returning the president from a state visit to Mos- cow; the bomber crashed due to mechanical dif•culties; and the Soviet fleet was beginning long-scheduled exercises. In an important sense, these were not “coincidences” but rather different manifestations of a common failure – human er- ror resulting from extreme tension of an interna- tional crisis. As one author noted, “The detection and misinterpretation of these events, against the context of world tensions from Hungary and Suez, was the first major example of how the size and complexity of worldwide electronic warning systems could, at certain critical times, create momentum of its own.” Perhaps most worrisome, the United States might be blithely unaware of the degree to which the Russians were concerned about its actions and inadvertently escalate a crisis. During the early 1980s, the Soviet Union suffered a major “war scare” during which time its leadership concluded that bilateral relations were rapidly declining. This war scare was driven in part by the rhetoric of the Reagan administration, fortified by the selective reading of intelligence. During this period, NATO conducted a major command post exercise, Able Archer, that caused some elements of the Soviet military to raise their alert status. American officials were stunned to learn, after the fact, that the Kremlin had been acutely nervous about an American first strike during this period.56 All of these incidents have a common theme – that confidence is often the difference between war and peace. In times of crisis, **false alarms** can have a momentum of their own. As in the second scenario in this monograph, the lesson is that commanders rely on the steady flow of reli-able information. When that information flow is disrupted – whether by a deliberate attack or an accident – confidence collapses **and** the result is panic and escalation. Introducing ASAT weapons into this mix is all the more dangerous, because such weapons target the elements of the command system that keep leaders aware, informed and in control. As a result, the mere presence of such weapons is corrosive to the con•dence that allows national nuclear forces to operate safely.

#### Extinction

Helfand and Pastore 9 | Presidents of Physicians for Social Responsibility (Ira and John, MD's and Past Presidents of the Physicians for Social Responsbility, "US-Russia nuclear war still a threat," 3/31)

Since the end of the Cold War, many have acted as though the danger of nuclear war has ended. It has not. There remain in the world more than 20,000 nuclear weapons. Alarmingly, more than 2,000 of these weapons in the U.S. and Russian arsenals remain on ready-alert status, commonly known as hair-trigger alert. They can be fired within five minutes and reach targets in the other country 30 minutes later. Just one of these weapons can destroy a city. A war involving a substantial number would cause devastation on a scale unprecedented in human history. A study conducted by Physicians for Social Responsibility in 2002 showed that if only 500 of the Russian weapons on high alert exploded over our cities, 100 million Americans would die in the first 30 minutes. An attack of this magnitude also would destroy the entire economic, communications and transportation infrastructure on which we all depend. Those who survived the initial attack would inhabit a nightmare landscape with huge swaths of the country blanketed with radioactive fallout and epidemic diseases rampant. They would have no food, no fuel, no electricity, no medicine, and certainly no organized health care. In the following months it is likely the vast majority of the U.S. population would die. Recent studies by the eminent climatologists Toon and Robock have shown that such a war would have a huge and immediate impact on climate world wide. If all of the warheads in the U.S. and Russian strategic arsenals were drawn into the conflict, the firestorms they caused would loft 180 million tons of soot and debris into the upper atmosphere — blotting out the sun. Temperatures across the globe would fall an average of 18 degrees Fahrenheit to levels not seen on earth since the depth of the last ice age, 18,000 years ago. Agriculture would stop, eco-systems would collapse, and many species, including perhaps our own, would become extinct. It is common to discuss nuclear war as a low-probabillity event. But is this true? We know of five occcasions during the last 30 years when either the U.S. or Russia believed it was under attack and prepared a counter-attack. The most recent of these near misses occurred after the end of the Cold War on Jan. 25, 1995, when the Russians mistook a U.S. weather rocket launched from Norway for a possible attack. Jan. 25, 1995, was an ordinary day with no major crisis involving the U.S. and Russia. But, unknown to almost every inhabitant on the planet, a misunderstanding led to the potential for a nuclear war. The ready alert status of nuclear weapons that existed in 1995 remains in place today. The nuclear danger will not pass until the U.S. and Russia lead the other nuclear states to a Nuclear Weapons Convention that seeks to abolish these weapons forever. As a critical first step the U.S. and Russia must take their weapons off ready-alert status. Presidents Obama and Medvedev can do this on their own by executive order.

#### Satellite arctic monitoring prevents war

**Hodges 11** (Jim Hodges, “Commanding the Arctic,” C4ISR Journal, March 1, 2011, http://www.c4isrjournal.com/story.php?F=5508063)

It was simpler during the Cold War. The United States and Canada set up a string of U.S.-built Defense Early Warning radars in the Arctic to watch for bombers and missiles that might be headed from the Soviet Union toward U.S. military bases and cities. Melting Arctic sea ice has created a vastly more complicated situation for the U.S., Canada and the joint North American Aerospace Defense Command (NORAD). Strategists worry that terrorists could use ice-free waterways as infiltration routes or other nations with stakes in the Arctic could try to tap the lion’s share of the region’s undiscovered petroleum reserves. NORAD is in planning mode when it comes to this new reality, but Canada, with arguably more at risk than the U.S., wants to move faster. Canada has set a goal of asserting sovereignty over its region of the Arctic. Canadian officials want to protect their share of the Arctic’s oil and also of the diamonds recently discovered under the thawing Arctic tundra — Canada is now third in the world in diamond mining. Canada also argues that the Northwest Passage shipping routes, which remain ice-free for longer periods each year, are internal to Canada, a claim that the U.S. and other nations dispute. With so many national interests in an area larger than continental Europe but with only 104,000 inhabitants, Canadian officials are testing new sonars and ship-spotting radars. They are mapping the continental shelf below the Arctic to make an international legal case for control of more waters. They are eyeing improvements to satellite communications and making plans to launch new versions of their cloud-penetrating Radarsat satellites. And they must do all this within the constraints of a $21.8 billion defense budget that some in Parliament want to reduce.

#### Arctic conflict causes nuclear war

Wallace & Staples 10 – Michael Wallace is Professor Emeritus at the University of British Columbia; Steven Staples is President of the Rideau Institute in Ottawa, March 2010, “Ridding the Arctic of Nuclear Weapons A Task Long Overdue”, http://www.arcticsecurity.org/docs/arctic-nuclear-report-web.pdf

The fact is, the Arctic is becoming a zone of increased military competition. Russian President Medvedev has announced the creation of a special military force to defend Arctic claims. Last year Russian General Vladimir Shamanov declared that Russian troops would step up training for Arctic combat, and that Russia’s submarine fleet would increase its “operational radius.” Recently, two Russian attack submarines were spotted off the U.S. east coast for the first time in 15 years. ¶ In January 2009, on the eve of Obama’s inauguration, President Bush issued a National Security Presidential Directive on Arctic Regional Policy. It affirmed as a priority the preservation of U.S. military vessel and aircraft mobility and transit throughout the Arctic, including the Northwest Passage, and foresaw greater capabilities to protect U.S. borders in the Arctic. ¶ The Bush administration’s disastrous eight years in office, particularly its decision to withdraw from the ABM treaty and deploy missile defence interceptors and a radar station in Eastern Europe, have greatly contributed to the instability we are seeing today, even though the Obama administration has scaled back the planned deployments. **The Arctic has figured in this renewed interest in Cold War weapons systems**, particularly the upgrading of the Thule Ballistic Missile Early Warning System radar in Northern Greenland for ballistic missile defence. ¶ **The Canadian government, as well, has put forward new military capabilities to protect Canadian sovereignty claims in the Arctic**, including proposed ice-capable ships, a northern military training base and a deep-water port. Earlier this year Denmark released an all-party defence position paper that suggests the country should create a dedicated Arctic military contingent that draws on army, navy and air force assets with shipbased helicopters able to drop troops anywhere. Danish fighter planes would be tasked to patrol Greenlandic airspace. ¶ Last year Norway chose to buy 48 Lockheed Martin F-35 fighter jets, partly because of their suitability for Arctic patrols. In March, that country held a major Arctic military practice involving 7,000 soldiers from 13 countries in which a fictional country called Northland seized offshore oil rigs. ¶ The manoeuvres prompted a protest from Russia – which objected again in June after Sweden held its largest northern military exercise since the end of the Second World War. About **12,000 troops, 50 aircraft and several warships were involved**. ¶ Jayantha Dhanapala, President of Pugwash and former UN under-secretary for disarmament affairs, summarized the situation bluntly: “From those in the international peace and security sector, deep concerns are being expressed over the fact that two nuclear weapon states – the United States and the Russian Federation, which together own 95 per cent of the nuclear weapons in the world – converge on the Arctic and have competing claims. These claims, together with those of other allied NATO countries – Canada, Denmark, Iceland, and Norway – could, if unresolved, lead to conflict escalating into the threat or use of nuclear weapons.” Many will no doubt argue that this is excessively alarmist, but **no circumstance in which nuclear powers find themselves in military confrontation can be taken lightly.** ¶ The current geo-political threat level is nebulous and low – for now, according to Rob Huebert of the University of Calgary, “[**the] issue is the uncertainty** as Arctic states and non-Arctic states begin to recognize the geo-political/economic significance of the Arctic because of climate change.”

#### Space radar is key to ISR---solves naval effectiveness and dampens the impact of bioweapons attacks

National Research Council 5 – Committee on the Navy's Needs in Space for Providing Future Capabilites, National Research Council. 2005. "The Navy's Needs in Space for Providing Future Capabilities" [www.nap.edu/catalog.php?record\_id=11299](http://www.nap.edu/catalog.php?record_id=11299)

[NSS = Naval Support System]

Today, strike targets are identified, classified, tracked, and geolocated through a combination of sensors on NSS systems, airborne platforms, and naval platforms. NSS and airborne systems are generally used cooperatively to support time-sensitive requirements of strikes. The requirements of the Navy for overland targeting are essentially identical to those of the other Services; however, the Navy will need to carefully manage and guide the course of progress on its requirements for over-water targeting to ensure that they are included in future programs. In particular, many satellite systems do not operate over the open ocean (this includes early plans for the SBR described above)—pointing out the Navy’s need to track even its most basic requirements on availability. During a system’s development and operational phases, technical and funding support is typically needed to improve performance and adapt the system to changing threat and target conditions. Additionally, **the Navy will need to explore the potential of other new** space ISR capabilities, such as hyperspectral imaging to assist in separating targets from background and camouflage, especially in the open-ocean and littoral areas unique to the operations of Navy and Marine Corps forces. In general, the future FIA and SBR systems could greatly enhance NSS support **for Sea Strike by— Improving persistence through increased numbers of satellites, and Improving image resolution, thereby strengthening the ability of naval forces to identify, track, and target terrorist and other small-unit threats.**¶ Sea Shield¶ To maintain littoral superiority for naval and joint force components, ISR resources must be able to support protection against conventional and unconventional (i.e., chemical, biological, radiological, nuclear, and environmental) threats from special operations and terrorist forces. Information from space-, ground-, and sea-based and airborne ISR resources need to be used, where possible, to identify and locate near-horizon and over-the-horizon threats, to enable afloat operations by supporting self-defense against and/or neutralization of undersea threats (including those from submarines, mines, submerged barriers, and obstacles), and to provide defense over land and over sea against theater air and ballistic missile threats. **The support of all of these defensive operations currently challenges NSS ISR resources and will continue to do so for the foreseeable future.** One of the limitations of current NSS systems in contributing significantly to defensive antisubmarine warfare (ASW) and countermine operations is the lack of persistence in making observations of offensive enemy operations. It is possible to observe enemy submarines at shallow depth from space, and also to observe the laying of mine fields or the navigation by enemy combatants through mine fields they have laid. However, **the long time lapses between overhead satellite observations by** current **NSS systems do not support the near-continuous observations needed**.3 As described above, the future FIA and SBR systems, if fielded, should significantly improve overall observational persistence.¶ Today, most operations rely largely on theater assets (the SPY-1D radar system on the Navy’s Aegis ships, sensors on E-2C and E-3 aircraft, and so on) to provide the ISR information necessary to support Sea Shield operations effectively. For surface warfare, **Sea Shield requires that ISR capability provide near-horizon and over-the-horizon warning, tracking, and targeting information against surface targets; these requirements are similar in many regards to the Sea Strike capability needs.** In addition to the improvements noted above that would enhance NSS support for Sea Strike, the future FIA and **SBR systems should greatly improve NSS support for Sea Shield by— Increasing coverage areas, thereby extending the engagement distance to distances beyond the threat range from enemy combatants; and Establishing a space-based GMTI capability (with SBR), thereby enabling space-based, near-continuous tracking of moving surface vessels**. Similarly, undersea warfare support can be extended in area by improved persistence of SBR and FIA, provided that these systems are designed and operated specifically to address the special needs of large-area search in ocean areas. These forms of support are just the beginning, however, and long-term S&T is needed in support of effective naval specification and use of SBR. As an example, further S&T funding could be provided to support a comparison of the expected performance of radars with which the Navy is familiar (such as the E-2C aircraft radar and its upgrades) with the various options for SBR. Such analysis would help establish and maintain the connection between specialized maritime radar experts, the operational Navy, and sthe SBR office.

#### Left uncheck, bioweapons cause extinction

Ochs 2 | Past president of the Aberdeen Proving Ground Superfund Citizens Coalition, Member of the Depleted Uranium Task force of the Military Toxics Project, and M of the Chemical Weapons Working Group [Richard Ochs, , June 9, 2002, “Biological Weapons Must Be Abolished Immediately,” <http://www.freefromterror.net/other_articles/abolish.html>]

Of all the weapons of mass destruction, the genetically engineered biological weapons, many without a known cure or vaccine, are an extreme danger to the continued survival of life on earth. Any perceived military value or deterrence pales in comparison to the great risk these weapons pose just sitting in vials in laboratories. While a “nuclear winter,” resulting from a massive exchange of nuclear weapons, could also kill off most of life on earth and severely compromise the health of future generations, they are easier to control. Biological weapons, on the other hand, can get out of control very easily, as the recent anthrax attacks has demonstrated. There is no way to guarantee the security of these doomsday weapons because very tiny amounts can be stolen or accidentally released and then grow or be grown to horrendous proportions. The Black Death of the Middle Ages would be small in comparison to the potential damage bioweapons could cause. Abolition of chemical weapons is less of a priority because, while they can also kill millions of people outright, their persistence in the environment would be less than nuclear or biological agents or more localized. Hence, chemical weapons would have a lesser effect on future generations of innocent people and the natural environment. Like the Holocaust, once a localized chemical extermination is over, it is over. With nuclear and biological weapons, the killing will probably never end. Radioactive elements last tens of thousands of years and will keep causing cancers virtually forever. Potentially worse than that, bio-engineered agents by the hundreds with no known cure could wreck even greater calamity on the human race than could persistent radiation. AIDS and ebola viruses are just a small example of recently emerging plagues with no known cure or vaccine. Can we imagine hundreds of such plagues? HUMAN EXTINCTION IS NOW POSSIBLE. Ironically, the Bush administration has just changed the U.S. nuclear doctrine to allow nuclear retaliation against threats upon allies by conventional weapons. The past doctrine allowed such use only as a last resort when our nation’s survival was at stake. Will the new policy also allow easier use of US bioweapons? How slippery is this slope?

#### Collapse of the navy causes great power wars

Conway et al. 7 [James T., General, U.S. Marine Corps, Gary Roughead, Admiral, U.S. Navy, Thad W. Allen, Admiral, U.S. Coast Guard, “A Cooperative Strategy for 21st Century Seapower,” October, http://www.navy.mil/maritime/MaritimeStrategy.pdf]

No other disruption is as potentially disastrous to global stability as war among major powers. Maintenance and extension of this Nation’s comparative seapower advantage is a key component of deterring major power war. While war with another great power strikes many as improbable, the near-certainty of its ruinous effects demands that it be actively deterred using all elements of national power. The expeditionary character of maritime forces—our lethality, global reach, speed, endurance, ability to overcome barriers to access, and operational agility—provide the joint commander with a range of deterrent options. We will pursue an approach to deterrence that includes a credible and scalable ability to retaliate against aggressors conventionally, unconventionally, and with nuclear forces. Win our Nation’s wars. In times of war, our ability to impose local sea control, overcome challenges to access, force entry, and project and sustain power ashore, makes our maritime forces an indispensable element of the joint or combined force. This expeditionary advantage must be maintained because it provides joint and combined force commanders with freedom of maneuver. Reinforced by a robust sealift capability that can concentrate and sustain forces, sea control and power projection enable extended campaigns ashore.

#### The navy solves piracy

Hilley 8 – Mass Communication Specialist 1st Class (Monique, “Coalition Forces Work To Deter Piracy In Gulf Of Aden”, The United States Department of the Navy, 1/17/09, Story Number: NNS090117-01, Online @ http://www.navy.mil/submit/display.asp?story\_id=41897)

USS SAN ANTONIO, At sea (NNS) -- Combined Task Force (CTF) 151 is working closely with international navies in the Gulf of Aden to conduct counterpiracy operations and ensure a lawful maritime order in the region. "We're out here as a force, with the coalition nations, to ensure commerce flows freely throughout the world," explained Rear Adm. Terry McKnight, commander, CTF 151. "We are working to achieve an objective of preventing piracy at sea. Over the past few years, we've learned from many combined operations that working with the coalition is key to our success throughout the world." The mission of CTF 151 is to prevent and deter piracy operations in the Gulf of Aden. The task force, which has assembled on board the amphibious transport dock ship USS San Antonio (LPD 17), has many capabilities which are enhanced by the ship's crew. The personnel currently embarked aboard San Antonio in support of CTF 151 counterpiracy operations include a helicopter squadron, fleet surgical team, boarding teams and several elements from the U.S. Marine Corps and U.S. Coast Guard. "This mission is very important for the maritime strategy of our nation and also to work with our coalition nations," said McKnight. "We are out here to demonstrate that the United States Navy will not allow criminal acts on the high seas and that we want, as best we can, to improve the open trade agreements throughout the world." Piracy acts spiked in the region in mid-August due to a very aggressive increase in activity by a clan on the north coast of Somalia. In response to the activity, Vice Adm. William Gortney, commander, Combined Maritime Forces, directed the establishment of the maritime security patrol area (MSPA), an area coalition ships and aircraft patrol to prevent destabilizing activity. "Because of the complexity of the operations, I determined it was necessary to establish CTF 151 to create a task force with a mission and a mandate from the United Nations to conduct counterpiracy operations throughout the area of responsibility," said Gortney during a press briefing at the Pentagon Jan. 15. Although the Combined Maritime Forces (CMF) do not have a mandate to conduct counterpiracy operations, combined task forces each have a particular mandate under which they operate. Any nation that does not yet have the authority to conduct counterpiracy operations will continue to work in Combined Task Force 150, while those that seek the authority to operate with CTF 151 will bring their collective capabilities together to deter, disrupt and eventually bring to justice the maritime criminals involved in the piracy events. "It's really a fascinating story to watch unfold as, at this point, 14 nations have sent their navies to work against the destabilizing activity," added Gortney. CTF 151, with the International Maritime Organization, created the maritime security patrol area as a place to channel the shipping so that they could concentrate naval activity. The task force includes three phases, which outline critical mission goals. The first phase is focused on bringing more international navies into the efforts to help solve this international problem. The second phase involves working with the shipping industry to develop and share practices that prevent pirates from successfully boarding their vessels. The third phase, once authorized, will allow the task force to deliver suspected pirates to court, where they will be held accountable for their actions. "We've had great effects on the first two," explained Gortney. "Fourteen nations are down there. The shipping industry is having the greatest impact. They're doing a terrific job of sharing best practices, speed, maneuver and non-kinetic defensive measures that will prevent pirates from getting aboard the vessel. We have had a great effect on that. In the last six weeks, there have only been four successful piracy attacks." CTF 151 is working very closely with the U.S. State Department to finalize an agreement with one of the nations in the area that will allow CTF 151 and coalition forces to disrupt, deter, capture and hold suspected pirates accountable for their actions. The task force expects that authority to be granted within the next week. "We are going to aggressively go after the pirates that are conducting pirate activity," said Gortney. "We have to make it unpleasant to be a pirate." CTF 151 is a multinational task force conducting counterpiracy operations to detect and deter piracy in and around the Gulf of Aden, Arabian Sea, Indian Ocean and Red Sea. It was established to create a lawful maritime order and develop security in the maritime environment.

#### Piracy causes oil spills that destroy ocean ecosystems

Middleton 8—Roger, consultant reseacher in the Africa Programme at the Chatham House, the Royal Institute of Economic Affairs, "Piracy in Somalia", October, <http://www.chathamhouse.org/sites/default/files/public/Research/Africa/1008piracysomalia.pdf>

Large oil tankers pass through the Gulf of Aden and the danger exists that **a pirate attack could cause a major oil spill** in what is a very sensitive and important ecosystem. During the attack on the Takayama the ship’s fuel tanks were penetrated and oil spilled into the sea. The consequences of a more sustained attack could be much worse. As pirates become bolder and use ever more powerful weaponry a tanker could be set on fire, sunk or forced ashore, any of **which could result in an** environmental catastrophe that would devastate marine and bird life for years to come. The pirates’ aim is to extort ransom payments and to date that has been their main focus; however, the possibility that they could destroy shipping is very real.

#### Ocean destruction causes extinction

Craig 3 (Robin, Professor of Law at Indiana, “Taking Steps,” 34 McGeorge Law Review. 155, Lexis)

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the **basic building blocks of living organisms**, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." In a very real and direct sense, therefore, human degradation of marine ecosystems impairs the planet's ability to support life. Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, **an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity**, "indicating that more diverse ecosystems are more stable." Coral reef ecosystems are particularly dependent on their biodiversity. Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence should be preserving marine wilderness whenever we can - especially when the United States has within its territory relatively pristine marine ecosystems that may be unique in the world. We may not know much about the sea, but we do know this much: **if we kill the ocean** we kill ourselves**, and we will take** most of the biosphere with us**.** The Black Sea is almost dead, its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." More importantly, the Black Sea is not necessarily unique. The Black Sea is a microcosm of what is happening to the ocean systems at large. The stresses piled up: overfishing, oil spills, industrial discharges, nutrient pollution, wetlands destruction, the introduction of an alien species. The sea weakened, slowly at first, then collapsed with shocking suddenness. The lessons of this tragedy should not be lost to the rest of us, because much of what happened here is being repeated all over the world. The ecological stresses imposed on the Black Sea were not unique to communism. Nor, sadly, was the failure of governments to respond to the emerging crisis. Oxygen-starved "dead zones" appear with increasing frequency off the coasts of major cities and major rivers, forcing marine animals to flee and killing all that cannot. Ethics as well as enlightened self-interest thus suggest that the United States should protect fully-functioning marine ecosystems wherever possible - even if a few fishers go out of business as a result.

# 2AC

### India Solvency

**Launching of thousands of satellites is inevitable**

**Space Daily 10** (" More Than 1,200 Satellites To Be Launched Over The Next 10 Years," Sept 7, http://www.spacedaily.com/reports/More\_Than\_1200\_Satellites\_To\_Be\_Launched\_Over\_The\_Next\_10\_Years\_999.html, EMM)

Euroconsult has forecast that an estimated 1,220 satellites will be built for launch over the next decade. The average of 122 satellites to be launched per year is up significantly from the annual average of 77 satellites launched in the previous decade, a sign that government and commercial operators require more satellite capabilities. In Euroconsult's just-released "Satellites to be Built and Launched by 2019, World Market Survey," the company projects that revenues from the manufacturing and launch of these 1,220 satellites will reach $194 billion worldwide for the decade. The report concludes that governments around the world will continue to dominate the space market, accounting for two thirds of the total number of spacecraft launched and the same amount of launch and manufacturing revenues. "Governments realize that satellite systems are a critical part of their country's infrastructure and contribute to socio-economic development by providing communications and geo-information solutions to many government agencies," said Rachel Villain, Director for Space for Euroconsult and editor of the report. Civilian and military government agencies in 50 countries will launch a total of 808 satellites in the next decade, with two-thirds of these satellites designated for civil or dual use. The military space market remains concentrated in a limited number of countries (USA, Europe, Russia, China, Japan and Israel). Despite the fact that defense and security agencies prefer proprietary military satellite systems for communications, imagery intelligence, and space surveillance, budget constraints will encourage alternative solutions such as public-private partnerships (PPP) and government payloads hosted on commercial satellites, the report predicts. In non-military areas, governments are expected to procure satellites for operational missions in Earth observation, meteorology, navigation, and communications.

#### Global democracy inevitable

Tow 10—Director of the Future Planet Research Centre (David, Future Society- The Future of Democracy, 26 August 2010, http://www.australia.to/2010/index.php?option=com\_content&view=article&id=4280:future-society-the-future-of-democracy&catid=76:david-tow&Itemid=230)

Democracy, as with all other processes engineered by human civilisation, is evolving at a rapid rate. A number of indicators are pointing to a major leap forward, encompassing a more public participatory form of democratic model and the harnessing of the expert intelligence of the Web. By the middle of the 21st century, such a global version of the democratic process will be largely in place. Democracy has a long evolutionary history. The concept of democracy - the notion that men and women have the right to govern themselves, was practised at around 2,500 BP in Athens. The Athenian polity or political body, granted all citizens the right to be heard and to participate in the major decisions affecting their rights and well-being. The City State demanded services and loyalty from the individual in return. There is evidence however that the role of popular assembly actually arose earlier in some Phoenician cities such as Sidon and Babylon in the ancient assemblies of Syria- Mesopotamia, as an organ of local government and justice. As demonstrated in these early periods, democracy, although imperfect, offered each individual a stake in the nation’s collective decision-making processes. It therefore provided a greater incentive for each individual to cooperate to increase group productivity. Through a more open decision process, improved innovation and consequently additional wealth was generated and distributed more equitably. An increase in overall economic wellbeing in turn generated more possibilities and potential to acquire knowledge, education and employment, coupled with greater individual choice and freedom. According to the Freedom House Report, an independent survey of political and civil liberties around the globe, the world has made great strides towards democracy in the 20th and 21st centuries. In 1900 there were 25 restricted democracies in existence covering an eighth of the world’s population, but none that could be judged as based on universal suffrage. The US and Britain denied voting rights to women and in the case of the US, also to African Americans. But at the end of the 20th century 119 of the world’s 192 nations were declared electoral democracies. In the current century, democracy continues to spread through Africa and Asia and significantly also the Middle East, with over 130 states in various stages of democratic evolution. Dictatorships or quasi democratic one party states still exist in Africa, Asia and the middle east with regimes such as China, North Korea, Zimbabwe, Burma, the Sudan, Belarus and Saudi Arabia, seeking to maintain total control over their populations. However two thirds of sub-Saharan countries have staged elections in the past ten years, with coups becoming less common and internal wars gradually waning. African nations are also starting to police human rights in their own region. African Union peacekeepers are now deployed in Darfur and are working with UN peacekeepers in the Democratic Republic of the Congo. The evolution of democracy can also be seen in terms of improved human rights. The United Nations Universal Declaration of Human Rights and several ensuing legal treaties, define political, cultural and economic rights as well as the rights of women, children, ethnic groups and religions. This declaration is intended to create a global safety net of rights applicable to all peoples everywhere, with no exceptions. It also recognises the principle of the subordination of national sovereignty to the universality of human rights; the dignity and worth of human life beyond the jurisdiction of any State. The global spread of democracy is now also irreversibly linked to the new cooperative globalisation model. The EU, despite its growing pains, provides a compelling template; complementing national decisions in the supra-national interest at the commercial, financial, legal, health and research sharing level. The global spread of new technology and knowledge also provides the opportunity for developing countries to gain a quantum leap in material wellbeing; an essential prerequisite for a stable democracy. The current cyber-based advances therefore presage a much more interactive public form of democracy and mark the next phase in its ongoing evolution. Web 2.0’s social networking, blogging, messaging and video services have already significantly changed the way people discuss political issues and exchange ideas beyond national boundaries. In addition a number of popular sites exist as forums to actively harness individual opinions and encourage debate about contentious topics, funnelling them to political processes. These are often coupled to online petitions, allowing the public to deliver requests to Government and receive a committed response. In addition there are a plethora of specialized smart search engines and analytical tools aimed at locating and interpreting information about divisive and complex topics such as global warming and medical stem cell advances. These are increasingly linked to Argumentation frameworks and Game theory, aimed at supporting the logical basis of arguments, negotiation and other structured forms of group decision-making. New logic and statistical tools can also provide inference and evaluation mechanisms to better assess the evidence for a particular hypothesis. By 2030 it is likely that such ‘intelligence-based’ algorithms will be capable of automating the analysis and advice provided to politicians, at a similar level of quality and expertise as that offered by the best human advisers. It might be argued that there is still a need for the role of politicians and leaders in assessing and prioritising such expert advice in the overriding national interest. But a moment’s reflection leads to the opposite conclusion. Politicians have party allegiances and internal obligations that can and do create serious conflicts of interest and skew the best advice. History is replete with such disastrous decisions based on false premises, driven by party political bias and populist fads predicated on flawed knowledge. One needs to look no further in recent times than the patently inadequate evidential basis for the US’s war in Iraq which has cost at least half a million civilian lives and is still unresolved. However there remains a disjunction between the developed west and those developing countries only now recovering from colonisation, the subsequent domination by dictators and fascist regimes and ongoing natural disasters. There is in fact a time gap of several hundred years between the democratic trajectory of the west and east, which these countries are endeavouring to bridge within a generation; often creating serious short-term challenges and cultural dislocations. A very powerful enabler for the spread of democracy as mentioned is the Internet/Web- today’s storehouse of the world’s information and expertise. By increasing the flow of essential intelligence it facilitates transparency, reduces corruption, empowers dissidents and ensures governments are more responsive to their citizen’s needs. Ii is already providing the infrastructure for the emergence of a more democratic society; empowering all people to have direct input into critical decision processes affecting their lives, without the distortion of political intermediaries. By 2040 more democratic outcomes for all populations on the planet will be the norm. Critical and urgent decisions relating to global warming, financial regulation, economic allocation of scarce resources such as food and water, humanitarian rights and refugee migration etc, will to be sifted through community knowledge, resulting in truly representative and equitable global governance. Implementation of the democratic process itself will continue to evolve with new forms of e-voting and governance supervision, which will include the active participation of advocacy groups supported by a consensus of expert knowledge via the Intelligent Web 4.0. Over time democracy as with all other social processes, will evolve to best suit the needs of its human environment. It will emerge as a networked model- a non-hierarchical, resilient protocol, responsive to rapid social change. Such distributed forms of government will involve local communities, operating with the best expert advice from the ground up; the opposite of political party self-interested power and superficial focus-group decision-making, as implemented by many current political systems. These are frequently unresponsive to legitimate minority group needs and can be easily corrupted by powerful lobby groups, such as those employed by the heavy carbon emitters in the global warming debate.

#### Democracy doesn’t solve war

Mueller 9—pol sci prof and IR, Ohio State. Widely-recognized expert on terrorism threats in foreign policy. AB from U Chicago, MA in pol sci from UCLA and PhD in pol sci from UCLA (John, Faulty Correlation, Foolish Consistency, Fatal Consequence: Democracy, Peace, and Theory in the Middle East, 15 June 2007, http://psweb.sbs.ohio-state.edu/faculty/jmueller/KENT2.PDF)

In the last couple of decades there has been a burgeoning and intriguing discussion about the connection between democracy and war aversion.7 Most notable has been the empirical observation that democracies have never, or almost never, gotten into a war with each other. This relationship seems more correlative than causal, however. Like many important ideas over the last few centuries, the idea that war is undesirable and inefficacious and the idea that democracy is a good form of government have largely followed the same trajectory: they were embraced first in northern Europe and North America and then gradually, with a number of traumatic setbacks, became more accepted elsewhere. In this view, the rise of democracy not only is associated with the rise of war aversion, but also with the decline of slavery, religion, capital punishment, and cigarette smoking, and with the growing acceptance of capitalism, scientific methodology, women's rights, environmentalism, abortion, and rock music.8 While democracy and war aversion have taken much the same trajectory, however, they have been substantially out of synchronization with each other: the movement toward democracy began about 200 years ago, but the movement against war really began only about 100 years ago (Mueller 1989, 2004). Critics of the democracy/peace connection often cite examples of wars or near-wars between democracies. Most of these took place before World War I--that is, before war aversion had caught on.9 A necessary, logical connection between democracy and war aversion, accordingly, is far from clear. Thus, it is often asserted that democracies are peaceful because they apply their domestic penchant for peaceful compromise (something, obviously, that broke down in the United States in 1861) to the international arena or because the structure of democracy requires decision-makers to obtain domestic approval.10 But authoritarian regimes must also necessarily develop skills at compromise in order to survive, and they all have domestic constituencies that must be serviced such as the church, the landed gentry, potential urban rioters, the nomenklatura, the aristocracy, party members, the military, prominent business interests, the police or secret police, lenders of money to the exchequer, potential rivals for the throne, the sullen peasantry.11 Since World War I, the democracies in the developed world have been in the lead in rejecting war as a methodology. Some proponents of the democracy-peace connection suggest that this is because the democratic norm of non-violent conflict resolution has been externalized to the international arena. However, developed democracies have not necessarily adopted a pacifist approach, particularly after a version of that approach failed so spectacularly to prevent World War II from being forced upon them. In addition, they were willing actively to subvert or to threaten and sometimes apply military force when threats appeared to loom during the Cold War contest. At times this approach was used even against regimes that had some democratic credentials such as in Iran in 1953, Guatemala in 1954, Chile in 1973, and perhaps Nicaragua in the 1980s (Rosato 2003, 590-91). And, they have also sometimes used military force in their intermittent efforts to police the post-Cold War world (Mueller 2004, chs. 7, 8). It is true that they have warred little or not at all against each other--and, since there were few democracies outside the developed world until the last quarter of the twentieth century, it is this statistical regularity that most prominently informs the supposed connection between democracy and peace. However, the developed democracies hardly needed democracy to decide that war among them was a bad idea.12 In addition, they also adopted a live-and-let-live approach toward a huge number of dictatorships and other non-democracies that did not seem threatening during the Cold War--in fact, they often aided and embraced such regimes if they seemed to be on the right side in the conflict with Communism. Moreover, the supposed penchant for peaceful compromise of democracies has not always served them well when confronted with civil war situations, particularly ones involving secessionist demands. The process broke down into civil warfare in democratic Switzerland in 1847 and savagely so in the United States in 1861. Democracies have also fought a considerable number of wars to retain colonial possessions--six by France alone since World War II--and these, as James Fearon and David Laitin suggest, can in many respects be considered essentially to be civil wars (2003, 76). To be sure, democracies have often managed to deal with colonial problems peacefully, mostly by letting the colonies go. But authoritarian governments have also done so: the Soviet Union, for example, withdrew from his empire in Eastern Europe and then dissolved itself, all almost entirely without violence. Thus, while democracy and war aversion have often been promoted by the same advocates, the relationship does not seem to be a causal one. And when the two trends are substantially out of step today, democracies will fight one another. Thus, it is not at all clear that telling the elected hawks in the Jordanian parliament that Israel is a democracy will dampen their hostility in the slightest. And various warlike sentiments could be found in the elected parliaments in the former Yugoslavia in the early 1990s or in India and then-democratic Pakistan when these two countries engaged in armed conflict in 1999. If Argentina had been a democracy in 1982 when it seized the Falkland Islands (a very popular undertaking), it is unlikely that British opposition to the venture would have been much less severe. "The important consideration," observes Miriam Fendius Elman after surveying the literature on the subject, does not seem to be "whether a country is democratic or not, but whether its ruling coalition is committed to peaceful methods of conflict resolution." As she further points out, the countries of Latin America and most of Africa have engaged in very few international wars even without the benefit of being democratic (for a century before its 1982 adventure, Argentina, for example, fought none at all) (1997, 484, 496). (Interestingly, although there has also been scarcely any warfare between Latin American states for over 100 years or among Arab ones or European ones for more that 50--in all cases whether democratic or not--this impressive phenomenon has inspired remarkably few calls for worldwide Arab colonialism or for the systematic transplant of remaining warlike states to Latin America or Europe.) And, of course, the long peace enjoyed by developed countries since World War II includes not only the one that has prevailed between democracies, but also the even more important one between the authoritarian east and the democratic west. Even if there is some connection, whether causal or atmospheric, between democracy and peace, it cannot explain this latter phenomenon. Democracy and the democratic peace become mystiques: the role of philosophers and divines Democracy has been a matter of debate for several millennia as philosophers and divines have speculated about what it is, what it might become, and what it ought to be. Associated with these speculations has been a tendency to emboss the grubby gimmick with something of a mystique. Of particular interest for present purposes is the fanciful notion that democracy does not simply express and aggregate preferences, but actually somehow creates (or should create) them. In addition, the (rough) correlation between democracy and war aversion has also been elevated into a causal relationship.

### SR

## Blah

#### Cleanup solves

Selding10Peter, Space News Writer, “NASA May Move Orbital Debris Mitigation Off Back Burner,” July 23, <http://www.spacenews.com/civil/100723-nasa-orbital-debris-mitigation.html>

BREMEN, Germany — NASA’s Orbital Debris Program Office expects to begin active work on how to remove debris in orbit on the strength of the new U.S. National Space Policy, according to the office’s chief scientist. Nicholas L. Johnson said the office, which assembles data from the U.S. Air Force-run Space Surveillance Network, has been working on these issues for years, but only on an informal basis, with few resources and no formal mandate. That changed on June 28, when President Barack Obama issued an updated space policy that specifically orders NASA and the U.S. Defense Department to “pursue research and development of technologies and techniques … to mitigate and remove on-orbit debris.” Attending the 38th Congress of the Committee on Space Research (Cospar) here July 18-25, Johnson said it is too early to tell exactly how the new policy will be transformed into programs and budgets. But the specificity of the wording, he said, gives reason to conclude that NASA will be able to increase its efforts. In addition to asking NASA and the Defense Department to research debris mitigation — making satellites and rockets less likely to break up in orbit, and removing satellites from the orbital highways upon retirement — the policy’s inclusion of orbital debris removal may take the NASA office in a new direction.

#### Debris won't affect SPS

Grey 2k

Jerry, Director of AIAA, Federal News Service, Congressional Testimony, 9-7-2000, Lexis

(2) Orbital Debris. Although the SSP configurations are large, their diaphanous nature and location in geostationary or geosynchronous halo orbits imply low susceptibility to serious damage by either natural or anthropogenic orbital debris. Moreover, since all the proposed concepts employ robotic inspection and maintenance, repairs of any such damage should be able to be accomplished.

### Tea

#### We meet – we procure energy in the United States

#### We meet – rectennas would be in the US

Snead 8 – James Michael Snead, senior member of the American Institute of Aeronautics and Astronautics, past chair of the Space Logistics Technical Committee, published in Aerospace America, the Air Force Air and Space Power Journal, the International Society of Logistics’ Logistics Spectrum magazine, the Journal of AstroPolitics, and the online Space Review, graduate of the Air Force Institute of Technology with Master's Degrees in Aerospace Engineering, November 19th, 2008, “The End of Easy Energy and What to Do About It,” National Space Society, <http://mikesnead.net/resources/spacefaring/white_paper_the_end_of_easy_energy_and_what_to_do_about_it.pdf>

Possible rectenna locations in the United States 2.45/5.8 GHz SSP During the initial SSP studies, Rice University conducted a preliminary assessment of the continental United States to determine where the rectennas could be located. The initial assessment concluded that about 40% of the continental United States could be used to locate rectennas. Fifteen exclusion variables were used: inland waters, metropolitan areas, other populated areas, marshlands, perennially flooded lands, military reservations, waterways, designated habitats of endangered species, topography unacceptable, atomic energy commission lands, and lands excluded by three dimensions of electromagnetic compatibility problems. Further refinement of these criteria reduced the initial 40% estimate to about 17% or about 530,000 sq. mi.209 Noting that a rectangular area enclosing the elliptical rectenna and safety zone comprises about 100 sq. mi.,210 the suitable land in the United States could, therefore, support over **5,000 rectennas,** substantially greater than the approximately 250 SSP platforms that would likely be used.211

#### Counter-interpretation – energy production is conversion to electricity and this must be in the United States

PNL 78, Report Commissioned by the DOE Pacific Northwestern Laboratories "An Analysis of Federal Incentives Used to Stimulate Energy Production" March 1978 www.osti.gov/bridge/servlets/purl/7059750-iKeQE4/7059750.pdf

Energy production is defined as the transformation of natural resources into commonly used forms of energy such as heat, light, and electricity. By this definition, the shining of the sun or the running of a river are not examples of energy production, but the installation of solar panels or the construction of a hydroelectric dam are. Energy consumption is defined as the use of one of these common, "manufactured" forms of energy. Under this definition sunbathing is not energy consumption, but heating water by means of a solar panel is. In both definitions, the crucial ingredient is the application of technology and resources to change a natural resource into a useful energy form.

#### **We meet – energy production takes place at rectennas on the ground**

URSI 5 – International Union of Radio Science (URSI), November 2005, "Supporting Document for the URSI White Paper on Solar Power Satellite Systems," [www.ss.ncu.edu.tw/~ursi/record/WP\_SPS\_supdoc\_051129.pdf](http://www.ss.ncu.edu.tw/~ursi/record/WP_SPS_supdoc_051129.pdf)

The rectenna is extremely efficient in the energy conversion. The 82% of **the energy received** at the ground **is converted to usable electricity.** The microwave beam averages 8% of the power of full sunlight. The maximum energy rate at the center of the radio beam is ¼ of the maximum sunlight energy rate, as measured at high noon in the desert. Thus the total SPS energy arriving at the rectenna site would be a fraction of the solar energy that arrives at each square meter of the site. However, unlike the sunlight, most of this SPS energy will be recoverable, and will be available 24 hours per day. This results in an average output of almost 1500 Wh/day/m2 for a rectenna at the equator 19 compared to only 600 Wh/day/m2 for terrestrial photovoltaics.5

#### Prefer our definition – it’s contextual

Huijbregts 8 Mark A. J. Huijbregts is an associate professor at the Department of En- vironmental Science of the Radboud University. Nijmegen in the Netherlands. and Stefanie Hellweg, Rolf Frischknecht, Konrad Hungerbühler, A. Jan Hendriks "Ecological footprint accounting in the life cycle assessment of products" Ecological Economics, Volume 64, Issue 4, 1 February 2008, Pages 798-807 Accessed vis SciVerse

The ecoinvent database v1.2 ( [ecoinvent Centre., 2004] and [Frischknecht et al., 2005]), containing consistent and quality-controlled life cycle information for 2630 products and services consumed in the western economy, has been used to derive product-specific ecological footprints and ecoindicator scores. Table 2 provides an overview of the product groups and the corresponding number of products considered. A subset of the total number of products and services in ecoinvent (1549 processes) was included in the data analysis to maintain homogeneity within the product groups. Ecological footprints of all 2630 products and services are included as supporting information (Appendix B). Energy production includes both heat and electricity production processes by nonrenewable energy sources (oil, hard coal, lignite, natural gas, nuclear) and renewable energy sources (hydropower, photovoltaic, wood, wind). Material production comprises many different product types, including plastics, chemicals, metals, agricultural products, and building materials. Transport includes transport of products and persons by road, ship, train, airplane, and pipelines. Waste treatment represents various types of land fill, incineration, recycling, and wastewater. Finally, infrastructural processes include all types of infrastructure, such as power plants, furnaces, and lorries.

#### Ground – they double the size of the topic, make it bidirectional by allowing affs to affect both supply and demand – wrecks preparedness for all debates

#### Holistic energy education – they exclude wind and solar affs – they are naturally produced raw material

#### No uniqueness for their limits – the majority of teams read the same aff

#### Reasonability – competing interpretations are a race to the bottom to arbitrary exclude the aff

#### Err aff – T is a no risk option for the negative and there’s no way for the aff to get offense

### Haygurlhay

#### Opposition to Hagel is hype—he’s guaranteed to be confirmed.

Josh Marshall 1-6, editor of Talking Points Memo, 1/6/13, “Crack Pipe,” http://talkingpointsmemo.com/archives/2013/01/crack\_pipe\_1.php

I’m watching a lot of neoconservative policy activists and a lot of people in the press telling me that it’s a very up in the air thing whether Chuck Hagel gets confirmed as Secretary of Defense. These folks should stop smoking crack. Because crack isn’t good for you. ¶ Maybe I’m just out of the loop because I’m not reporting aggressively myself. Or maybe — I think much more likely — I’m not in the same crack den with the rest of these good people so the air I’m breathing is clear and I know what is happening in the real world. ¶ Will Republicans uniformly oppose a former member of their own caucus when the issues at stake are complaints that look comical when held up to the light of day? One who was one of the top foreign policy Republicans in the Senate? I doubt it. ¶ Will Democratic senators deny a reelected President Obama his choice for one of the top four cabinet positions when he is quite popular and the expansion of their caucus is due in significant measure to his popularity? Please. Chuck Schumer will oppose the President? Not likely. ¶ So I look forward to Republican crocodile tears on gay rights — seemingly in large part over something Hagel said in the 90s in support of the Senate Republican caucus’s efforts to pillory an openly gay nominee. And yes, perhaps it really will pave the way for a LGBT upsurge of support for Richard Grinnell for President in 2016. But I doubt it.¶ Otherwise, assuming President Obama nominates him tomorrow, get ready for a Hagel Pentagon.

#### Hagel won’t have a big impact

Walt 12—Stephen Walt, Senior Contributor and Foreign Policy Online, professor of international affairs at Harvard University's Kennedy School of Government, 12/26/12, What’s at stake in the Hagel affair, <http://walt.foreignpolicy.com/posts/2012/12/26/whats_at_stake_in_the_hagel_affair>

Second, let's not lose sight of what is at stake here. Contrary to what some suggest, the choice of SecDef isn't going to make any difference in U.S. policy toward Israel or the "peace process." Policy on those issues will be set by the White House and Congress, with AIPAC et al. breathing down both their necks. The Israeli government has no interest in a two-state solution, the Palestinians are too weak and divided to persuade Israel to rethink its present course, and the United States is incapable of mounting the sort of sustained pressure that might force both sides to compromise. Which means the two-state solution is dead, and it won't matter whether Hagel gets the nod or not. The $3-4 billion annual aid package won't be affected, and I'll bet the United States continues to wield its U.N. Security Council veto whenever it is asked. This appointment could affect U.S. policy toward Iran, insofar as Hagel's been skeptical about the wisdom of using military force in the past. He's hardly a dove or an appeaser, of course; he just recognizes that military force may not be a very good way to deal with this problem. (Well, duh.) If Obama wants to pursue diplomacy instead of preventive war -- and he should -- the combination of Hagel at Defense and Kerry at State would give him two respected, articulate, and persuasive voices to help him make that case. But if Obama were to decide that force was a good idea, neither Kerry nor Hagel would stand in his way. So in terms of overall Middle East policy in the next couple of years, this appointment may matter less than most people think.

#### Hagel will have limited influence

Goodsell 1/6—Paul Goodsell, Omaha World Herald, January 6, 2013, Chuck Hagel's record suggests his approach to military, budget, http://www.omaha.com/article/20130106/NEWS/701069941/1707

But Obama's expected choice wouldn't come with proven expertise in running the vast military bureaucracy at a time of budget cutbacks. Nor would Hagel, despite being a Republican, bring much bipartisan credibility to the Democratic administration's policies when he discusses them with Congress.¶ “He's not likely to bring many Republicans along,” said Peter Feaver, a Duke University political scientist who was a national security adviser during the George W. Bush administration. “I think he will struggle more than his supporters in the pundit academic world understand.”

#### Vague---gets how it is---understands----no impact

### Soft Power

#### **SPS is key to soft power**

Wood 12 – Leet W.Wood is a PhD student in political science at George Mason University in Fairfax, Virginia, Bulletin of the Atomic Scientists, February 15th, 2012, ““Projecting power: The security implications of space-based solar power,” Ebscohost

The ability of the system to direct power on short notice to most points on the globe also has significance for international aid and disaster relief. In the wake of a **natural or humanitarian disaster**, power from space could be used to **keep hospitals and refugee camps operational, as well as providing electricity for water desalination** and other critical but energy-intensive processes. Operating in this mode, spacebased solar power could become a powerful tool of diplomacy rather than one of force projection in the traditional sense.

### Ohhay

#### Budget fights outweigh---consumes the first half of 2013

Helderman 1/1 Rosalind S, "After a 'fiscal cliff' deal, what next?", 2013, www.washingtonpost.com/politics/after-a-fiscal-cliff-deal-what-next/2012/12/31/b9d9a452-5384-11e2-bf3e-76c0a789346f\_story.html?wprss=rss\_politics

Assuming the deal is approved by the House, it will nevertheless give way to a nearly continuous series of fights that will consume the first part of the year, even as President Obama might hope to shift Congress’s attention to immigration reform and gun control.¶ “It’s become less like a fiscal cliffhanger and more like a journey over the fiscal mountains,” said Rep. Jeff Fortenberry (R-Neb.).¶ The next big deadline is likely to come around the end of February, when the Treasury Department will exhaust the measures now in place to extend the nation’s $16.4 trillion debt ceiling. At that point, the government will not be able to pay its bills unless Congress votes to raise the nation’s legal borrowing limit.¶ Republicans hope to use that moment to force Obama and congressional Democrats to agree to major spending cuts in return for the increase — in what could be a sequel to the contentious face-off over the debt limit in the summer of 2011.¶ Provided Monday’s deal is approved, in early March would come another deadline: the $110 billion cut in spending, half from the Pentagon, delayed as part of this deal.¶ A month or so later — on March 27 — a short-term measure that funds government agencies will lapse. Without a renewal, the government will shut down, setting up another possible showdown.¶ “Round two’s coming,” said Sen. Lindsey O. Graham (R-S.C.). “And we’re going to have one hell of a contest about the direction and the vision of this country.”¶ Many Republicans believe they’ll have more leverage then than they do now because the debate over tax rates on the wealthy will be settled.

### Derp

#### Congressional support for SPS

Morring 7 – Frank Morring, expert at Aviation Week & Space Technology, August 20th, 2007, “Space Solar Power: Climate, Economy, National Security Drive Another Look At SSP; Experts see warming, economic concerns and energy security as reasons to build SSP” Proquest Search

Another factor that might build support in Congress and the Executive Branch is the effect building an SSP system would have on competitiveness. "Here in the U.S. **we continue to be concerned about competitiveness**, particularly in light of the migration of many high-tech industries overseas, and how [to] provide long-term economic and science and technology strength in the U.S. [It's] an ongoing challenge," Mankins says.

#### Winners win

Marshall and Prins 11 (BRYAN W, Miami University and BRANDON C, University of Tennessee & Howard H. Baker, Jr. Center for Public Policy, “Power or Posturing? Policy Availability and Congressional Influence on U.S. Presidential Decisions to Use Force”, Sept, Presidential Studies Quarterly 41, no. 3)

Presidents rely heavily on Congress in converting their political capital into real policy success. Policy success not only shapes the reelection prospects of presidents, but it also builds the president’s reputation for political effectiveness and fuels the prospect for subsequent gains in political capital (Light 1982). Moreover, the president’s legislative success in foreign policy is correlated with success on the domestic front. On this point, some have largely disavowed the two-presidencies distinction while others have even argued that foreign policy has become a mere extension of domestic policy (Fleisher et al. 2000; Oldfield and Wildavsky 1989) Presidents implicitly understand that there exists a linkage between their actions in one policy area and their ability to affect another. The use of force is no exception; in promoting and protecting U.S. interests abroad, presidential decisions are made with an eye toward managing political capital at home (Fordham 2002).

#### The DOD supports SPS and shields it

Hurst 8 – executive editor and writer for ecopolitology and Cleantechnica (Timothy B. December 21, 2008, Red Green & Blue, “Will Obama Champion Space-Based Solar Power?” <http://redgreenandblue.org/2008/12/21/will-obama-champion-space-based-solar-power/>)

But there has also been some discussion that Obama could make cuts at NASA, if for no other reason than something has got to be cut somewhere. Although funding NASA may not be a top priority for Obama, a strong argument could be made that investment in SSP research program would sync with his focus on building a clean energy economy. It also helps that the idea has been supported by Defense Department officials who see SSP applications in the transmission of electricity to remote locations to support military actions. I’m not suggesting that Obama will use the cover of the Defense Departmen**t to expand solar research**, but used as part of a strategy that promotes economic growth and environmental health, it may be a strategic choice that has some political legs. Whatever political method the Obama administration uses to hammer on the clean energy agenda, it is clear that Obama’s will be a science-based administration. And as recently as yesterday, Obama reiterated that his administration would not stifle hard-to-swallow science, but nurture it. Obama said in his weekly address: “Today more than ever before science holds the key to our survival as a planet and the security and prosperity as a nation. It’s time once again that we put science at the top of our agenda and restore America’s place as the world leader in science and technology.” If that includes a robust Space-Based Solar Program, we’ll have to wait and see.

#### The DOD shields the plan from politics

Appelbaum 12 – Binyamin, Defense cuts would hurt scientific R&D, experts say, The New York Times, 1-8, http://hamptonroads.com/2012/01/defense-cuts-would-hurt-scientific-rd-experts-say

Sarewitz, who studies the government's role in promoting innovation, said the Defense Department had been more successful than other federal agencies because it is the main user of the innovations that it finances. The Pentagon, which spends billions each year on weapons, equipment and technology, has an unusually direct stake in the outcome of its research and development projects.¶ "The central thing that distinguishes them from other agencies is that they are the customer," Sarewitz said. "You can't pull the wool over their eyes."¶ Another factor is the Pentagon's relative insulation from politics, which has allowed it to sustain a long-term research agenda in controversial areas**.** No matter which party is in power, the Pentagon has continued to invest in clean-energy technology, for example, in an effort to find ways to reduce one of its largest budget items, energy costs.

### Counterplan

#### Perm do both

#### Arms control is infeasible

Krepon 12 – Michael Krepon is co-founder of the Stimson Center, Krepon is the author or editor of thirteen books, and more than 350 articles. Prior to co-founding Stimson, he worked at the Carnegie Endowment for International Peace, the US Arms Control and Disarmament Agency during the Carter administration, and in the US House of Representatives, assisting Congressman Norm Dicks. Krepon received an MA from the School of Advanced International Studies at Johns Hopkins University, and a BA from Franklin & Marshall College. He also studied Arabic at the American University in Cairo, Egypt. March 6th, 2012, "Toward a Space Code of Conduct" [www.worldpoliticsreview.com/articles/11680/toward-a-space-code-of-conduct?page=](http://www.worldpoliticsreview.com/articles/11680/toward-a-space-code-of-conduct?page=3)2

Paradoxically, the reasons for prior restraint in the military space competition also have made space arms control very difficult. Because there are so many ways to interfere with, disable or destroy satellites -- including by means of launch platforms that are indispensable for other military uses -- a ban on all of these means is inconceivable. A ban on “dedicated” ASAT weapons specifically designed and intended for use against satellites is conceivable, but it is also not credible, since so many other ways to counter satellites will remain unconstrained**.** ¶ A treaty banning space warfare, the use of ASATs or dedicated ASAT weapons therefore runs aground on a Catch-22**: To be effective, the scope must be sufficiently broad as to be unrealizable, while a narrower scope would be unreliable.** This Catch-22 becomes even more severe when effective verification standards are considered. **What can be verified is insufficient, since bans on dedicated ASATs can be circumvented by hiding them in warehouses, while extant military capabilities with ASAT potential can be declared as intended for other purposes.** These circumstances make it extremely difficult to engage in classical arms control treaty negotiations for the global commons of space. But the existence of considerable military capabilities with ASAT potential also makes it extremely unwise for major powers to strike first against each other’s satellites, since retribution and unintended escalation -- including escalation across the nuclear threshold -- might well follow.

#### Russia, China, India, and Brazil reject arms control

Krepon 12 – Michael Krepon is co-founder of the Stimson Center, Krepon is the author or editor of thirteen books, and more than 350 articles. Prior to co-founding Stimson, he worked at the Carnegie Endowment for International Peace, the US Arms Control and Disarmament Agency during the Carter administration, and in the US House of Representatives, assisting Congressman Norm Dicks. Krepon received an MA from the School of Advanced International Studies at Johns Hopkins University, and a BA from Franklin & Marshall College. He also studied Arabic at the American University in Cairo, Egypt. March 6th, 2012, "Toward a Space Code of Conduct" [www.worldpoliticsreview.com/articles/11680/toward-a-space-code-of-conduct?page=3](http://www.worldpoliticsreview.com/articles/11680/toward-a-space-code-of-conduct?page=3)

The European Union has already drafted a Code of Conduct (.pdf), an effort that has been endorsed by the governments of Japan, Canada and Australia. However, **Russia, China, India and Brazil have kept this initiative at arm’s length.** Moscow and China have tabled a draft treaty (.pdf) prohibiting the placement of weapons and threats of force in outer space. This draft treaty, which has no verification provisions, defines a space weapon as something “which has been specially produced or converted to destroy, damage or disrupt the normal functioning of objects” in space. This language leaves the definition of a space weapon in the eyes of the beholder, and it permits weapons that could be used in space so long as they are not “specifically produced” for this purpose. ¶ The tabling of the Russian and Chinese draft treaty followed the George W. Bush administration’s withdrawal from the Anti-Ballistic Missile Treaty and the Pentagon’s expressions of intent to pursue war-fighting capabilities in space. As was the case in the Reagan administration, these ambitions went unrealized. The question now arises whether Moscow and Beijing will continue to press for rhetorical and unverifiable bans, or agree to consider pragmatic steps forward. The governments of India and Brazil have also expressed reservations, not on substance as much as on process, as they did not have seats at the table when the EU’s code was drafted.

### 1AC UAVs Advantage

#### SPS is key to UAVs

Johnson et al. 9 – W. Neil Johnson, Naval Research Laboratory, High-energy Space Environment Branch, Space Science Division, AND\*\*\* Keith Atkins, James Armstrong, Kwok Cheung, Glen Henshaw, Steven Huynh, Paul Jaffe, Matthew Long, Michael Mook, Michael Osborn, Robert Skalitzky, and Frederick Tasker, Spacecraft Engineering Department, AND\*\*\* Jill Dahlburg and Michael N. Lovelette, Space Science Division, AND\*\*\* Robert Bartolo and Keith Williams, optical sciences division, AND\*\*\* Mark Dorsey, radar division, AND\*\*\* Donald Gubser, Materials Science and Technology Division, October 23rd, 2009, "Space-based Solar Power: Possible Defense Applications and Opportunities for NRL Contributions" [www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA513123](http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA513123)

Current long-duration solar-powered UAV systems, while demonstrated to be feasible, are **payload limited because a significant** fraction of total vehicle **mass must be dedicated to energy storage**, usually in the form of batteries. Those batteries are essential to provide power during nighttime flight as well as to augment available solar power when the aircraft flies in attitudes or circumstances not favorable to solar energy collection. While significant advances in lightweight battery technology have been made in recent years, energy storage still comprises anywhere from 20% to 50% of total vehicle mass in flight-proven UAVs. Significant augmentation of overall UAV system capabilities is possible if a large fraction of that battery mass can be made available to the payload. ¶ SBSP, provided in concert with local insolation at the UAV, can result in far less battery mass being required on the aircraft. In addition to providing additional power during daylight operations, a network of SBSP satellites can provide nearly continuous power to the UAV during local night. In fact, at typical UAV cruise power requirements of 75 to 100 W and typical wing areas of 1.2 to 2 m 2 , all the flight power for the bird could conceivably be provided by RF or light transmission from SBSP without exceeding the 100 W/m 2 controlled area limit of exposure currently accepted as human-safe.

#### Now is key – the next generation of UAVs is coming to deal with growing threats

Reed 12 – John Reed graduated from the University of New Hampshire with a dual degree in international affairs and history. Reed is a national security reporter for Foreign Policy. He comes to FP after editing Military.com’s publication Defense Tech and working as the associate editor of DoDBuzz. Between 2007 and 2010, he covered major trends in military aviation and the defense industry around the world for Defense News and Inside the Air Force. July 31st, 2012, "The Next Generation of UAVs" blog.foreignpolicy.com/posts/2012/07/31/the\_next\_generation\_of\_uavs

In an example of how the next-generation of stealthy UAV will be here within the decade, Lockheed Martin has just revealed the Sea Ghost, an unmanned Naval strike jet.¶ While the vast majority of the world's current fleet of combat UAVs aren't much more survivable against modern air defenses than a World War I bi-plane, **drone technology is set to take a** giant leap forward in the next decade **if all goes according to the U.S. Navy's plan to field a fighter-sized, stealthy, long-range combat drone by 2018.**¶ The Navy's Unmanned Carrier-Launched Surveillance and Strike (UCLASS) program calls for a fleet of jet-powered stealth drones that can do everything from refuel other planes to spy on the enemy and even drop bombs on them, all while flying autonomously. This means they are supervised by humans aboard aircraft carriers or shore installations, but the planes will execute the details of their missions -- including the incredibly difficult task of landing on an aircraft carrier in pitching seas -- on their own. Current UAVs are flown by pilots sitting in trailers, which is why the U.S. Air Force officially calls them Remotely Piloted Vehicles. (Click here to see how UCLASS will fly autonomously and land itself on carriers.)¶ **How is the Navy going to field a brand new class of jet so quickly? It's going to base the jets off of existing technology that's been developed and proven via programs such as Northrop Grumman's X-47B Unmanned Combat Air Vehicle**. (The X-47B is actually being used to prove that it is possible to operate a stealthy, fighter-sized UAV from an aircraft carrier.)¶ To that end, Lockheed Martin is developing Sea Ghost as its proposal for the UCLASS effort. The jet, shown above, will draw on the Bethesda-Md.-based company's experiences fielding the mysterious RQ-170 Sentinel stealth UAV (made famous for spying on Osama bin Laden as well as crashing inside Iran in 2011) and the F-35 Joint Strike Fighter, according to a company statement.¶ Other than that, Lockheed is pretty mum about the new jet.¶ We do know that in addition to being stealthy, autonomous and able to quickly swap out payloads of weapons, sensors and even air-to-air refueling kits, the Sea Ghost will need to be toughened to withstand the strain of catapult launches, arrested landings and corrosive, salty ocean air. It would also seem likely that this will be a flying wing, judging from the image above and the fact that this plane will draw on Lockheed's experience with the RQ-170, which is a stealthy, jet-powered flying wing.¶ The UCLASS concept fits nicely into several post-Iraq/Afghanistan constructs that the military is focusing on.¶ First off, this jet is well suited, in theory anyway, to the Pentagon's focus on fielding new weapons capable of traveling long distances and penetrating 21st century air defenses.¶ This is **because** nations such as Iran and China have figured out how to defend against the U.S. military that awed the world in the 1990s **during campaigns in the Balkans and Middle East.** Potential enemies will try to keep U.S. aircraft and warships at bay by firing masses of guided missiles capable of hitting American air bases the region - and in China's case, aircraft carriers - and by fielding advanced Russian-designed air defense systems that are able to shoot down all but the stealthiest of aircraft. ¶ UCLASS is stealthy - so that, with the help of electronic warfare gear, it has a chance of getting past enemy radars - and it can be refueled in flight, giving it fairly unlimited range and it's unmanned so that if one is shot down, a U.S. pilot won't be endangered.¶ The jet also fits into Chief of Naval Operations Adm. Jonathan Greenert's call for the sea service to buy relatively inexpensive, easy to develop, "trucks" that can be adapted to perform a variety of missions instead of complex and expensive weapons systems that are designed to perform a narrow set of missions. (20th Century examples of the type of truck Greenert has in mind are the B-52 bomber and the U-2 spy plane, both of which have outlasted aircraft built to replace them by decades due to their ability to be adapted to perform a wide variety of missions over the last fifty years.)

#### UAVs in Pakistan are inevitable and key to quelling the insurgency

Bergen & Tiedemann 11 – Peter Bergen, Director of the National Security Studies Program at the New America Foundation AND\*\*\* Katherine Tiedemann, research fellow at the New America Foundation, July/August 2011, “Washington’s Phantom War,” Foreign Affairs, http://www.foreignaffairs.com/articles/67939/peter-bergen-and-katherine-tiedemann/washingtons-phantom-war?page=show

Despite the drone program’s shortcomings, it is likely to continue-put simply, Washington has no better military options for combating the anti-Western militants who have made their home in Pakistan’s tribal areas. Pakistan’s army has proved itself unwilling or unable to clear out the Taliban and other insurgent groups from North Waziristan, where around 90 percent of last year’s drone strikes took place. Although the Pakistani armed forces have in recent years undertaken operations in the six other agencies of fata, the military’s high command remains resistant to attacking North Waziristan, a base of the Haqqani network, al Qaeda and other foreign fighters, and local Taliban militants, some of whom Pakistan views as a hedge against Indian influence in the region. Pakistan’s ambassador to United States, Husain Haqqani, has argued that Pakistan is not in a position to begin an offensive in North Waziristan because its military is already stretched thin by its work on reconstruction efforts necessitated by the country’s devastating floods in the summer of 2010. And Pakistan’s powerful army chief, General Ashfaq Parvez Kayani, has resisted the efforts of countless U.S. officials to convince him to attack the insurgents based in North Waziristan. Kayani, it seems, is concerned not only with overcommitting his already overstretched forces but also with retaining the loyalty of the Haqqani network, which has long been an asset of Pakistani military intelligence, according to U.S. officials. The military alternatives to drone strikes in the tribal areas-U.S. Special Forces operations using ground troops, for example, or conventional nato-led air strikes-are not supported by Pakistani officials and would be met with strong resistance. In September 2008, U.S. commandos carried out a raid against alleged al Qaeda and Taliban militants just over the border from Afghanistan in South Waziristan, angering Kayani, who said that Pakistan’s sovereignty would be defended “at all cost.” Two years later, when nato helicopters flew into Pakistani airspace in the Kurram Agency, Pakistan’s reaction was even harsher-officials closed the Torkham border crossing, a key link in nato’s supply lines to Afghanistan. Last December, when a report in The New York Times suggested that Washington might be interested in expanding U.S. special operations raids into Pakistani territory, Ambassador Haqqani immediately registered his disapproval and noted that no foreign forces would be allowed to operate inside Pakistan. And the operation that killed bin Laden was met with outcries from Pakistani offi- cials concerned about violations of the country’s sovereignty. Behind the scenes, many Pakistani officials-including President Asif Ali Zardari and Prime Minister Yousaf Raza Gilani-have supported the drone strikes, despite their occasional public protests. In a State Department cable from August 2008, just when Washington was ramping up the drone program, Gilani said, “I don’t care if they [the Americans] do it as long as they get the right people. We’ll protest in the National Assembly and then ignore it.” A few months later, Zardari gave his blessing to the program with the brusque comment, “Kill the seniors. Collateral damage worries you Americans. It does not worry me.” And of course, the greatest proof of Islamabad’s cooperation is the fact that the program has continued; for the strikes to be even minimally successful, they require some coordination with Pakistan’s military and intelligence services. As one U.S. official commented, “You need guys on the ground to tell you who they [militant targets] are, and that isn’t coming from some white guy running around the fata.” Although Pakistani officials have recently resumed their public criticism of the strikes, Islamabad has some strong reasons to cooperate. The strikes routinely kill enemies of the Pakistani state, such as Mehsud, who targeted police officers, soldiers, and civilians across the country with suicide bombings. Anecdotal evidence suggests that **the strikes are** also **having an effect on the insurgents’ morale and operational practices.** Low-level **militants** have grown to **fear the drones**, which some have dubbed machay, or “wasps,” for the buzzing sound they make as they hover for hours before or after attacks. David Rohde, the New York Times reporter who was held by the Haqqani network for over seven months in North and South Waziristan in 2008 and 2009, wrote later that “the drones [were] a terrifying presence that … unnerved and angered the guards.” Today, Haqqani fighters set up camp in groups no larger than ten men to avoid attracting the attention of the Predators and Reapers patrolling the skies above them. Some militants in North Waziristan have reportedly gone so far as to take up living in underground tunnels. Finally, it is important to remember that Pakistan’s tribal areas are a major source of human and material support for attacks against U.S. and nato forces in Afghanistan, according to the United Nations. Washington is therefore loath to abandon, or even slow down, a program that may have any kind of positive effects in taming this troublesome region. Lacking other military alternatives and facing a persistent threat from the tribal areas, the U.S. program of drone strikes is not likely to end in the near future. As Leon Panetta, the outgoing cia director, once said, **the drone program is “the only game in town.”**

#### Insurgency in Pakistan causes global nuclear war

Pitt 9 – William Rivers Pitt, Political Activist Specializing on the War on Terror and New York Times and Internationally Bestselling Author of “War on Iraq: What Team Bush Doesn’t Want You to Know,” and “The Greatest Sedition is Silence” “Unstable Pakistan threatens the world,” May 8th, 2009, http://www.arabamericannews.com/news/index.php?mod=article&cat=commentary&article=2183

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But a suicide bomber in Pakistan rammed a car packed with explosives into a jeep filled with troops today, killing five and wounding as many as 21, including several children who were waiting for a ride to school. Residents of the region where the attack took place are fleeing in terror as gunfire rings out around them, and government forces have been unable to quell the violence. Two regional government officials were beheaded by militants in retaliation for the killing of other militants by government forces. As familiar as this sounds, it did not take place where we have come to expect such terrible events. This, unfortunately, is a whole new ballgame. It is part of another conflict that is brewing, one which puts what is happening in Iraq and Afghanistan in deep shade, and which represents a grave and growing threat to us all. Pakistan is now trembling on the edge of violent chaos, and is doing so with nuclear weapons in its hip pocket, right in the middle of one of the most dangerous neighborhoods in the world. The situation in brief: Pakistan for years has been a nation in turmoil, run by a shaky government supported by a corrupted system, dominated by a blatantly criminal security service, and threatened by a large fundamentalist Islamic population with deep ties to the Taliban in Afghanistan. All this is piled atop an ongoing standoff with neighboring India that has been the center of political gravity in the region for more than half a century. **The fact that Pakistan**, and **India**, and **Russia, and China all possess nuclear weapons and share the same space means any** ongoing or escalating **violence** over there **has the real potential to crack open the** very **gates of Hell itself.** Recently, the Taliban made a military push into the northwest Pakistani region around the Swat Valley. According to a recent Reuters report: The (Pakistani) army deployed troops in Swat in October 2007 and use d artillery and gunship helicopters to reassert control. But insecurity mounted after a civilian government came to power last year and tried to reach a negotiated settlement. A peace accord fell apart in May 2008. After that, hundreds — including soldiers, militants and civilians — died in battles. Militants unleashed a reign of terror, killing and beheading politicians, singers, soldiers and opponents. They banned female education and destroyed nearly 200 girls' schools. About 1,200 people were killed since late 2007 and 250,000 to 500,000 fled, leaving the militants in virtual control. Pakistan offered on February 16 to introduce Islamic law in the Swat valley and neighboring areas in a bid to take the steam out of the insurgency. The militants announced an indefinite cease-fire after the army said it was halting operations in the region. President Asif Ali Zardari signed a regulation imposing sharia in the area last month. But the Taliban refused to give up their guns and pushed into Buner and another district adjacent to Swat, intent on spreading their rule. The United States, already embroiled in a war against Taliban forces in Afghanistan, must now face the possibility that Pakistan could collapse under the mounting threat of Taliban forcesthere. Military and diplomatic advisers to President Obama, uncertain how best to proceed, now face one of the great nightmare scenarios of our time. "Recent militant gains in Pakistan," reported The New York Times on Monday, "have so alarmed the White House that the national security adviser, Gen. James L. Jones, described the situation as 'one of the very most serious problems we face.'" "Security was deteriorating rapidly," reported The Washington Post on Monday, "particularly in the mountains along the Afghan border that harbor al-Qaeda and the Taliban, intelligence chiefs reported, and there were signs that those groups were working with indigenous extremists in Pakistan's populous Punjabi heartland. The Pakistani government was mired in political bickering. The army, still fixated on its historical adversary India, remained ill-equipped and unwilling to throw its full weight into the counterinsurgency fight. But despite the threat the intelligence conveyed, Obama has only limited options for dealing with it. Anti-American feeling in Pakistan is high, and a U.S. combat presence is prohibited. The United States is fighting Pakistan-based extremists by proxy, through an army over which it has little control, in alliance with a government in which it has little confidence." It is believed Pakistan is currently in possession of between 60 and 100 nuclear weapons. Because Pakistan's stability is threatened by the wide swath of its population that shares ethnic, cultural and religious connections to the fundamentalist Islamic populace of Afghanistan, fears over what could happen to those nuclear weapons if the Pakistani government collapses are very real. "As the insurgency of the Taliban and Al Qaeda spreads in Pakistan," reported the Times last week, "**senior American officials** say they **are increasingly concerned about** new vulnerabilities for **Pakistan's nuclear arsenal,** including the potential for militants to snatch a weapon in transport or to insert sympathizers into laboratories or fuel-production facilities. In public, the administration has only hinted at those concerns, repeating the formulation that the Bush administration used: that it has faith in the Pakistani Army. But that cooperation, according to officials who would not speak for attribution because of the sensitivity surrounding the exchanges between Washington and Islamabad, has been sharply limited when the subject has turned to the vulnerabilities in the Pakistani nuclear infrastructure." "The prospect of turmoil in Pakistan sends shivers up the spines of those U.S. officials charged with keeping tabs on foreign nuclear weapons," reported Time Magazine last month. "Pakistan is thought to possess about 100 — the U.S. isn't sure of the total, and may not know where all of them are. Still, if Pakistan collapses, the U.S. military is primed to enter the country and secure as many of those weapons as it can, according to U.S. officials. Pakistani officials insist their personnel safeguards are stringent, but a sleeper cell could cause big trouble, U.S. officials say." In other words, a shaky Pakistan spells trouble for everyone, especially if America loses the footrace to secure those weapons in the event of the worst-case scenario. **If** Pakistani militants **ever succeed in toppling the government,** several very dangerous events could happen at once. **Nuclear-armed India could be galvanized into military action** of some kind, **as could** nuclear-armed **China or** nuclear-armed **Russia.** If the Pakistani government does fall, and all those Pakistani nukes are not immediately accounted for and secured, the specter (or reality) of **loose nukes** falling into the hands of terrorist organizations could **place the entire world on a collision course with unimaginable disaster.** We have all been paying a great deal of attention to Iraq and Afghanistan, and rightly so. The developing situation in Pakistan, however, needs to be placed immediately on the front burner. The Obama administration appears to be gravely serious about addressing the situation. So should we all.

#### SPS is key to micro-UAVs

Leet et al. 12 – Kevin Gu, James Leet, Amit Alon, Manpreet Singh, engineering department at CalTech, June 7th, 2012, "E/ME 103 Final Report" [www.pickar.caltech.edu/e103/papers/Micro%20UAVs.pdf](http://www.pickar.caltech.edu/e103/papers/Micro%20UAVs.pdf)

We believe that **the key technological breakthrough for micro-UAV’s** **will be** the development of a suitable high energy-density power source. Through our secondary research, we found that the single most pressing issue facing micro-UAV’s is flight time and range, a conclusion that has been validated by our primary research. However, suffice it to say that we anticipate our technology will become viable for military applications within the next 5-10 years, even without this breakthrough of high energydensity power sources. For instance, as early as 2007, Horizon Fuel Cell Technologies and the NASA Dryden Flight Research Center demonstrated a micro-UAV, called the Pterosoar, with a range of 500 km being powered by hydrogen fuel [7]. Based on the trend of development we observed through our primary research, current technology is expected to mature sufficiently, such that **micro-UAV’s will become viable for a number of applications that require moderate energy density.** The development of a high energy density power source will then enable significantly more complex and power-intensive vehicles (such as devices capable of vertical take-off and landing), which will **dramatically increase the role of micro-UAV’s in both military and commercial applications.**

#### Micro-UAVs are key to air power

Abatti 5 – James M. Abatti, USAF Major, the Center for Strategy and Technology, Air War College, Air University, November 2005, "Small Power: The Role of Micro and Small UAVs in the Future" [www.au.af.mil/au/awc/awcgate/cst/bugs\_ch06.pdf](http://www.au.af.mil/au/awc/awcgate/cst/bugs_ch06.pdf)

No longer are micro and small UAVs of limited utility for military operations. Technological advances and new operational concepts are eliminating the barriers that restricted their use on the battlefield. Advances in miniaturization, computer technology, and nanotechnology are broadening the capabilities of micro and small UAVs, making them an economically feasible means of augmenting the USAF’s manned and unmanned fleet. Current advances in miniaturization and microfabrication have succeeded in reducing some UAV payloads by a factor of fifteen 113 and will continue to do so at an accelerating rate in the future. In addition, the exponential growth of computing power is expanding small UAV capabilities by providing more capable and intelligent systems in smaller and smaller packages. Scientists predict that **lower costs and technology advances will enhance the degree of autonomous capability and create a paradigm shift from reliance on a few LDHD platforms to a robust network of small UAVs working together.** 114¶ The synergistic capabilities of these agents working together in a MAS will enable the USAF to employ less capable low cost UAVs to perform complex missions. Moreover, a robust network of smaller UAVs provides commanders innate flexibility to accomplish a wide spectrum of missions regardless of the level of threat. **From ISR to strike missions, micro and small UAVs will be** critical force enhancers in future conflicts. The traditional small UAV role of basic ISR will expand to include NBC detection and monitoring, battle damage assessment, urban ISR, and large area ISR coverage utilizing numerous cooperative UAVs. **Due to their inherently low signatures and low cost, these small vehicles will play a** major role defeating future adversaries**.** Whether they are deployable UAV jammers or UAV antiradiation missiles, micro and small UAVs will be an integral part of the USAF’s arsenal.

#### Airpower prevents nuclear war and bioweapons in Asia

Khalilzad & Lesser 98 – Zalmay Khalilzad, Counselor at CSIS, President of Khalilzad Associates, and Former US Ambassador to the UN AND\*\*\* Ian Lesser, PhD Senior Transatlantic Fellow @ the German Marshall Fund, 1998, "Sources of Conflict in the 21st Century," p.164-165

The first key implication derived from the analysis of trends in Asia suggests that American air and space power will continue to remain critical for conventional and unconventional deterrence in Asia. This argument is justified by the fact that several sub-regions of the continent still harbor the potential for **full-scale** conventional war. This potential is most conspicuously on the Korean peninsula and to a lesser degree, in South Asia, the Persian Gulf, and the South China Sea. In some of these areas such as Korea and the Persian Gulf, the United States has clear treaty obligations and therefore has pre-planned the use of air power should contingencies arise. U.S. Air Force assets could also be called upon for operations in some of these other areas. In almost all these cases, US **airpower would be at the forefront of an American** politico-military **response** because (a) of the vast distances on the Asian continent; (b) the diverse range of operational platforms available to the U.S. Air Force, a capability unmatched by any other country or service, (c) the possible unavailability of naval assets in close proximity, particularly in the context of surprise contingencies; and (d) the heavy payload that can be carried by U.S. Air Force platforms. These platforms can exploit speed, reach, and high operating tempos to sustain continual operations until the political objectives are secured. The entire range of warfighting capability—fighters, bombers, electronic warfare (EW), suppression of enemy air defense (SEAD), combat support platforms such as AWACS and J-STARS and tankers—are relevant in the Asia-Pacific region, because many of the regional contingencies will involve large, fairly modern, conventional forces, most of which are built around large land armies, as is the case in Korea, China-Taiwan, India-Pakistan and the Persian Gulf. In addition to conventional combat, the demands of unconventional deterrence will increasingly confront the U.S. Air Force in Asia. The Korean peninsula, China, and the Indian subcontinent are already arenas of WMD proliferation. While emergent nuclear capabilities continue to receive the most public attention, chemical and biological warfare threats will progressively become future problems. The delivery systems in the region are increasing in range and diversity. China already targets the continental United States with ballistic missiles. North Korea can threaten northeast Asia with existing Scud-class theater ballistic missiles. India will acquire the capability to produce ICBM-class delivery vehicles, and both China and India will acquire long-range cruise missiles during the time frames examined in this report. The second key implication derived from the analysis of trends in Asia suggests that airand space power **will function as a** vital rapid reaction force **in a breaking crisis**. Current guidance tasks the Air Force to prepare for two major regional conflicts that could break out in the Persian Gulf and on the Korean peninsula. In other areas of Asia, however, such as the Indian subcontinent, the South China Sea, Southeast Asia, and Myanmar, the United States has no treaty obligations requiring it to commit the use of its military forces. But as past experience has shown, American policymakers have regularly displayed the disconcerting habit of discovering strategic interests in parts of the world previously neglected after conflicts have already broken out. Mindful of this trend, it would behoove U.S. Air Force planners to prudently plan for regional contingencies in nontraditional areas of interest, because naval and air power will of necessity be the primary instruments constituting the American response.

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### Derp

#### Evaluating consequences is most ethical – Bosnia proves

Gvosdev 5 – Nikolas Gvosdev 5 (Nikolas, Exec Editor of The National Interest, The Value(s) of Realism, SAIS Review 25.1, Muse)

As the name implies, realists focus on promoting policies that are achievable and sustainable. In turn, the morality of a foreign policy action is judged by its results, not by the intentions of its framers. A foreign policymaker must weigh the consequences of any course of action and assess the resources at hand to carry out the proposed task. As Lippmann warned, Without the controlling principle that the nation must maintain its objectives and its power in equilibrium, its purposes within its means and its means equal to its purposes, its commitments related to its resources and its resources adequate to its commitments, it is impossible to think at all about foreign affairs.8 Commenting on this maxim, Owen Harries, founding editor of The National Interest, noted, "This is a truth of which Americans—more apt to focus on ends rather than means when it comes to dealing with the rest of the world—need always to be reminded."9 In fact, Morgenthau noted that "there can be no political morality without prudence."10 This virtue of prudence—which Morgenthau identified as the cornerstone of realism—should not be confused with expediency. Rather, it takes as its starting point that **it is more moral to fulfill one's commitments than to make "empty" promises, and to seek solutions that minimize harm and produce sustainable results**. Morgenthau concluded: [End Page 18] Political realism does not require, nor does it condone, indifference to political ideals and moral principles, but it requires indeed a sharp distinction between the desirable and the possible, between what is desirable everywhere and at all times and what is possible under the concrete circumstances of time and place.11 This is why, prior to the outbreak of fighting in the former Yugoslavia, U.S. and European realists urged that Bosnia be decentralized and partitioned into ethnically based cantons as a way to head off a destructive civil war. Realists felt this would be the best course of action, especially after the country's first free and fair elections had brought nationalist candidates to power at the expense of those calling for inter-ethnic cooperation. They had concluded—correctly, as it turned out—that the United States and Western Europe would be unwilling to invest the blood and treasure that would be required to craft a unitary Bosnian state and give it the wherewithal to function. Indeed, at a diplomatic conference in Lisbon in March 1992, the various factions in Bosnia had, reluctantly, endorsed the broad outlines of such a settlement. For the purveyors of moralpolitik, this was unacceptable. After all, for this plan to work, populations on the "wrong side" of the line would have to be transferred and resettled. Such a plan struck directly at the heart of the concept of multi-ethnicity—that different ethnic and religious groups could find a common political identity and work in common institutions. When the United States signaled it would not accept such a settlement, the fragile consensus collapsed. The United States, of course, cannot be held responsible for the war; this lies squarely on the shoulders of Bosnia's political leaders. Yet Washington fell victim to what Jonathan Clarke called "faux Wilsonianism," the belief that "high-flown words matter more than rational calculation" in formulating effective policy, which led U.S. policymakers to dispense with the equation of "balancing commitments and resources."12 Indeed, as he notes, the Clinton administration had criticized peace plans calling for decentralized partition in Bosnia "with lofty rhetoric without proposing a practical alternative." The subsequent war led to the deaths of tens of thousands and left more than a million people homeless. After three years of war, the Dayton Accords—hailed as a triumph of American diplomacy—created a complicated arrangement by which the federal union of two ethnic units, the Muslim-Croat Federation, was itself federated to a Bosnian Serb republic. Today, Bosnia requires thousands of foreign troops to patrol its internal borders and billions of dollars in foreign aid to keep its government and economy functioning. Was the aim of U.S. policymakers, academics and journalists—creating a multi-ethnic democracy in Bosnia—not worth pursuing? No, not at all, and this is not what the argument suggests. But aspirations were not matched with capabilities. As a result of holding out for the "most moral" outcome and encouraging the Muslim-led government in Sarajevo to pursue maximalist aims rather than finding a workable compromise that could have avoided bloodshed and produced more stable conditions, the peoples of Bosnia suffered greatly. In the end, the final settlement was very close [End Page 19] to the one that realists had initially propo

### Human K

#### Permutation do both

**Permutation do the plan and the non-mutually exclusive parts of the alternative**

**Frameworking---Evaluate the consequences of the plan - alternative frameworks destroy policymaking, are infinitely regressive, and jack all aff offense.**

**Human life outweighs - we're the only ones who can protect the Earth from cosmic disasters**

**Matheny 9** (Jason Gaverick, research associate with the Future of Humanity Institute at Oxford University, where his work focuses on technology forecasting and risk assessment - particularly of global catastrophic risks and existential risks, Sommer Scholar and PhD candidate in Applied Economics at Johns Hopkins University, March 14, “Ought we worry about human extinction? [1]”, http://jgmatheny.org/extinctionethics.htm)

At the same time, we’re probably the only animal on Earth that routinely demonstrates compassion for other species. Such compassion is nearly universal in developed countries but we usually know too little, too late, for deeply ingrained habits, such as diets, to change. If improvements in other public morals were possible without any significant biological change in human nature, then the same should be true for our treatment of nonhuman animals, though it will take some time. Even without any change in public morals, it seems unlikely we will continue to use animals for very long – at least, nowhere near 50 billion per year. Our most brutal use of animals results not from sadism but from old appetites now satisfied with inefficient technologies that have not fundamentally changed in 10,000 years. Ours is the first century where newer technologies -- plant or in vitro meats, or meat from brainless animals -- could satisfy human appetites for meat more efficiently and safely (Edelman et al, 2005). As these technologies mature and become cheaper, they will likely replace conventional meat. If the use of sentient animals survives much beyond this century, we should be very surprised. This thought is a cure for misanthropy. As long as most humans in the future don't use sentient animals, the vast number of good lives we can create would **outweigh any sins humanity** has committed or **is** **likely to commit**. Even if it takes a century for animal farming to be replaced by vegetarianism (or in vitro meats or brainless farm animals), the century of factory farming would represent around 10^12 miserable life-years. That is one-billionth of the 10^21 animal life-years humanity could save by protecting Earth from asteroids for a billion years. The century of industrialized animal use would thus be the equivalent of a terrible pain that lasts one second in an otherwise happy 100-year life. **To accept human extinction now would be like committing suicide to end an unpleasant itch.** If human life is extinguished, all known animal life will be extinguished when the Sun enters its Red Giant phase, if not earlier. Despite its current mistreatment of other animals, humanity is the animal kingdom’s best long-term hope for survival.

**Only the plan and perm can solve---alt fails to change anything**

**Light 2**

[Light, Andrew, Assistant Professor of Environmental Philosophy and Director, Environmental Conservation Education Program, 2002 (Environmental Ethics: What Really Matters What Really Works David Schmidtz and Elizabeth Willott, p. 556-57)]

In recent years a critique of this predominant trend in environmental ethics has emerged from within the pragmatist tradition in American philosophy.' The force of this critique is driven by the intuition that environmental philosophy cannot afford to be qui­escent about the public reception of ethical argu­ments over the value of nature. The original moti­vations of environmental philosophers for turning their philosophical insights to the environment sup­port such a position., Environmental philosophy evolved out of a concern about the state of the grow­ing environmental crisis, and a conviction that a philosophical contribution could be made to the res­olution of this crisis. But if environmental philoso­phers spend all of their time debating non­-human centered forms of value theory they will ar­guably never get very far in making such a contri­bution. For example, to continue to ignore human motivations for the act of valuing nature causes many in the field to overlook the fact that most people find it very difficult to extend moral consideration to plants and animals on the grounds that these entities possess some form of intrinsic, inherent, or other­wise conceived nonanthropocentric value. It is even more difficult for people to recognize that non­humans could have rights. Claims about the value of nature as such do not appear to resonate with the or­dinary moral intuitions of most people who, after all, spend most of their livesthinking of value, moral obligations, and rights in exclusively human terms. Indeed, while most environmental philosophers be­gin their work with the assumption that most people think of value in human-centered terms (a problem that has been decried since the very early days of the field), few have considered the problem of how a non-human-centered approach to valuing nature can ever appeal to such human intuitions. The particular version of the pragmatist critique of environmental ethics that I have endorsed recognizes that we need to rethink the utility of anthropocentric arguments in environmental moral and political theory, not nec­essarily because the traditional nonanthropocentric arguments in the field are false, but because they hamper attempts to contribute to the public discus­sion of environmental problems, in terms familiar to the public

**The alternative dooms millions of animals to extinction**

Michael **Pollan 2**, Professor of Journalism at UC-Berkeley, “An Animal’s Place,” The New York Times Magazine, 11-10-02, http://michaelpollan.com/articles-archive/an-animals-place/

For any animal, happiness seems to consist in the opportunity to express its creaturely character -- its essential pigness or wolfness or chickenness. Aristotle speaks of each creature's ''characteristic form of life.'' For domesticated species, the good life, if we can call it that, cannot be achieved apart from humans -- apart from our farms and, therefore, our meat eating. This, it seems to me, is where animal rightists betray a profound ignorance about the workings of nature. To think of domestication as a form of enslavement or even exploitation is to misconstrue the whole relationship, to project a human idea of power onto what is, in fact, an instance of mutualism between species. Domestication is an evolutionary, rather than a political, development. It is certainly not a regime humans imposed on animals some 10,000 years ago. Rather, domestication happened when a small handful of especially opportunistic species discovered through Darwinian trial and error that they were more likely to survive and prosper in an alliance with humans than on their own. Humans provided the animals with food and protection, in exchange for which the animals provided the humans their milk and eggs and -- yes -- their flesh. Both parties were transformed by the relationship: animals grew tame and lost their ability to fend for themselves (evolution tends to edit out unneeded traits), and the humans gave up their hunter-gatherer ways for the settled life of agriculturists. (Humans changed biologically, too, evolving such new traits as a tolerance for lactose as adults.) From the animals' point of view, the bargain with humanity has been a great success, at least until our own time. Cows, pigs, dogs, cats and chickens have thrived, while their wild ancestors have languished. (There are 10,000 wolves in North America, 50,000,000 dogs.) Nor does their loss of autonomy seem to trouble these creatures. It is wrong, the rightists say, to treat animals as ''means'' rather than ''ends,'' yet the happiness of a working animal like the dog consists precisely in serving as a ''means.'' Liberation is the last thing such a creature wants. To say of one of Joel Salatin's caged chickens that ''the life of freedom is to be preferred'' betrays an ignorance about chicken preferences -- which on this farm are heavily focused on not getting their heads bitten off by weasels. But haven't these chickens simply traded one predator for another -- weasels for humans? True enough, and for the chickens this is probably not a bad deal. For brief as it is, the life expectancy of a farm animal would be considerably briefer in the world beyond the pasture fence or chicken coop. A sheep farmer told me that a bear will eat a lactating ewe alive, starting with her udders. ''As a rule,'' he explained, ''animals don't get 'good deaths' surrounded by their loved ones.'' The very existence of predation -- animals eating animals -- is the cause of much anguished hand-wringing in animal rights circles. ''It must be admitted,'' Singer writes, ''that the existence of carnivorous animals does pose one problem for the ethics of Animal Liberation, and that is whether we should do anything about it.'' Some animal rightists train their dogs and cats to become vegetarians. (Note: cats will require nutritional supplements to stay healthy.) Matthew Scully calls predation ''the intrinsic evil in nature's design . . . among the hardest of all things to fathom.'' Really? A deep Puritan streak pervades animal rights activists, an abiding discomfort not only with our animality, but with the animals' animality too.

### Wep

### 2AC Block

#### Weaponization inevitable globally---their UQ is from 2 years ago

Bridge 12-10 – Robert Bridge, writer for RT, December 10th, 2012, "Space militarization: Coming to a galaxy near you" rt.com/politics/space-militarization-us-russia-699/print/

The United States is moving toward the militarization of space and this will change the face of war in the near future, an academician with the Russian Academy of Engineering Sciences has warned.¶ Judging by recent developments, **the idea of** formidable space weapons **prowling the last frontier is no longer limited to the realm of science fiction**.¶ The US has published tactical guidelines over the past three years on the use of force in outer space, while systems that may be used as orbiting weapons are undergoing rigorous test flights, said Yuri Zaitsev, Academic Advisor with the Russian Academy of Engineering Sciences.¶ In a security document released in October, the US Department of Defense (DoD) said that its space-related activities are designed to “maintain and enhance the national security advantages afforded by the use of outer space.”¶ Among its numerous stated objectives, the DoD report said it is US policy to “proactively seek opportunities to cooperate with allies and selected international partners in developing space architectures and in **designing, acquiring, and** operat**ing military space systems**.”¶ Zaitsev said that America’s push to militarize space may include the use of both nuclear and conventional weapons, which could have dangerous and dramatic implications for future warfare.¶ "**The** U**nited** S**tates, as well as some other leading powers, is attempting to gain supremacy** in [space],” Zaitsev explained. “This will enable their aerospace operations at the very beginning of a war to initiate strikes on strategic facilities throughout the [targeted] country.”¶ **During this year’s UN General Assembly, the US conspicuously refused to support a resolution to halt the militarization of space.**¶ In a vote on a resolution titled ‘Prevention of an Arms Race in Outer Space,’ 169 member-states, including the Russian Federation, voted in favor of the draft resolution stating, “[The] exploration and use of space…shall be for peaceful purposes…carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development.”¶ Only **the United States and Israel abstained from voting on the document**, rendering it effectively toothless.¶ Washington’s refusal to cede control of space likely stems from its increasing reliance on space-based systems: An estimated 90 percent of the US Military reportedly uses or depends on space-based systems.¶ The Russian academic referred the shock over China’s successful targeted destruction of an old orbiting weather satellite in 2007.¶ "The Americans were frightened by the Chinese tests of anti-satellite weapons,” Zaitsev said. “It is quite possible that the US may soon initiate negotiations on anti-satellite systems."¶ Zaitsev also said that the United States and its allies may attempt to regulate space activity to its advantage.¶ "The United States and the European Union are working out a draft code of conduct in outer space," he said. "This document may regulate space activity in the interests of the United States and its allies and may discriminate [against] other states, including Russia.”¶ “**Russia and China are unlikely to sign this document, which means** military confrontation in outer space will intensify**,”** Zaitsev warned.

#### No timeframe---occurs

#### No arms race

Lopez 12 – Laura Delgado Lopez, expert at the Institute for Global Environmental Studies, Arlington, Virginia, master's degree in international science and technology from George Washington University, 2009 Truman Scholar and a Northrop Grumman Fellow at GWU's Space Policy Institute, bachelor's in political science, March 6th, 2012, "Predicting an Arms Race in Space: Problematic Assumptions for Space Arms Control" [www.tandfonline.com/doi/pdf/10.1080/14777622.2012.647391](http://www.tandfonline.com/doi/pdf/10.1080/14777622.2012.647391)

**Referring to the history of the nuclear arms race, as space doves often do, is misleading**. The Soviet Union and the United States did race to build up their nuclear arsenals, but that was because they could, both technologically and economically. Interestingly, while both lawful 43 and potentially illegal transfers of nuclear technology have taken place, the list of countries with known or suspected nuclear technology is still relatively small. 44 Moreover, it would be open to debate whether those countries that possess the knowledge of how to build nuclear weapons are currently immersed in a race to build up their arsenals in response to that of other countries. It is probable that limited proliferation may be a sign of the success of an efficient arms control regime, but it is nevertheless evident that adequate resources are a necessary prerequisite for an arms race**.**¶ **In the case of** space weapons**, the** conditions are even harsher**.** The incredible cost not only to develop and launch these systems, but to maintain them has been a major impediment to their development. Brilliant Pebbles, arguably the most cost-effective U.S. space-based missile defense program, which would also amount to an ASAT weapon, still amounted to a price tag of between $11 and $16 billion, expended over a 20-year period. 45 Would a country such as Pakistan, which ranks twenty-eighth in the U.S. Central Intelligence Agency’s World Factbook Gross Domestic Product comparison, be able to raise the kind of resources necessary for racing other countries in space? It is more probable that countries such as China and Russia would be able to compete if they so chose, 46 but **the idea of a worldwide space arms race can still not be sustained**. And therein lies the biggest issue that space doves fail to address in their arguments about an inevitable space race: resources. The perception of a threat and the political will to meet it are not enough to warrant the kind of worldwide conditions they are so quick to describe.¶ When space doves bring up the question of resources, they point to ‘‘asymmetric challenges from those who could not afford to be participants in the race itself.’’ 47 This situation might encourage, for instance, nuclear proliferation or the build-up of chemical or biological weapons. In fact, Nancy Gallagher argues that the United States rightly denies the existence of an arms race in space ‘‘only in the narrow sense that there is not, and probably will not be, a Cold War style ‘space arms race,’ i.e., an action-reaction dynamic between peer competitors,’’ but that doing so ignores the danger of ‘‘asymmetric reactions.’’ 48¶ Space doves thus seem to acknowledge that measures to regain or sustain stability in the international system do not always manifest themselves in the same way because power can take many forms. In proposing his concept of ‘‘soft power’’ as a legitimate tool for the United States to exert international influence, Joseph Nye explained that in a world of increased political complexity, the traditional ways to employ force are too costly, and thus ‘‘other instruments such as communications. . . and manipulation of interdependence have become more important.’’ 49¶ But this contention clearly **invalidates the inevitability of an arms race in space**. If countries do not respond in kind, then there is no race to speak of, and the inevitability argument breaks down. Gallagher’s statement thus seems contradictory: if a space race is not an ‘‘action-reaction dynamic between peer-competitors,’’ then what do space doves mean with an arms race? Why must it be avoided?¶ **This issue also raises a more** important problem: causality. **Unless other countries explicitly state that their asymmetric build-up is a direct response to U.S. deployment of space weapons, then** this link cannot be established**.** Even considering the timing sequence of deployment and the projected build-up—which would be difficult considering it takes years to develop, launch, and deploy space systems—**it would be simplistic to assume that other motivators for international behavior are not at work.**

#### No space war – deterrence checks

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Fourth, advanced space-based technology and weapons systems can have a stabilizing effect on the international community. As was the case with nuclear weapons during the Cold War, if a weapons system poses a large enough threat to two or more adversaries, its potential use can cause state leaders to avoid direct confrontation. This is not to suggest that future space-based weapons will eliminate tensions among competing states, nations, or groups, but **weapons can provide a stabilizing influence at times.**

#### SPS is not a weapon and will not be attacked

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 “Your concern about weaponization of the system and environmental risks are proper and deserve solid answers. For the answers (and a whole bunch of other great information) let me point you to a special edition of Ad Astra magazine produced by the National Space Society. If you look on page 29 you’ll see the answers as to why space-based [SPS] solar power satellites cannot be weaponized. Let me add to that list the following items: **The DoD will not own or operate SBSP satellites**. Energy production and distribution is outside of its Title X authority. In my opinion the DoD merely wants to be a customer of safe, clean energy and is most comfortable purchasing its energy from commercial vendors, just as it does today. The interest shown by the National Security Space Office (NSSO) in hosting the work done by the Space-Based Solar Power Study Group was largely because NASA does not do energy and the DoE does not do space. In other words, it was a ball being dropped along organizational lines. The security-related interest of the NSSO as it stepped in to host the study was three fold: Provide more energy sources to hopefully alleviate energy competition as a trigger for war between the major powers in the 21st Century Achieve American energy independence from foreign oil suppliers who attract US vital interests in areas and with peoples with whom we really would prefer to interact with in ways other than a dependent customer-supplier relationship. Provide a source of clean energy that provides America with broader options regarding carbon contamination and clean-up, as well as improved ability to make progress on treaties such as Kyoto. **Simple inspections of the waveguides for either laser or microwave transmitters on the satellites can easily verify that the beam cannot be focused narrowly to create a weapons effect**. Such inspections can and likely will be conducted at time of insurance inspection, licensing, and registration before launch. **International inspectors would be welcome and encouraged**. The goal is to have international corporations own and operate these satellites and provide power to international customers–that’s the key to defense of these huge birds–deterrence by mutual defense through broad international ownership and international customership–an attack on a satellite is an attack against all.

#### China already perceives weaponization

Waugh 12-12 – Rob Waugh, December 12th, 2012, "US launches mysterious 'space weapon' which can orbit for a year" uk.news.yahoo.com/us-launches-mysterious--space-weapon--which-can-orbit-for-a-year-140313369.html

An Atlas V rocket blasted off from Cape Canaveral yesterday carrying a mysterious and controversial military 'space plane'. ¶ Boeing's X37-B is 196 feet long, robotic, and designed for long stays in space - it orbited for 469 days on its last mission, more than a year. ¶ What is unclear is what is aboard the unmanned craft - or what it does in orbit.¶ News outlets and analysts speculated that the craft could have been built to spy on Chinese satellites. ¶ Brian Weeden of the Secure World Foundation says that **the vehicle is highly controversial in** China**, where the government** views it as a 'space weapon'. ¶ Reports from Chinese news agencies suggested that the Chinese were developing their own rocket-powered space plane. In 2007, the Chinese tested an anti-satellite missile against one of its own weather satellites, destroying it in orbit.

#### Double bind – if there’s weaponization now, it’s non-unique – if there’s arms control now, the plan would be deployed peacefully and would not cause weaponization

#### SPS creates cooperation through the NSP

Garretson 12 – Peter Garretson, Lieutenant Colonel of the USAF serving on CSAF's Strategic Studies Group, Spring 2012 "Solar Power in Space?" Strategic Studies Quarterly Spring

Our current National Space Policy articulates the top three space-related goals as: • Energize competitive domestic industries to participate in global markets and advance the development of satellite manufacturing, satellite-based services, space launch, terrestrial applications, and increased entrepreneurship; • Expand international cooperation; and • Strengthen stability in space. It continues by articulating several foundational activities important to the nation: • Strengthen US leadership in space-related science, technology, and industrial bases. Encourage an innovative and entrepreneurial commercial space sector. • Enhance capabilities for assured access to space. Develop launch systems and technologies necessary to assure and sustain future reliable and efficient access to space, in cooperation with US industry. • Develop and retain space professionals. Promote and expand publicprivate partnerships to foster educational achievement in science, technology, engineering, and mathematics (STEM) programs; embrace innovation to cultivate and sustain an entrepreneurial US research and development environment. • Strengthen interagency partnerships. • International cooperation. Strengthen US space leadership. Facilitate new market opportunities for US commercial space capabilities and services, including commercially viable terrestrial applications that rely on government-provided space systems.6 SBSP can be seen as a desirable strategy to achieve these national-level goals, consistent with the foundational activities, and with desirable effects for the USAF and the DoD. Fundamentally, a successful SBSP program would transform our industrial base and competitiveness and be at least as significant for American STEM programs as were the post-Sputnik and Apollo expansions in aerospace engineering. It would greatly expand the role of commercial space, and the effect on assured access and launch would be profound. Its natural confluence of challenges in space, energy, and security offers exciting options to further interagency partnerships between NASA, DOE, DoD, FAA, FCC, EPA, DOC, and DOS. It presents excellent opportunities for the United States to lead in international cooperation.

#### No perception link

Lopez 12 – Laura Delgado Lopez, expert at the Institute for Global Environmental Studies, Arlington, Virginia, master's degree in international science and technology from George Washington University, 2009 Truman Scholar and a Northrop Grumman Fellow at GWU's Space Policy Institute, bachelor's in political science, March 6th, 2012, "Predicting an Arms Race in Space: Problematic Assumptions for Space Arms Control" [www.tandfonline.com/doi/pdf/10.1080/14777622.2012.647391](http://www.tandfonline.com/doi/pdf/10.1080/14777622.2012.647391)

To return to the space doves’ argument, incapable of fully trusting the intentions of the United States if it were to deploy space weapons, adversaries and allies alike would respond by seeking to increase their own offensive space capabilities. But **this assumption is unwarranted**. Lacking resources and feeling insecure, countries tend to seek alliances with those in power, not independence to offset system unbalances on their own. The ‘‘go it alone’’ attitude that this perspective assumes contradicts the basic tenets of international system stability, in which stability is manifested through alliances, as occurred during the Cold War. In such a scenario, would the European Union try to divert its resources to the development of space weapons? No, and not only because of limited resources, but also because of the political risks. Europe would have to consider the far-reaching benefits of its historical relationship with the United States. Moreover, it would have to weigh the risk of contradicting its own national and regional policies. For instance, the European Space Policy reiterates Europe’s commitment to the OST and the ‘‘use of outer space for exclusively peaceful purposes.’’ 54 **It is therefore hard to imagine that Europe’s response to U.S. deployment of space weapons would elicit more than sharp criticism, let alone a complete reversal in policy**. If history is taken as a model, which recalling the historic concept of an arms race would necessitate, then there is no precedent to assume that an aggressive action by the United States would be met by competition from both adversaries and allies alike, particularly when costly political positions averse to these actions have already been taken.

#### Unilateralism causes cooperation, not backlash

Stone 11 – Christopher Stone, Space policy analyst and strategist, space/missile officer with Air Force Space Command Reserve Component, “American leadership in space: leadership through capability,” The Space Review, Monday, March 14, 2011, pg. <http://www.thespacereview.com/article/1797/1>

When it comes to space exploration and development, including national security space and commercial, I would disagree somewhat with Mr. Friedman’s assertion that space is “often” overlooked in “foreign relations and geopolitical strategies”. My contention is that while space is indeed overlooked in national grand geopolitical strategies by many in national leadership, space is used as a tool for foreign policy and relations more often than not. In fact, I will say that the US space program has become less of an effort for the advancement of US space power and exploration, and is used more as a foreign policy tool to “shape” the strategic environment to what President Obama referred to in his National Security Strategy as “The World We Seek”. Using space to shape the strategic environment is not a bad thing in and of itself. What concerns me with this form of “shaping” is that we appear to have changed the definition of American leadership as a nation away from the traditional sense of the word. Some seem to want to base our future national foundations in space us[e]ing the important international collaboration piece as the starting point. Traditional national leadership would start by advancing United States’ space power capabilities and strategies first, then proceed toward shaping the international environment through allied cooperation efforts. The United States’ goal should be leadership through spacefaring capabilities, in all sectors. Achieving and maintaining such leadership through capability will allow for increased space security and opportunities for all and for America to lead the international space community by both technological and political example. The world has recognized America as the leaders in space because it demonstrated technological advancement by the Apollo lunar landings, our deep space exploration probes to the outer planets, and deploying national security space missions. We did not become the recognized leaders in astronautics and space technology because we decided to fund billions into research programs with no firm budgetary commitment or attainable goals. We did it because we made a national level decision to do each of them, stuck with it, and achieved exceptional things in manned and unmanned spaceflight. We have allowed ourselves to drift from this traditional strategic definition of leadership in space exploration, rapidly becoming participants in spaceflight rather than the leader of the global space community. One example is shutting down the space shuttle program without a viable domestic spacecraft chosen and funded to commence operations upon retirement of the fleet. We are paying millions to rely on Russia to ferry our astronauts to an International Space Station that US taxpayers paid the lion’s share of the cost of construction. Why would we, as United States citizens and space advocates, settle for this? The current debate on commercial crew and cargo as the stopgap between shuttle and whatever comes next could and hopefully will provide some new and exciting solutions to this particular issue. However, we need to made a decision sooner rather than later. Finally, one other issue that concerns me is the view of the world “hegemony” or “superiority” as dirty words. Some seem to view these words used in policy statements or speeches as a direct threat. In my view, each nation (should they desire) should have freedom of access to space for the purpose of advancing their “security, prestige and wealth” through exploration like we do. However, to maintain leadership in the space environment, space superiority is a worthy and necessary byproduct of the traditional leadership model. If your nation is the leader in space, it would pursue and maintain superiority in their mission sets and capabilities. In my opinion, **space superiority does** not imply a wall of orbital weapons preventing other nations from access to space, nor does it **preclude international cooperation** among friendly nations. Rather, it indicates a desire as a country to achieve its goals for national security, prestige, and economic prosperity for its people, and to be known as the best in the world with regards to space technology and astronautics. I can assure you that many other nations with aggressive space programs, like ours traditionally has been, desire the same prestige of being the best at some, if not all, parts of the space pie. Space has been characterized recently as “congested, contested, and competitive”; the quest for excellence is just one part of international space competition that, in my view, is a good and healthy thing. As other nations pursue excellence in space, we should take our responsibilities seriously, both from a national capability standpoint, and as country who desires expanded international engagement in space. If America wants to retain its true leadership in space, it must approach its space programs as the advancement of its national “security, prestige and wealth” by maintaining its edge in spaceflight capabilities and use those demonstrated talents to advance international prestige and influence in the space community. These energies and influence can be channeled to create the international space coalitions of the future that many desire and benefit mankind as well as America. Leadership will require sound, long-range exploration strategies with national and international political will behind it. American leadership in space is not a choice. It is a requirement if we are to truly lead the world into space with programs and objectives “worthy of a great nation”.

#### Weapons are not destabilizing

Lopez 12 – Laura Delgado Lopez, expert at the Institute for Global Environmental Studies, Arlington, Virginia, master's degree in international science and technology from George Washington University, 2009 Truman Scholar and a Northrop Grumman Fellow at GWU's Space Policy Institute, bachelor's in political science, March 6th, 2012, "Predicting an Arms Race in Space: Problematic Assumptions for Space Arms Control" [www.tandfonline.com/doi/pdf/10.1080/14777622.2012.647391](http://www.tandfonline.com/doi/pdf/10.1080/14777622.2012.647391)

If space weapons are taken to be destabilizing, then the context preceding their deployment requires a condition of stability in the arrangement of power in the international space system. Space doves thus assume that despite unrivaled U.S. leadership in space—investing more resources and employing more space capabilities than any other nation, even the quickly-progressing China 35 —the fact that it lacks space weapons makes it an equal player in space. This argument assumes that if the United States were to deploy weapons in space, it would acquire a resource (power) of such magnitude that it would destabilize the system, 36 forcing other countries to respond in kind and seek a new condition of stability.¶ But is there balance in the international space system? No. First, if balance requires at least more than one bloc of power, where is the parity in resources? **In 2010, the U.S. space budget accounted for 23% of global space activity, versus 8% of non-U.S. space budgets combined. 37 Likewise, since the United States waged its first space war in the 1990s, space capabilities have been a key enabler of its asymmetrical advantage in warfare. While it is true that many other countries now participate in space, few have independent access on their own. The fact that astronauts from several countries were grounded along with the U.S. Space Shuttle fleet, but for the Russian Soyuz, points to an unbalanced distribution of power as it pertains to space**.¶ If, on the other hand, stability is assumed not through the resources power paradigm, but through comparable vulnerabilities, the imbalance becomes even starker. The United States is both more vulnerable and less vulnerable than other countries in space, depending on which way one looks at it. If one considers dependability, and the important role that space plays in day-to-day activities in the United States versus in other countries (considering their indigenous capabilities) then its vulnerability and disadvantage are highlighted. But if one considers the vulnerability of a space system by itself, a country with a single or only a handful of satellites could be crippled by a single attack, whereas several U.S. systems—like the Global Positioning System—would be able to survive or recover more easily because of the size of its constellations.¶ The current space environment does not reflect stability; on the contrary, the system is tilted. **It would be more appropriate to argue that U.S. space weapons deployment would widen the existing gap and effectively rule out the influence of other countries in this domain.** For countries that are only beginning to access space or are not yet able to participate, the presence of weapons may be seen as a threat to their own activities, particularly when considering the prohibitive effects of debris-causing weapons. These considerations aside, however, **while space weapons could reduce the likelihood of many countries catching up to the United States,** it would be a mistake to assume that these weapons would be the destabilizing element in the system.

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#### Global democracy inevitable

Tow 10—Director of the Future Planet Research Centre (David, Future Society- The Future of Democracy, 26 August 2010, http://www.australia.to/2010/index.php?option=com\_content&view=article&id=4280:future-society-the-future-of-democracy&catid=76:david-tow&Itemid=230)

Democracy, as with all other processes engineered by human civilisation, is evolving at a rapid rate. A number of indicators are pointing to a major leap forward, encompassing a more public participatory form of democratic model and the harnessing of the expert intelligence of the Web. By the middle of the 21st century, such a global version of the democratic process will be largely in place. Democracy has a long evolutionary history. The concept of democracy - the notion that men and women have the right to govern themselves, was practised at around 2,500 BP in Athens. The Athenian polity or political body, granted all citizens the right to be heard and to participate in the major decisions affecting their rights and well-being. The City State demanded services and loyalty from the individual in return. There is evidence however that the role of popular assembly actually arose earlier in some Phoenician cities such as Sidon and Babylon in the ancient assemblies of Syria- Mesopotamia, as an organ of local government and justice. As demonstrated in these early periods, democracy, although imperfect, offered each individual a stake in the nation’s collective decision-making processes. It therefore provided a greater incentive for each individual to cooperate to increase group productivity. Through a more open decision process, improved innovation and consequently additional wealth was generated and distributed more equitably. An increase in overall economic wellbeing in turn generated more possibilities and potential to acquire knowledge, education and employment, coupled with greater individual choice and freedom. According to the Freedom House Report, an independent survey of political and civil liberties around the globe, the world has made great strides towards democracy in the 20th and 21st centuries. In 1900 there were 25 restricted democracies in existence covering an eighth of the world’s population, but none that could be judged as based on universal suffrage. The US and Britain denied voting rights to women and in the case of the US, also to African Americans. But at the end of the 20th century 119 of the world’s 192 nations were declared electoral democracies. In the current century, democracy continues to spread through Africa and Asia and significantly also the Middle East, with over 130 states in various stages of democratic evolution. Dictatorships or quasi democratic one party states still exist in Africa, Asia and the middle east with regimes such as China, North Korea, Zimbabwe, Burma, the Sudan, Belarus and Saudi Arabia, seeking to maintain total control over their populations. However two thirds of sub-Saharan countries have staged elections in the past ten years, with coups becoming less common and internal wars gradually waning. African nations are also starting to police human rights in their own region. African Union peacekeepers are now deployed in Darfur and are working with UN peacekeepers in the Democratic Republic of the Congo. The evolution of democracy can also be seen in terms of improved human rights. The United Nations Universal Declaration of Human Rights and several ensuing legal treaties, define political, cultural and economic rights as well as the rights of women, children, ethnic groups and religions. This declaration is intended to create a global safety net of rights applicable to all peoples everywhere, with no exceptions. It also recognises the principle of the subordination of national sovereignty to the universality of human rights; the dignity and worth of human life beyond the jurisdiction of any State. The global spread of democracy is now also irreversibly linked to the new cooperative globalization

 model. The EU, despite its growing pains, provides a compelling template; complementing national decisions in the supra-national interest at the commercial, financial, legal, health and research sharing level. The global spread of new technology and knowledge also provides the opportunity for developing countries to gain a quantum leap in material wellbeing; an essential prerequisite for a stable democracy. The current cyber-based advances therefore presage a much more interactive public form of democracy and mark the next phase in its ongoing evolution. Web 2.0’s social networking, blogging, messaging and video services have already significantly changed the way people discuss political issues and exchange ideas beyond national boundaries. In addition a number of popular sites exist as forums to actively harness individual opinions and encourage debate about contentious topics, funnelling them to political processes. These are often coupled to online petitions, allowing the public to deliver requests to Government and receive a committed response. In addition there are a plethora of specialized smart search engines and analytical tools aimed at locating and interpreting information about divisive and complex topics such as global warming and medical stem cell advances. These are increasingly linked to Argumentation frameworks and Game theory, aimed at supporting the logical basis of arguments, negotiation and other structured forms of group decision-making. New logic and statistical tools can also provide inference and evaluation mechanisms to better assess the evidence for a particular hypothesis. By 2030 it is likely that such ‘intelligence-based’ algorithms will be capable of automating the analysis and advice provided to politicians, at a similar level of quality and expertise as that offered by the best human advisers. It might be argued that there is still a need for the role of politicians and leaders in assessing and prioritising such expert advice in the overriding national interest. But a moment’s reflection leads to the opposite conclusion. Politicians have party allegiances and internal obligations that can and do create serious conflicts of interest and skew the best advice. History is replete with such disastrous decisions based on false premises, driven by party political bias and populist fads predicated on flawed knowledge. One needs to look no further in recent times than the patently inadequate evidential basis for the US’s war in Iraq which has cost at least half a million civilian lives and is still unresolved. However there remains a disjunction between the developed west and those developing countries only now recovering from colonisation, the subsequent domination by dictators and fascist regimes and ongoing natural disasters. There is in fact a time gap of several hundred years between the democratic trajectory of the west and east, which these countries are endeavouring to bridge within a generation; often creating serious short-term challenges and cultural dislocations. A very powerful enabler for the spread of democracy as mentioned is the Internet/Web- today’s storehouse of the world’s information and expertise. By increasing the flow of essential intelligence it facilitates transparency, reduces corruption, empowers dissidents and ensures governments are more responsive to their citizen’s needs. Ii is already providing the infrastructure for the emergence of a more democratic society; empowering all people to have direct input into critical decision processes affecting their lives, without the distortion of political intermediaries. By 2040 more democratic outcomes for all populations on the planet will be the norm. Critical and urgent decisions relating to global warming, financial regulation, economic allocation of scarce resources such as food and water, humanitarian rights and refugee migration etc, will to be sifted through community knowledge, resulting in truly representative and equitable global governance. Implementation of the democratic process itself will continue to evolve with new forms of e-voting and governance supervision, which will include the active participation of advocacy groups supported by a consensus of expert knowledge via the Intelligent Web 4.0. Over time democracy as with all other social processes, will evolve to best suit the needs of its human environment. It will emerge as a networked model- a non-hierarchical, resilient protocol, responsive to rapid social change. Such distributed forms of government will involve local communities, operating with the best expert advice from the ground up; the opposite of political party self-interested power and superficial focus-group decision-making, as implemented by many current political systems. These are frequently unresponsive to legitimate minority group needs and can be easily corrupted by powerful lobby groups, such as those employed by the heavy carbon emitters in the global warming debate.

#### Democracy doesn’t solve war

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In the last couple of decades there has been a burgeoning and intriguing discussion about the connection between democracy and war aversion.7 Most notable has been the empirical observation that democracies have never, or almost never, gotten into a war with each other. This relationship seems more correlative than causal, however. Like many important ideas over the last few centuries, the idea that war is undesirable and inefficacious and the idea that democracy is a good form of government have largely followed the same trajectory: they were embraced first in northern Europe and North America and then gradually, with a number of traumatic setbacks, became more accepted elsewhere. In this view, the rise of democracy not only is associated with the rise of war aversion, but also with the decline of slavery, religion, capital punishment, and cigarette smoking, and with the growing acceptance of capitalism, scientific methodology, women's rights, environmentalism, abortion, and rock music.8 While democracy and war aversion have taken much the same trajectory, however, they have been substantially out of synchronization with each other: the movement toward democracy began about 200 years ago, but the movement against war really began only about 100 years ago (Mueller 1989, 2004). Critics of the democracy/peace connection often cite examples of wars or near-wars between democracies. Most of these took place before World War I--that is, before war aversion had caught on.9 A necessary, logical connection between democracy and war aversion, accordingly, is far from clear. Thus, it is often asserted that democracies are peaceful because they apply their domestic penchant for peaceful compromise (something, obviously, that broke down in the United States in 1861) to the international arena or because the structure of democracy requires decision-makers to obtain domestic approval.10 But authoritarian regimes must also necessarily develop skills at compromise in order to survive, and they all have domestic constituencies that must be serviced such as the church, the landed gentry, potential urban rioters, the nomenklatura, the aristocracy, party members, the military, prominent business interests, the police or secret police, lenders of money to the exchequer, potential rivals for the throne, the sullen peasantry.11 Since World War I, the democracies in the developed world have been in the lead in rejecting war as a methodology. Some proponents of the democracy-peace connection suggest that this is because the democratic norm of non-violent conflict resolution has been externalized to the international arena. However, developed democracies have not necessarily adopted a pacifist approach, particularly after a version of that approach failed so spectacularly to prevent World War II from being forced upon them. In addition, they were willing actively to subvert or to threaten and sometimes apply military force when threats appeared to loom during the Cold War contest. At times this approach was used even against regimes that had some democratic credentials such as in Iran in 1953, Guatemala in 1954, Chile in 1973, and perhaps Nicaragua in the 1980s (Rosato 2003, 590-91). And, they have also sometimes used military force in their intermittent efforts to police the post-Cold War world (Mueller 2004, chs. 7, 8). It is true that they have warred little or not at all against each other--and, since there were few democracies outside the developed world until the last quarter of the twentieth century, it is this statistical regularity that most prominently informs the supposed connection between democracy and peace. However, the developed democracies hardly needed democracy to decide that war among them was a bad idea.12 In addition, they also adopted a live-and-let-live approach toward a huge number of dictatorships and other non-democracies that did not seem threatening during the Cold War--in fact, they often aided and embraced such regimes if they seemed to be on the right side in the conflict with Communism. Moreover, the supposed penchant for peaceful compromise of democracies has not always served them well when confronted with civil war situations, particularly ones involving secessionist demands. The process broke down into civil warfare in democratic Switzerland in 1847 and savagely so in the United States in 1861. Democracies have also fought a considerable number of wars to retain colonial possessions--six by France alone since World War II--and these, as James Fearon and David Laitin suggest, can in many respects be considered essentially to be civil wars (2003, 76). To be sure, democracies have often managed to deal with colonial problems peacefully, mostly by letting the colonies go. But authoritarian governments have also done so: the Soviet Union, for example, withdrew from his empire in Eastern Europe and then dissolved itself, all almost entirely without violence. Thus, while democracy and war aversion have often been promoted by the same advocates, the relationship does not seem to be a causal one. And when the two trends are substantially out of step today, democracies will fight one another. Thus, it is not at all clear that telling the elected hawks in the Jordanian parliament that Israel is a democracy will dampen their hostility in the slightest. And various warlike sentiments could be found in the elected parliaments in the former Yugoslavia in the early 1990s or in India and then-democratic Pakistan when these two countries engaged in armed conflict in 1999. If Argentina had been a democracy in 1982 when it seized the Falkland Islands (a very popular undertaking), it is unlikely that British opposition to the venture would have been much less severe. "The important consideration," observes Miriam Fendius Elman after surveying the literature on the subject, does not seem to be "whether a country is democratic or not, but whether its ruling coalition is committed to peaceful methods of conflict resolution." As she further points out, the countries of Latin America and most of Africa have engaged in very few international wars even without the benefit of being democratic (for a century before its 1982 adventure, Argentina, for example, fought none at all) (1997, 484, 496). (Interestingly, although there has also been scarcely any warfare between Latin American states for over 100 years or among Arab ones or European ones for more that 50--in all cases whether democratic or not--this impressive phenomenon has inspired remarkably few calls for worldwide Arab colonialism or for the systematic transplant of remaining warlike states to Latin America or Europe.) And, of course, the long peace enjoyed by developed countries since World War II includes not only the one that has prevailed between democracies, but also the even more important one between the authoritarian east and the democratic west. Even if there is some connection, whether causal or atmospheric, between democracy and peace, it cannot explain this latter phenomenon. Democracy and the democratic peace become mystiques: the role of philosophers and divines Democracy has been a matter of debate for several millennia as philosophers and divines have speculated about what it is, what it might become, and what it ought to be. Associated with these speculations has been a tendency to emboss the grubby gimmick with something of a mystique. Of particular interest for present purposes is the fanciful notion that democracy does not simply express and aggregate preferences, but actually somehow creates (or should create) them. In addition, the (rough) correlation between democracy and war aversion has also been elevated into a causal relationship.

#### Prefer our evidence—backed by studies

Rosato 3 – PhD PolSci, Chicago; conclusion of a statistical survey of democracies (Sebastian, The Flawed Logic of Democratic Peace Theory, The American Political Science Review 97.4, AG)

The causal logics that underpin democratic peace theory cannot explain why democracies remain at peace with one another because the mechanisms that make up these logics do not operate as stipulated by the theory's proponents. In the case of the normative logic, liberal democracies do not reliably externalize their domestic norms of conflict resolution and do not treat one another with trust and respect when their interests clash. Similarly, in the case of the institutional logic, democratic leaders are not especially accountable to peaceloving publics or pacific interest groups, democracies are not particularly slow to mobilize or incapable of surprise attack, and open political competition offers no guarantee that a democracy will reveal private information about its level of resolve. In view of these findings there are good reasons to doubt that joint democracy causes peace.

Popular sentiment empirically doesn’t prevent wars even in a democracy - multiple reasons

Rosato 3 (Sebastian, PhD, Asst. Professor of Political Science at the University of Notre Dame, Former Research Fellow at the International Security Program, “The Flawed Logic of Democratic Peace Theory,” Nov, American PoliSci Review Vol 97 No 4, Muse)

Pacific public opinion does not appear to place a fundamental constraint on the willingness of democracies to go to war. If it did, then democracies would be more peaceful in their relations with all types of states, not just other democracies. However, instead of being more peaceful, on average democracies are just as likely to go to war as non-democracies (Farber and Gowa 1995). There are three reasons why publics are unlikely to constrain democratic war proneness. First, the costs of war typically fall on a small subset of the population that will likely be unwilling to protest government policy. Excluding the two World Wars, democratic fatalities in war have exceeded 0.1% of the population in only 6% of cases. In 60% of cases, losses represented less than 0.01% of the population or one in 10,000 people. Most democratic citizens, then, will never be personally affected by war or know anyone affected by military conflict. Adding the many militarized dis- putes involving democracies strengthens this finding. Both the United States and Britain have suffered fewer than 100 battle casualties in approximately 97% of the militarized disputes in which they have been involved (Singer and Small 1994). Moreover, modern democracies have tended to have professional standing armies. Members of the military, then, join the armed forces voluntarily, accepting that they may die in the service of their countries. This in turn means that their families and friends, that is, those who are most likely to suffer the costs of war, are unlikely to speak out against a government that chooses to go to war or are at least less likely to do so than are the families and friends of conscripts. In short, the general public has little at stake in most wars and those most likely to suffer the costs of war have few incentives to organize dissent. Second, any public aversion to incurring the costs of war may be overwhelmed by the effects of nationalism. In addition to the growth of democracy, one of the most striking features of the modern period is that people have come to identify themselves, above all, with the nation state. This identification has been so powerful that ordinary citizens have repeatedly demonstrated a willingness to fight and die for the continued existence of their state and the security of their co-nationals. There are, then, good reasons to believe that if the national interest is thought to be at stake, as it is in most interstate conflicts, calculations of costs will not figure prominently in the public's decision process. Third, democratic leaders are as likely to lead as to follow public opinion. Since nationalism imbues peo- ple with a powerful spirit of self-sacrifice, it is actively cultivated by political elites in the knowledge that only highly motivated armies and productive societies will prevail in modern warfare (e.g., Posen 1993). Democratically elected leaders are likely to be well placed to cultivate nationalism, especially because their gov- ernments are often perceived as more representative and legitimate than authoritarian regimes. Any call to defend or spread "our way of life," for example, is likely to have a strong resonance in democratic polities, and indeed the historical record suggests that wars have of- ten given democratic leaders considerable freedom of action, allowing them to drum up nationalistic fervor, shape public opinion, and suppress dissent despite the obligation to allow free and open discussion. Events in the United States during both World Wars highlight the strength of nationalism and the ability of democratic elites to fan its flames. Kennedy (1980, 46) notes that during the First World War, President Wilson lacked "the disciplinary force of quick coming crisis or imminent peril of physical harm" but turned successfully to "the deliberate mobilization of emotions and ideas." At the same time his administration turned a blind eye to, or actively encouraged, the deliberate subversion of antiwar groups within the United States. The Roosevelt administration was equally successful at generating prowar sentiment during World War II. Early in the war the president spoke for the nation in asserting that the German firebombing of population centers had "shocked the conscience of humanity," and yet, remarkably, there was no sustained protest in the United States against the bombing of Japanese cities that killed almost a million civilians a few years later. This abrupt transformation, notes Dower (1986), was made possible by a massive propaganda campaign, con- doned by the political elite, describing the Japanese as subhuman and untrustworthy "others." In stark con- trast, America's allies were forgiven all their faults "Russian Communists were transformed into agrarian reformers, Stalin into Uncle Joe..." (Ambrose 1997, 150).