

Space Exploration Paper

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I. Why Space Exploration Now?

A) Why should we talk about space exploration now?

US space policy is at a crossroads. The future of the US commitment to space exploration, and of NASA's viability in general, is in question due to a number of controversies facing the US space program. First, the political commitment to space exploration is waning. In these tough economic times, lawmakers and the American public are questioning why we are spending billions of dollars "up there" when there is so much need "down here". The political motivations that drove US space exploration during the Cold War are long gone. In addition, the question of whether or not US space exploration should be led by the government or the private sector has come to a head with Obama's new vision for US space policy. And finally, both of these issues have created something of an existential crisis for NASA. With the cancellation of the Shuttle Program and the elimination of the programs to get back to the Moon and go to Mars, the exploration activities that NASA has long focused on are gone. The direction that NASA should take in terms of space exploration is largely in question.

B) Why is space exploration a good debate topic?

Space exploration is both timely and "big" enough to make a good topic. Obama is doing stuff in the opposite direction of the topic and there is a lot of literature on where space policy should go from here. Space exploration accesses the types of big impacts that debaters like to discuss: climate/environment, US leadership, interactions with Russia and China, the economy, ect. For many of the potential advantage areas, there are good warrants for acting now (i.e.- this is the key moment for the US in the space race with Asia, this is the key moment to harness space's potential in the search for climate solutions).

The college community has not debated space since 1985, before most current debaters were even born. Given the current state of the US space exploration program, the time is ripe to debate space again.

II. The Aff- Topic Uniqueness

On April 15th 2010, Obama delivered a speech at Kennedy Space Center revealing his plans for NASA. This speech signaled a new direction for US space policy that did a lot to dismantle current space exploration efforts. The administration cancelled the Constellation program to return to the Moon, declined to recommit to the Shuttle Program expiring this year, and has generally abandoned any plans for near Earth exploration. A space topic where the aff increases space exploration is heading the opposite direction of the status quo. Given Obama's recent speech, it seems unlikely that he will "do" the topic during the year.

The US space program is at a crossroads- recent changes by Obama threaten NASA's exploration missions.

AI Times 4/18/10

http://blog.al.com/times-views/2010/04/editorial_nasa_budget_takes_un.html

The space shuttle program will end soon, and there are no clearly defined space goals that NASA centers like Huntsville's Marshall Space Flight Center can comfortably hang their proverbial space helmets on. NASA has been here before. When the Apollo moon program wound down with the last lunar flight in 1972, only four manned missions followed under the Skylab program. After the Apollo-Soyuz rendezvous in July 1975, American astronauts remained grounded until the first space shuttle flight in April 1981. The shuttle program, with its ability to deploy and retrieve satellites and ferry components to build the International Space Station, led to phenomenal spinoffs in materials processing, earth sciences, medical breakthroughs and discoveries that have deepened our understanding of the cosmos. Now, with a ballooning budget deficit and past space policy initiatives that have gotten lost in space, NASA watchers have good reason to be skeptical of yet another new direction in U.S. space policy. President Barack Obama, in a speech this week at Florida's Kennedy Space Center, tried to lay out a new vision for NASA that could put humans on an asteroid, in Mars orbit, and on the red planet itself, perhaps by 2030. "I expect to be around to see it," said Obama, 48. And while the president committed to increase NASA's budget by \$6 billion over five years with a heavier emphasis on commercial space vehicle development, many are troubled by his plans to kill most of the Constellation rocket program that MSFC has been working on for years as the successor to the shuttle. As much as \$9 billion has been spent on Constellation since its inception in 2004. Constellation had to go, Obama told KSC workers, because it was behind budget and underfunded. He said a return to the moon under the Constellation program would be shortsighted. "We've been there before. There's a lot more space to explore," he said. Constellation supporters counter that it will be far costlier to scrap the program and start over. And they point out we weren't just going to the moon again to get a tourist visa stamped. We were going to learn the skills needed to live on other worlds long enough to make the journeys to Mars and beyond. Obama charged NASA to charge on with developing a new "heavy lift" rocket while commercial space companies provide low-orbit cargo and astronaut flights. He promised to pick a design for the new heavy lift rocket by 2015 and then begin to build it and start a set of crewed flights early in the next decade on "deep space" missions. The space community is so divided that even the world's first moonwalkers, Neil Armstrong and Buzz Aldrin, are on opposite sides. Obama invoked John Kennedy's 1962 speech challenging America to send a man to the moon and back within the decade in saying it's time to take the nation's space program in a new direction. The challenge this time is different, he said, in that we are "no longer racing against an adversary" or shooting for a single goal of landing on the moon. Obama's plan, subject to congressional approval, could send several billion dollars to Marshall to research and develop a new heavy lift rocket and robot craft to scout locations for eventual human visits to an asteroid or Mars. It would also channel billions of dollars to KSC and Houston's Johnson Space Flight Center for new technology development and private-sector spaceflight. It all sounds good, but we agree with those still leery of killing Constellation just because it is behind schedule and never properly funded. That seems to fly in the face of Obama's own criticism that NASA has too often changed course with changes in political winds. Marshall Space Flight Center Director Robert Lightfoot seemed upbeat about Obama's NASA vision and about Marshall playing a key role. Others, including leaders of Alabama's congressional delegation, blasted the plan as putting America's space superiority at risk by ceding development to the private sector and creating long gaps in manned flights. Obama promised that no one is more committed to manned space flight than him. The return on the dollar is worth it, he said. Not to mention how a committed space program advances society, bolsters our defense readiness and inspires people to pursue science and engineering fields. When it comes to space program, President Kennedy's model is best. Pick a clear mission, set deadlines, then spend the money it takes. So far, we're not convinced the administration's new vision does any one of the three. But there's no doubt Obama took a good step going to the Kennedy Space Center. So let's all keep talking.

Obama sending wrong signal- his space policy radically scales back US space exploration.

TechNews 10

Obama to Defend Space Vision Against Mounting Criticism, April 14, <http://www.technewsworld.com/story/Obama-to-Defend-Space-Vision-Against-Mounting-Criticism-69772.html?wlc=1271618735>

Included in those plans is a decision -- originally announced back in February -- to end the Constellation moon program and shift NASA's focus to developing new technologies for deeper space exploration instead. The new plan will increase NASA's budget by US\$6 billion over the next five years. It calls for a decision in 2015 on the specific heavy-lift rocket chosen to

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take Americans deeper into space, the White House said. Decision Is 'Devastating' Though former astronaut Buzz Aldrin has spoken out in favor of Obama's plans, a trio of other high-profile astronauts recently released an open letter criticizing the administration's new direction. "The decision to cancel the Constellation program, its Ares 1 and Ares V rockets, and the Orion spacecraft, is devastating," wrote former astronauts Neil Armstrong, James Lovell and Eugene Cernan in an open letter published on Tuesday. "For the United States, the leading space faring nation for nearly half a century, to be without carriage to low Earth orbit and with no human exploration capability to go beyond Earth orbit for an indeterminate time into the future, destines our nation to become one of second or even third rate stature," they added. The administration has since said it would revive a scaled-back version of the planned Orion space capsule to provide an emergency escape for astronauts aboard the International Space Station. 'Listening to the Wrong People' President Obama has "got the wrong equation," Paul Czysz, a professor emeritus of aerospace engineering at St. Louis University, told TechNewsWorld. "He's listening to the wrong people." The criticisms posed by Armstrong and the other former astronauts are valid, Czysz added. Armstrong, in fact, is typically "very reticent," he pointed out. "For him to come out publicly like this is an enormous change of character. He really has to believe this is something he needs to do."

Space exploration not on the agenda

21st Century Waves 12/6/09 <http://21stcenturywaves.com/tag/space-colonization/>

4) No NASA Administrator Space News has concerns about President Obama's inaction regarding a new post-Griffin Administrator. In a March 30 editorial, they suggested that the candidate vetting and Senate confirmation processes could leave NASA leader-less "well into the second quarter of 2009." The worry is about major near-term decisions — e.g., retirement date for the Shuttle and the 5-year gap — that will affect NASA well into the 2015 Maslow Window. This situation is consistent with my January forecast that, despite Obama's interest and support of NASA during the campaign, he will, of necessity, need to focus on the economy and national security. Therefore, NASA will simply not be a front-burner item early in his administration.

SQ = privatization, puts entire US space program at risk

Examiner 4-18-10

First nukes, now space race: U.S. bows to Russia, China, <http://www.examiner.com/x-43096-Houston-Homeland-Security-Examiner~y2010m4d18-First-nukes-now-space-race-US-bows-to-Russia>

According to the latest Washington cop-out, dismantling NASA will allow Russia to be "Pilot in Command" and taxi American astronauts. The Obama administration wants to privatize space exploration and in the meantime, Russia and China have an opportunity to leapfrog ahead. Welcome to another Cold War. What is the rationale? There are a few back-stories, but on the surface, reasoning is flawed and the negatives are excruciatingly obvious. The timing and economics are shell games and there is too much at stake. This Cold War will be more dramatic than the one that started in 1945 and ended in 1991—after the fall of the Soviet Union—and the beginning of a closer Russia / U.S. relationship and a safer world. If the NASA deal goes through, the notion of being a "safer world" is highly debatable. Space technology includes weaponry. In view of shaving our nuclear program and shutting down NASA, our image as a superpower is quickly eroding. Reducing our nuclear capability by 30% Nuke freaks build up while U.S. scales back and closing NASA are self-inflicted wounds that will cost us big time. Scaling back nukes hurts our defenses and closing our space agency interrupts—if not destroys—technical continuity and our lead in space technology. The biggest blow is eliminating the Constellation project, the mission to put American astronauts back on the moon. Sixty percent of space industry professionals say the cancellation will end U.S. space missions. Moreover, the economic impacts are devastating—particularly in a recession, with an extraordinary deficit and high unemployment. Tens of thousands of Americans will be hurt. Texas, Florida and Alabama face a significant economic jolt and it may take years, maybe decades to recover. NASA represents more than 20,000 employees and contractors in the Houston area. In South Florida, thousands of workers and local businesses are dependent on the space flights. Following recent government takeovers (i.e., GM, health care) the reasoning of this is incomprehensible. We nationalize health care, but we privatize space technology. There seems to be no cogent pattern to policy or direction; but there has to be motives. There are entrepreneurial interests involved in the privatization of space travel Behind The Scheme To Privatize NASA Elon Musk, The Downey Connection & Google Owners. Notably, Elon Musk former owner of PayPal, and Google's Larry Page and Sergey Brin aim to take up the challenge of a space program in Florida. With all due respect, building and launching space ships is not the same as running Web based businesses. Some say the move "... will create the opportunity for the private sector to do for space what it did for computers: massively reduce costs and similarly

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increase capabilities." Certainly, the argument that the private sector usually does a better job has merit. There are, however, too many "ifs" involved. For one, it will take private industry some 5 to 10 years to ramp up to effectiveness. The knowledge transfer from the NASA folks will take time and money. Besides government funding (which dilutes the argument of "massively reducing costs"), private companies have to raise scarce capital. Even if private industry reaches technological, operational and financial efficiencies, the loss of momentum gives our adversaries a tremendous advantage. Now is not the time to privatize U.S. space exploration. The economics is questionable, and nuclear and space technologies are vital to our national defense.

II. The Aff- Advantage Areas

There is a lot of diverse advantage ground for space exploration affs, ranging from geopolitical to economic to environment/resource based advantages. This list is in no way exhaustive- various possible plan mechanisms can access other potential advantages (like export controls and US-EU relations, or the Moon aff and other exploration good impacts).

A) Leadership/Geopolitics advantages:

Space exploration key to US leadership.

Sabathier 08

(Vincent G., “Smart Power Through Space,” International Space Exploration Update, http://csis.org/files/media/isis/pubs/080220_smart_power_through_space.pdf)

The attractiveness of space is due, in large measure, to its reflection of the strongly American inspirational values of hope, optimism, and enthusiasm for people all around the world. During the political turmoil of the 1960s, Apollo served as a beacon of hope and a counterpoint to the increasingly unpopular Vietnam War. This contrast illustrates the challenge of balancing hard and soft power priorities. More people cite the successes of the space program as the greatest accomplishment of the U.S. government during the twentieth century than they do maintaining peace, ending the Cold War, and winning World War II combined. However, much of the public perception of space exploration is firmly rooted in an often-romanticized perception of the Apollo era—a poll on the 20th anniversary of the Moon landing showed that more than 80 percent of respondents felt that the Apollo missions were worth the cost (Harris, July 1989). However, support for the Apollo program during the space race only briefly exceeded 50 percent (Harris, July 1969). Past support for space exploration was never as high as it is currently believed to have been, and public support for human exploration of the Moon is now much higher than it was during the height of the space race. In much the same way that the Apollo program and Vietnam War era were then the two most visible displays of soft and hard power, we are now faced with a similar situation. Throughout the entire Cold War, support for soft and hard power use of space was carefully balanced. We must now signal to the world that we are not a nation that lives by use of military force alone. We must increase our support of civil space utilization and exploration to bring it back in line with spending on military and intelligence applications of space. Public opinion is mixed about the prospect of increasing space program funding. An April 2007 Harris poll showed almost half of respondents supported cutting the space program to reduce the deficit; yet in a March 2007 Zogby poll, 71 percent of respondents opposed any cut in NASA funding. Opposition to increased funding must be considered in light of widespread confusion about the current levels of funding for civil space applications versus the historical highs seen during space race. At its height, NASA funding amounted to approximately 0.8 percent of GDP (and this was in the budgetary context of the Vietnam War) as opposed to the current amount of less than one-eighth of 1 percent. Only one in five Americans correctly estimates NASA spending at less than 1 percent of the budget, while a plurality believes that NASA funding accounts for 1 percent to 5 percent of the budget, and roughly one-third believes that NASA consumes more than 10 percent of the total budget. While a simple increase in the level of national support is a clear signal of our interest in broader engagement and a commitment to a rational balance between all of our soft and hard power activities, it also creates an opportunity for a compelling display of U.S. global leadership. A highly visible commitment to civil space exploration and utilization will restore U.S. credibility and allow the United States to assume its traditional global leadership role. More generally, space exploration is a high-payoff, low-risk opportunity for U.S. leadership—in no case has a significant expenditure of political capital in support of civil space activities failed to provide high returns on investment. The most spectacular returns from space exploration have been cases where the initial engagement, and consequently the visibility of U.S. leadership, has been the greatest. Yet even in cases where a given space initiative fell short of expectations, virtually no penalty was incurred. As we approach the 35th anniversary of the retreat from the lunar surface we must carefully balance our priorities—neither neglecting pressing problems at home nor forgetting future generations. A stable balance between the short and long term and between hard and soft power is contingent in large measure on increased support for civil space operations. Over the longer term, we should strongly consider supporting our civil space activities at a minimum of 1 percent of the federal budget, with a long-term goal of supporting our space program at the rate of 25 cents per American per day.

Commitment to exploration key to solve space race with Asia.

Marlow 09

(Jeff, Marshall Scholar working on the European Space Agency's ExoMars mission at Imperial College London, Moon-rush: Is the United States Sitting out of the Next Space Race?, https://www.nss.org/Ad_Astra_Spring_09-Final.pdf)

Unfortunately, as the Asian space race heats up, NASA seems to be losing momentum. The space shuttles, which may have been futuristic enough 30 years ago, are now antiques. It has become increasingly difficult to justify the safety risks and billion-dollar price tags that come with each launch. Wisely, the remaining shuttles are on the fast track to retirement, but thanks to cost overruns, leadership gaps, and sagging employee morale chronicled by a NASA safety panel in August, a replacement vehicle is still several years off. In the interim, from 2010 to 2015, American astronauts will have to hitch rides to the International Space Station with the temperamental Russians, which is kind of like having to ask your grouchy neighbor to let you into your own house. Once things do get back on track, NASA aims for a manned return to the Moon by—you guessed it—2020. But even that might be too late: Former NASA Administrator Michael Griffin recently admitted the possibility, telling the BBC that “if China wants to put people on the Moon, and if it wishes to do so before the United States, it certainly can.” So what are Americans, seemingly the laggards in the modern space race, to make of this Asian space enthusiasm? Does the shifting momentum signal a new world order, or is the contest an inconsequential rerun playing 40 years after the original? Recent patterns notwithstanding, the United States retains the world's most advanced space program, thanks to the largest space exploration budget in the world and several decades of persistent, diligent, sustained effort. NASA has unparalleled technical and administrative know-how that can't be bought off the shelf, and though the manned space program is faltering, robotic missions are returning troves of scientific data from across the universe. But the trends do matter, and the future of America's space program may have a monumental effect on the future of the entire nation. The nebulous sense of prestige gained from a strong space exploration program often translates into substantive economic and political gains. James Oberg, a Houston-based space consultant, told the Associated Press that “doing ‘Moon probes’ advertises a country's technological level, and that's good for high-tech exports, and for validating the threat-level of its high-tech weapons.” Space exploration is also a bellwether for a country's philosophical outlook. A nation excitedly engaged in space exploration is a nation that believes in its future, one that tackles new problems confidently and leads fearlessly. It is a nation where schoolchildren idolize astronauts and rocket scientists like most youths today admire football stars—an attitude that eventually develops into a wide base of scientific and technological knowledge, driving innovation and economic growth. It is a nation that is going somewhere. A nation with a stagnating space program, on the other hand, is one on its heels, stricken by intellectual malaise. It is a nation that has turned inward and is unwilling or unable to take risks that are likely to provide economic and societal rewards. It is a nation that has lost its hunger and grown a little too comfortable in its privileged position, happy to reflect on past glory days. The exact date that China, India, Japan, the United States, or anybody else next lands on the Moon is immaterial, but the race itself is important as a litmus test of participating nations' technological prowess and the value they ascribe to science and technology. Right now, the United States must work to get back on the right side of the equation. Meanwhile, half a world away—after Chandrayaan soared over rice paddies and fishing ships toward the Moon just a few months ago—India is looking up.

Terrorism

Space Foundation ‘6 The Case for Space Exploration

<http://www.spaceref.com/news/viewpr.html?pid=19151>

On the other side of this path, suppose the next terrorist attack invokes biological warfare. Who are you going to call? You want the best biologists in the world. Well, we're going to have them because they're working on the biology of life on Mars or Europa. We will have attracted that person because the space vision had been in place. Or maybe it's chemical warfare. We will want the best chemists in the world. Because of the vision, we know we'll have them. And they will not have left the path to become lawyers and investment bankers, as what happened in the '80s and '90s. And once this kind of intellectual capability takes its place in society, a \$32 billion per year budget for NASA looks pretty cheap. It becomes an investment in tomorrow's economy and an investment in our national security. You start counting

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not just how many missiles are on alert, but how many scientists and engineers are there, too. This, by the way, makes the Vision for Space Exploration one of the most rare of great works — it fulfills not just one but two of the forces that drive nations to do great things: the national security driver and the economic driver.

International cooperation

Silver-MIT-1/28/04 In Defense of Space Exploration

<http://tech.mit.edu/V123/N66/mattsilver.66c.html>

An often-ignored benefit of space activities involves its capacity to increase international cooperation and generate goodwill. A return to the moon will bring the international community together in an activity that pits man against the cosmos. An international effort will not only lower costs through the pooling of resources, it will create concrete links between the U.S., Russia, Japan, Europe, even China; and this will have tremendous symbolic over-tones.

Coop with China

CSIS 10

(Chinese Space Policy: Collaboration or Competition?, March 23, <http://csis.org/blog/chinese-space-policy-collaboration-or-competition>)

There has been little collaboration between the US and China on space exploration. Indeed, the situation has been tense at times. Some of China's space technology was stolen from US firms. For example, a former engineer at Boeing, Dongfan Chung, was convicted in July 2009 of economic espionage on behalf of China. He provided information about the space shuttle and fueling system of the Delta IV booster rocket. Furthermore, the US has historically disapproved of Chinese aeronautical firms selling missile technology to countries like Iran, North Korea and Pakistan. On the other hand, China resented a plan proposed by the US delegation at the Copenhagen climate talks in December 2009, where foreign satellites would be used to monitor and verify carbon dioxide emissions in China. The Chinese argue that this would be an infringement upon their national sovereignty. The contraction of the US space program because of budget cuts will potentially necessitate a closer relationship with China than the US has had in the past with respect to space exploration. For example, with the retirement of the US space shuttle in 2010, American astronauts will be increasingly dependent on foreign technology to get into space. In November 2009, when President Obama visited China, he and Chinese president Hu Jintao, emphasized their willingness to cooperate on matters of space exploration. However it remains to be seen how this cooperation will manifest itself in the future. Both sides will have much to negotiate before a viable partnership can be established.

B) Economy/Technology related advantage areas:

Competitiveness

Griffin 07

(Michael, Space Exploration: A Measure of American Competitiveness, Oct 29, <http://www.spaceref.com/news/viewsr.html?pid=25944>)

I hope you agree with me that America's economic growth is driven by technological innovation, and that societies which foster such innovation become leaders in the world. But as NASA begins its next fifty years, I am deeply concerned about our nation's "bench strength" in carrying out our mission of space exploration, as well as other technical endeavors. We need "the best of the best of the best" in more than just the astronaut corp. The alarming statistics I have quoted here tonight have broad implications for our ability to maintain economic and technological leadership in today's world. Specific to the realm of spaceflight, I am concerned that America's real and perceived leadership in the standing of the world's spacefaring nations is slipping

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away. As Admiral Hal Gehman noted in his report of the Space Shuttle Columbia Accident Investigation Board a few years ago, "previous attempts to develop a replacement vehicle for the aging Shuttle represent a failure of national leadership." We have only recently begun developing the new Orion Crew Exploration Vehicle and Ares rockets, which will ferry astronauts to and from the Space Station and, more importantly, allow us once again to go beyond low Earth orbit to the moon. We plan to retire the Space Shuttle in 2010, but this new capability will not come on-line until 2015, according to current budget projections. With an operational stand-down like this, I am concerned that even more highly-skilled aerospace engineers will simply exit the field altogether, as happened at the end of the Apollo program. Worse, between now and then NASA will pay over \$700 million, and possibly a good deal more, to the Russian Space Agency to support the ISS with their Soyuz and Progress crew and cargo vehicles. Other countries, like Malaysia and South Korea, and certain wealthy individuals are already paying the Russians for trips to the International Space Station. So, fifty years after Sputnik, and thirty-five years after the last American footprint on the moon, I must ask: who is currently the recognized leader in spaceflight? China has also emerged as one of the three spacefaring nations, because they understand the value of space activities as a driver for innovation and a source of national pride in being a member of the world's most exclusive club. China today not only flies its own taikonauts, but also has plans to launch about 100 satellites over the next five to eight years. It should be no surprise, especially to those who have read Tom Friedman's book "The World is Flat" or John Kao's "Innovation Nation", that this environment in China is breeding thousands of high-tech start-ups. The Chinese have adapted the design of the Russian Soyuz to create their Shenzhou spacecraft. However, the similarity between the two ends at the out mould line; the Shenzhou spacecraft is both more spacious and more capable. They plan to conduct their first spacewalks and orbital rendezvous operations, and to build their own space station - admittedly simpler than ours - in the coming years. While they have not stated an intention to do so, the Chinese could send a mission around the moon with the Shenzhou spacecraft, as we did with the Apollo 8 mission, which inspired our nation and the world during the Christmas season of 1968. China could easily execute such a mission with their planned Long March V rocket, currently under development and reportedly rivaling any expendable rocket in the world today. I have no doubt that they will have it in use, as they plan, by around 2012. I am pointing out such things, matters of engineering capability, because I believe that it is important to understand our strategic competitors as well as those with whom we wish to collaborate. We must also understand ourselves, and the framework of our real and perceived leadership in the world. As John Kao couches the issue, we are currently facing a "Silent Sputnik" where "many countries are racing for a new innovation high ground while our own advantages are showing signs of serious wear." All this being said, I believe that America's greatest days in space exploration lie always ahead of us. However, this can only be true if we recognize such problems and strive with some concerted energy to fix them.

Economy

Hall-ranking member of the House Science and Technology Committee-7/14/09

<http://thehill.com/special-reports/technology-july-2009/50201-numerous-benefits-of-space-exploration>

Numerous benefits of space exploration

Forty years ago the world watched in wonder as American astronauts blazed through Earth's atmosphere into outer space and landed on the moon, the first time in history that humans set foot on another celestial body. But today, with the economy floundering and the national debt soaring into the stratosphere, some may suggest that we simply cannot afford to sustain human space exploration. I would argue just the opposite. Anyone who follows NASA knows that President Obama recently launched an independent review of planned U.S. human spaceflight activities. The blue ribbon panel, headed by Norman Augustine, retired chairman and chief executive officer of Lockheed Martin, and my friend, is expected to release its findings in August. I am confident that Norm will not sugarcoat the panel's findings, and I am also optimistic that the panel will promote an ambitious goal for manned space exploration. America's space and technological preeminence in the world hangs in the balance. Throughout its 40-year history, our space program has set goals that required innovation and technology yet to be developed, and the results have been astonishing. Miniaturized integrated circuits, satellite technology, GPS navigation systems, bone-density measurements, miniaturized heart pumps and other technologies derived from NASA research and development have saved and improved our lives. New spin-offs include water filtration systems that turn wastewater into drinkable water, wireless light switches, remediation solutions for sites contaminated by chemicals, the development of Liquidmetal and sensors on reconnaissance robots used in Afghanistan and Iraq to deal with improvised explosive devices. The list goes on and on. The National Research Council recently released a report advocating that NASA align its civil space program with national needs. While I understand the temptation to focus on finding solutions to present problems, we need to remember that much of the R&D conducted by NASA has resulted in unintended yet beneficial breakthroughs. Space exploration drives innovation by reaching into the unknown and overcoming complex problems. This sort of problem-solving inherently pushes the limits of technology. Space exploration fundamentally necessitates basic research. If we try to task NASA with too narrow a mission for R&D, we lose the possibility of new discoveries and breakthroughs to adapt technologies in new and creative ways that could have unanticipated applications. Rather than micromanage the type of research we want from our space program, I would prefer a clear goal for U.S. space exploration. NASA must have a challenging, inspirational goal that is ambitious and sufficiently funded. President Bush gave NASA the direction it needed with his Vision for Space Exploration, which included a plan to complete the International Space Station (ISS), retire the Space Shuttle, and develop a new launch system capable of traveling outside low Earth orbit, with a goal of returning to the moon by 2020 as a stepping stone to more difficult destinations such as Mars. This was a goal that Congress endorsed in the NASA Authorization Act of both 2005 and 2008, which were subsequently signed into law. Our space program has accomplished many great feats in the last half-century and it is only prudent to implement and fund a vision that builds on that progress. America and our global partners have nearly completed the ISS, which is possibly the most elaborate engineering endeavor of all time. Unfortunately, with an impending five-year gap in U.S. spaceflight capability following retirement of the Space Shuttle, we will have to rely on Russia and our international partners to ferry crew and cargo to and from the ISS. This is a setback for our space program but one that can be overcome with a renewed commitment to space exploration. I strongly believe that we must close the gap in U.S. access to

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space and it is my hope that the Augustine panel comes to a similar conclusion. NASA has made great progress in developing the Orion vehicle and the Ares launch systems. Constellation is already in the development phase, so to abandon this plan now would be a massive waste of time, money and resources. The one-half of one percent of the national budget devoted to NASA may be the best investment we make, providing for long-term, high-dividend research, and technology breakthroughs. Economic growth is driven by technological innovation, and space exploration fuels this innovation.

Tech Spin-off

Silver-MIT-1/28/04 In Defense of Space Exploration

<http://tech.mit.edu/V123/N66/mattsilver.66c.html>

First, money spent on space research and development does not disappear into thin air. It goes toward creating knowledge, jobs, new businesses, and technologies, many of which have direct application to other activities. This is the spin-off argument. A moon initiative will require increased sophistication in, to name a few areas, solar-power generation, cryogenic technologies (cooling and storing liquefied gas), and human-robot interaction. These advances in the state-of-the-art will benefit energy, environment, health care, and many other areas. Many of the capabilities required for human exploration are synergistic with defense needs. Bush's initiative will likely lead NASA and the Department of Defense to pool resources, lowering development costs for both agencies.

C) Environment/Energy/Resources advantage areas:

Environment

Daily Galaxy 5/27/09

Will Space Technology Be the Solution to Earth's Future Environment? -A Galaxy Insight

http://www.dailygalaxy.com/my_weblog/2009/05/will-space-tech.html

Setup4NOAA14_9-06-2000_col_segment So far, the effort to figure out a way for safe, sustainable development for humankind has been tied to planet Earth, but some are beginning to think not just "outside the box", but outside the entire atmosphere. They believe that the exploitation of space could be a potential solution to the earth's environmental crisis. Political scientist Rasmus Karlsson suggests that space could provide us with a sustainable future that is simply not possible from an earthbound-only perspective. Karlsson, a researcher at the University of Lund, Sweden, believes that over the years, two strands of thought on sustainable development have emerged. They are ecologism and environmentalism. Ecologism offers a solution by emphasizing the need for major socioeconomic reform aimed at a post-industrial era. Environmentalism, in contrast, focuses on the preservation, restoration, and improvement of the natural environment within the present framework. However, Karlsson, suggests that there is a third approach to sustainable development that has until now been excluded from the agenda - namely a large-scale industrial expansion into space. He suggests that access to the raw materials found on the Moon as well as unfiltered solar energy could be used to increase dramatically our stock of resources and energy while providing unlimited sinks for pollutants. Such an approach would satisfy two of the most demanding issues regarding sustainability, finding renewable energy sources and the disposal of pollutants. Resource scarcity, pollution, and dwindling fossil fuels, have become of serious environmental concern in the last few decades. As such, environmentalists have called for massive reductions in energy and material consumption. Seemingly unrelated but running in parallel is that the promise of space exploration has been limited to technological optimists whose economic framework rarely acknowledges any such scarcity. Karlsson suggests that it is time to reconcile the politics of scarcity with this technological optimism and to devise a unified political vision for the 21st century that will lead to a truly sustainable planet by extending our reach into space.

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Energy

Engineer: **The Professional Bulletin for Army Engineers 3/11/05**

Sun seekers: advances in space exploration technology could herald the answer to the global energy crisis and the search for emission-free sources to replace fossil fuels

http://findarticles.com/p/articles/mi_m0FDF/is_7670_293/ai_n13807605/

Hoffert is one of an increasingly vocal group of engineers, physicists, atmospheric researchers and economists calling for a massive R & D programme in the US along the lines of the Manhattan & Apollo projects to develop a broad spectrum of alternative energy technologies. 'Right now decisions on the global climate/energy problem are predominantly made by economists and politicians. Good guys, sometimes, but more people need to work on this who have the expertise and skills to make something happen. Once innovative energy technologies are demonstrated convincingly, and the potential for cost-effectiveness shown, venture capitalists will pile on, as they did for computers, telecommunications, biotech and now nanotech.' Could SPS be a compelling enough technology to make this happen? NASA's John Mankins certainly thinks so. "The US currently generates something like 700 or 800GW, the world generates four times that. A hundred years from now it's going to take thousands of gigawatts to satisfy the world's needs. We will require a whole set of energy sources to do that and SPS could be one of the major ones.'

Overpopulation

Socyberty 9/14/08 **The Benefits of Space Exploration**

<http://socyberty.com/future/the-benefits-of-space-exploration/>

A second argument that is provided for the debate is the need to figure out how to alleviate highly over-populated areas that through the use of mass human consumption and activities, lessens the healthy nature of the surrounding environment. In an example, John Carter McKnight of the Space Exploration foundation offers the idea of space colonization by saying that "Our species is threatened by environmental dangers both natural and human-made, and the myriad consequences of too many of us in too small a space. Space can offer protection against these dangers only to the extent that our species is genuinely spread out across many habitats and worlds – small-scale efforts can at best be only a lifeboat for a resented elite, not a promise of safety and salvation for us all. Of course, the hope is always that new lessons from the frontier can be applied to end the dangers back on Earth." (McKnight, 2003). The idea of exploring new worlds and establishing human-friendly settlements to stretch out the borders of the earth, can offer a multitude of means to provide more room for the world's population to grow, as well as adding economic and social benefits that come with it. Countries like China or even our local urban areas that are being affected by overcrowding populations, can look forward to fresh new cities being built, with re-newd possibilities of better paying jobs and growth for their own lives and their families.

Gotta get off the rock

Hopkins 09

(Mark, The Inevitability of Space Settlement, Summer, <http://www.nss.org/spacemovement/inevitability.html>)

Will these resources eventually become available for use at competitive prices? The answer (barring a civilization-ending catastrophe, such as an asteroid collision with Earth that ends all life) is almost certainly yes. The twin forces of resource exhaustion and technical change are virtually unstoppable. Consider the example of the modern oil industry. The oil industry began in 1859 with the first successful oil well. Pennsylvania was the location. By today's standards, the oil was obtained by little more than "kicking" the ground. As time passed, resource exhaustion began to set in. "Kicking" the ground in Pennsylvania was no longer sufficient. The force of resource exhaustion pushed the oil industry to increasingly exotic locations: first to places like Texas, later to the North Slope of Alaska and more recently to the ocean floor, miles below the surface. Simultaneously the force of technical change drove humanity towards more efficient ways to find and drill for oil. This made the move towards ever more exotic locations economically viable. Similarly, the forces of resource exhaustion and technical change apply to the Earth as a whole. The ongoing exhaustion of the Earth's resources is pushing us towards more exotic locations — specifically, towards the space resource bonanza awaiting us. Technical change is making such a development increasingly viable. It is only a matter of time before the large scale move into space

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begins. It is the goal of NSS and more generally the Space Movement for this to occur sooner rather than later.

Hunger

Socyberty 9/14/08 The Benefits of Space Exploration

<http://socyberty.com/future/the-benefits-of-space-exploration/>

The fourth argument I would like to refer to are those who prescribe to the uselessness of space exploration is its actual benefits towards world hunger. Today, we are constantly bombarded with pictures and stories of food shortages and starvation from third world countries that are often plagued by natural disasters and poor farming techniques. This is one of the chief elements that are often brought up when there is a discussion about the value of space exploration. In Dr. Ernst Stuhlinger's paper on Space Exploration: Why Explore Space?, he illustrates an example of its benefit by saying "large areas of land could be utilized far well if efficient methods of watershed control, fertilizer use, weather forecasting, fertility assessment, plantation programming, field selection, planting habits, timing of cultivation, crop survey and harvest planning were applied. The best tool for the improvement of all these functions, undoubtedly, is the artificial earth satellite. Circling the globe at a high altitude, it can screen wide areas of land within a short time; it can observe and measure a large variety of factors, indicating the status and conditions of crops, soil, droughts, rainfall, snow cover, etc., and it can radio this information to ground stations for appropriate use."(Stuhlinger 1996) In this report, satellite technology from space can not only forecast current weather patterns, but it can also be used to monitor crops and predict conditions for later farming plans.

Asteroids

Socyberty 9/14/08 The Benefits of Space Exploration

<http://socyberty.com/future/the-benefits-of-space-exploration/>

The last argument is what I believe is the most important in terms of safety and survival, is the use of space exploration to combat the danger of foreign objects that can collide with the earth. When someone studies the geographical history of the planet, it is not too long before they encounter the formations and scientific evidence that throughout its evolution, the earth has been hit by asteroids that were the cause of global destruction and mass change, the likes of which no one could ever imagine. There are some that believe that the end of the Dinosaurs were attributed to a large object, such as an asteroid, which sailed into the direction of the earth's orbit, crashed into it, and thus caused great natural disasters such as earthquakes, tsunamis, continental drifts, volcanic eruptions, and other anomalies that destroyed most life and its natural habitats throughout the world. In the Institute of Astronomy at the University of Hawaii, they explain asteroids as "objects, collectively known as Near Earth Objects or NEOs, still pose a danger to Earth today. Depending on the size of the impacting object, such a collision can cause massive damage on local to global scales. There is no doubt that sometime in the future Earth will suffer another cosmic impact; the only question is "when?" There is strong scientific evidence that cosmic collisions have played a major role in the mass extinctions documented in Earth's fossil record." (Institute for Astronomy 2005) The information continues on to say that "search programs have discovered hundreds of thousands of main-belt asteroids, and have identified thousands of NEOs. They have made great progress toward meeting the Congressional mandate and have cataloged most, but not all, of the 1-km and larger NEOs — the ones that are most likely to produce a global catastrophe, such as a mass extinction should they collide with Earth." (Institute for Astronomy 2005) It doesn't take much more than a good size object the size of an SUV to form a large rift in the earth's crust to make earthquakes and tidal waves, comparable to the tsunami that killed thousands in Thailand three years ago. Space exploration, with the help of satellite technology and the further construction of better space craft, can not only plot ones that may strike the earth, but they can get at those very objects and prevent them from

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colliding with the planet. One missed object unseen, can devastate the entire world and cause mass causalities beyond any man-made weapon could ever hope to cause.

II. The Aff- Possible Plan Areas

The most recent US policy directive on space exploration, the Vision for US Space Exploration (2004), breaks down exploration activities into four categories: exploration activities in low Earth orbit (LEO), exploration beyond low Earth orbit (BEO), space transportation capabilities supporting exploration, and international and commercial participation in exploration. Possible affirmative plan areas generally fall into these four categories. Space development is another potential aff area could overlap some with these areas. Based on our preliminary review of the literature, going back to the Moon, revamping the Shuttle, developing new launch architecture/deep space capabilities, and reforming export controls seem to be the big issues in the literature.

A) Exploration in low Earth orbit:

Revamp Shuttle program

Jones-four-time shuttle astronaut, planetary scientist-4/16/10 **Obama's Hollow Promise On Space**

<http://www.foxnews.com/opinion/2010/04/16/obamas-hollow-promise-space/>

These commitments to a vigorous space exploration program are all to the good. But the president's budget speaks louder than his words. His extra \$6 billion for NASA over the next five years does little more than pace inflation, and cannot fund both the revised Orion spacecraft, the "bold" research to enable deep space travel, "breakthrough" propulsion systems, and a realistic program to send humans into deep space. His lack of a firm schedule and proposed funds for these achievements (an asteroid mission would not occur before 2025) means that his NASA vision has little chance of becoming reality. After the shuttle retires later this year, NASA will have no route to the ISS other than rented seats on Russian rockets, at \$55 million per seat. The nation will have to wait until commercial companies, with no record of yet launching a single new human-rated rocket or spacecraft, learn the lessons NASA has accumulated during 50 years of spaceflight experience. There is no backup system in case of the commercial firms' failure. Worst of all, NASA's unmatched team of spaceflight experts will disperse after the shuttle retires—there will be no work for them. Will we ever see such a team, with its knowledge and spirit, challenging the space frontier again? Without a schedule to leave Earth orbit behind, and funds to match, that talent pool will rapidly drain away. Neil Armstrong and other veteran astronauts and flight directors conclude that our nation will quickly become an also-ran in space, with no better capabilities on the frontier than Russia, China, or India. Last year the U.S. had a proven spacecraft in the shuttle, and a well-defined plan for sending American astronauts to deep space. Next year we will have no spacecraft, and no credible plan to develop our own deep space craft for a decade or more. Our experienced NASA team will have left for jobs elsewhere—if they can find them. Our claims for space leadership will be believed only by the president's speechwriters. Success in rocket science, in exploration, demands real-world skill, adequate resources, and vigorous leadership. Certainly we can afford the 0.7% of the federal budget necessary to retain global leadership in human spaceflight. The extra \$3 billion per year that the president's own expert panel recommended for NASA would be a continuing stimulus to our high-tech work force, and an inspiration to our brightest young people, who won't wait decades to decide on careers in science and engineering. The Congress should correct the president's short-sighted course and give NASA an ambitious exploration goal and schedule. It should provide the necessary funding to assure our access to space, then send American explorers to deep space destinations within a decade. By renewing our commitment to demonstrated leadership in space, we will continue to reap the economic, technological, and scientific rewards of exploration on the high frontier.

Shuttle life extension

Information Week 4/16/10 **Obama Mars Plan Too Far Out?**

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<http://www.informationweek.com/news/government/leadership/showArticle.jhtml?articleID=224400495>

Reaction to President Obama's plan to kill the space shuttle, scrap moon missions in favor of deep-space travel, and outsource launches to private contractors is falling mostly along partisan lines—but even some Democrats said the proposals could hurt U.S. space interests in the short term. Congresswoman Suzanne Kosmas (D-FI) said the President's refusal to extend the life of the shuttle could be a job killer in her state, home to the Kennedy Space Center, and a blow to the U.S. aerospace leadership. "Without working towards a specific vehicle and without having American access to the International Space Station, we risk losing our supremacy in space," Kosmas said in a statement Thursday, following an address by Obama at Kennedy during which he outlined his strategic vision for NASA. Kosmas has introduced legislation that would extend the life of the shuttle program, slated to end this year, and fund development of a new vehicle that could be used for flights to the ISS.

Shuttle Replacement

Poughkeepsiejournal 4/17/10

<http://www.poughkeepsiejournal.com/article/20100417/OPINION01/4170313/Editorial-NASA-in-store-for-big-changes>

While NASA intends to retire the three remaining shuttles by the end of September, it's unclear what will follow for American human spaceflight. The United States must make it clear it won't take a back seat to any other country when it comes to space exploration and the research and technology that goes with it. President Obama has scuttled NASA's \$100 billion plans to return astronauts to the moon, with administration officials saying the program was over budget and way behind schedule. Instead, NASA has been tasked with putting more money into new rocket technology research. Obama fleshed out some of those details Thursday, but will have to do more over time, since taxpayers will be footing at least some of the bill regardless of what is specifically decided. It was good to hear he wasn't scrapping America's human spaceflight programs altogether but, instead, envisions astronauts flying to asteroids beyond the moon in a little more than a decade and circling Mars by the mid-2030s. For certain, in these tough financial times and with taxpayers continually questioning whether billions of dollars should be spent on space exploration, NASA will have to look for ways to develop more public-private partnerships as well. But Obama said his budget would add \$6 billion to NASA's funding over five years, and Congress, too, will have to weigh in on these matters. With the space shuttle programming nearing an end, federal officials need to offer a clear vision of what comes next.

Ares development

Information Week 4/16/10 Obama Mars Plan Too Far Out?

<http://www.informationweek.com/news/government/leadership/showArticle.jhtml?articleID=224400495>

Republican Congressman John Culberson, of Texas, said saving Orion, but not Ares, isn't enough. "The President's plan scraps six years and \$9 billion of time and taxpayer money that have been invested in the Constellation program," Culberson said in a statement. "It carelessly casts aside the proven technology developed through the program and literally sends us back to the drawing board," Culberson said.

B) Exploration beyond low Earth orbit

Obama cancelled the US program to go back to the Moon- should abandon this- key to space exploration

Mahoney 10

(Bob, former spaceflight instructor at the Johnson Space Center, Prognosticating NASA's future, March 29, <http://www.thespacereview.com/article/1594/1>)

Call me suspicious, but is it not strange that an administration who for more than a year has insisted that a government-provided option in healthcare is necessary for introducing competition and reducing costs now suggests that the best means of fostering competition in the LEO access industry is to eliminate the already-in-work government option that holds a 50-year pedigree? As for the exploration end of the

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roadmap, it seems so... aimless. I have always been a firm believer in the wisdom of exploiting the relatively close lunar surface as a staging base for opening up the entire solar system, not just getting people on Mars: for gaining experience (akin to how Gemini contributed to Apollo's success); for supporting logistics (establishing stable infrastructure outside Earth's deep gravity well in a not-unfamiliar environment); for tapping resources (accessing material already outside Earth's deep gravity well—including the recently confirmed water ice). Consequently, removing investigatory lunar surface operations from the first tier of a beyond Earth orbit (BEO) architecture strikes me as ill-advised, since having it first on the list could very well make getting everywhere else (including Mars) substantially easier. (This premise was the original backbone of the 2004 Vision for Space Exploration.) Admittedly, the Obama approach does not explicitly exclude such lunar operations further down the road. But what of the other redirections in policy? Is US human spaceflight on the cusp of pouring concrete for a superhighway to a brilliant future, or is this policy (introduced curiously not in an inspirational bit of oratory but merely through a budget submission that seemingly caught even NASA Public Affairs offguard) paving a footpath to a dark grave? Can any of us predict what's ahead for the United States on the road to the final frontier?

Mars

AFP 1/29/10 Obama abandons plan to return to the Moon

<http://www.cosmosmagazine.com/news/3264/obama-abandons-plan-return-moon>

WASHINGTON: President Barack Obama's 2011 budget, to be submitted to U.S. Congress Monday, will propose abandoning a program to return NASA astronauts to the Moon, two Florida newspapers reported. Citing administration and NASA officials who spoke on the condition of anonymity, the reports said the White House would call on the U.S. space agency to focus on other programs, including the development of commercial services to ferry U.S. astronauts to the International Space Station, or ISS. Florida Today and the Orlando Sentinel, two papers based in the area around the Kennedy Space Centre in Cape Canaveral, said Obama would seek to boost NASA's budget by six billion dollars over five years, despite a pledge to freeze most discretionary spending. No money for Moon or Mars But the boost will fall far short of the money NASA needs to finance the Constellation program launched in 2004 by President George W. Bush after the space shuttle Columbia crash in 2003 effectively brought the shuttle program to a close. Constellation envisioned the return of NASA astronauts to the Moon by 2020, and then using Earth's nearest neighbour as a base for manned trips to Mars.

C) Space transportation capabilities supporting exploration:

Reform launch architecture- key to space exploration

Coopersmith 4-12-10

(Jonathan, historian of technology at Texas A&M University, Obama in space: bold but not bold enough, <http://www.thespacereview.com/article/1603/1>)

Lost in the attention given to ending shuttle flights this year, as intended by President Bush, and the cancellation of the overcost and overweight Constellation program, are the promising initiatives to develop and deploy new generations of technology. At the core of the president's proposed revamping of NASA is the focus on new technologies to reduce the cost and complexity of operating in space. NASA will restart its Institute for Advanced Concepts, eliminated in 2007 to help pay for Constellation cost overruns. Chief technologist Robert D. Braun will head the new Space Technology Program, which will offer research grants to encourage innovative ideas. These steps will revitalize the private, academic, and NASA technology base. The chief flaw of the president's proposals is they do not address the key constraint limiting human and robotic exploration and exploitation of space, the high cost of reaching orbit. When I fly domestically, I pay about \$2 per pound of me for a ticket. To launch a satellite into orbit costs roughly \$10,000 a pound. Until that cost dramatically drops, the promise of the final frontier will remain only a promise. These high launch costs restrict access to space to those governments and corporations that can afford tens of millions of dollars to launch a satellite. Consequently, the annual total of all payloads is only a few hundred tons, the equivalent of two 747 freighter flights. The great expense to

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reach orbit has not only hindered past exploration, but will also restrict the future if unchanged. Imagine how many more businesses would experiment and develop applications in space if the cost of launching a satellite was only in the hundreds of thousands instead of tens of millions of dollars. Making access to space affordable will create vast economic as well as scientific opportunities. The Augustine report and the president's proposals realize that the space remains an expensive arena, but do not take the next logical step. To truly open space up for exploration and exploitation, President Obama and the Congress should set a goal of reducing the costs of reaching orbit to \$100 a pound—two orders of magnitude—by 2020. Chemical rockets will probably not be able to meet that challenge. Despite a half-century of improvements, they remain expensive. The new generation of commercial launchers should reduce the cost of reaching orbit, but even Virgin Galactic is charging approximately \$1,000 a pound of passenger—without reaching orbit. President Obama and the Congress should set a goal of reducing the costs of reaching orbit to \$100 a pound—two orders of magnitude—by 2020. Instead, NASA needs to think beyond its existing launch systems. Alternatives to rockets do exist. All keep the launch system on the ground, so only the payload is sent into orbit. As well as being less costly, ground-launched systems are inherently safer than rockets because the capsules will not carry liquid fuels and their complex equipment, eliminating the danger of an explosion. Of particular interest are beamed energy propulsion, which uses a microwave or laser beam to power a spaceship into orbit; and the space elevator. The catch is that these technologies are still in the laboratory: more promise than reality. Let's be honest: Research, development and deployment will cost billions of dollars and several years. Such commitments of time and money are beyond the reach of corporations. These commitments are, however, reasonable for a government that can invest for the long term. Indeed, without the large investments by the American military in rocket technology in the 1950s, the mammoth Saturn V that sent Apollo 11 to the moon could not have been built. Developing a ground-based system should give the United States a competitive edge against foreign rocket providers. Currently, American launch services are more expensive than their foreign counterparts, a consequence of their lower costs and, in the case of Ariane, better geography. A ground-launched system could change the competitive dynamics of launching. Reducing launch costs does not carry the political excitement of sending astronauts to the moon. Nor will the benefits begin until the 2020s, perhaps too long a time for elected officials. Yet the consequences of making space affordable will be far greater than twelve astronauts walking on the Moon. Reducing the cost of space travel will be as revolutionary as the container ship was for shipping cargo. If accomplished, this could be a great legacy of the Obama Administration, an America that is exploring and exploiting space for the benefit of all humanity.

Heavy Lift Vehicles, Speeding up timeline for Mars

Parabolic Arc 4/15/10 <http://www.parabolicarc.com/2010/04/15/space-exploration-coalition-obamas-space-goals-distant-unclear/> COALITION FOR SPACE EXPLORATION PRESS RELEASE

The Coalition for Space Exploration (Coalition) recognizes today's Space Conference in Florida as an important step in the continuing discussion on the future of America's global leadership in space exploration. The Coalition believes human space exploration is a national imperative that calls for a focused strategy with a more aggressive timetable and milestones to drive the development of capabilities, in support of its missions. To successfully forge the industry and international partnerships necessary for future space exploration missions, America must have robust, sustained support from its elected officials and the public. This cannot be achieved, when goals are distant and unclear. The President's announcement, today, that NASA will undertake the development of a heavy-lift vehicle for deep space missions to specific destinations, including asteroids and Mars, provides some clarity to the future direction of space exploration, planned by the Administration. We commend the President's efforts to help mitigate some of the job losses associated with the retirement of the Space Shuttle program and restructuring of Constellation. This highly skilled workforce is essential to the sustenance of our nation's preeminence in space, economic, and national security and global competitiveness. The erosion of this skill base would seriously affect the nation's industrial base and national security strategies. While the steps outlined by President Obama are encouraging, many key issues and concerns remain with regard to the transition from the current programs to the proposed new exploration agenda and the impact that it will have on our nation's space industrial base and global leadership. Delaying a decision until 2015 on the design of a heavy-lift vehicle, the establishment of its first human exploration mission for no earlier than 2025, as a precursor to a Mars expedition in 2030, threatens to sacrifice a generation of experience and expertise in our nation's human space flight workforce. Continuing development of a variant of the Orion spacecraft is good news, in that it will reduce dependence on Russian spacecraft for International Space Station (ISS) crew escape and take advantage of existing assets and investments, but it by no means fully addresses the issue of independent, assured American access to space. There remain questions as to whether the proposal to rely solely on commercial providers to send American astronauts to the ISS is premature and threatens to extend indefinitely our reliance on other nations. In the final analysis, the U.S. human spaceflight program is a national imperative, not only a commercial interest.

D) International and Commercial roles in exploration

Export Control Policy Reform-

Current export control policy is a barrier to space exploration- policy reform key to US competitiveness and space leadership

Abbey and Lane 05

(George, senior fellow in Space Policy at the Baker Institute, and Neal, senior fellow at the Baker Institute, United States Space Policy Challenges and Opportunities, http://www.bakerinstitute.org/publications/wp_aaas_spacePolicy.pdf)

The success of U.S. space science and exploration is closely related to the success of the commercial space industry. The most serious barrier to U.S. competitiveness in space commerce, particularly in the satellite industry, is U.S. policy on export controls. Export control policy and practices have already seriously damaged the U.S. commercial satellite industry and promise to do the same to the ability of the United States to conduct space operations with international partners. The complexity of this issue is made clear by a review of its history over the past decade. . . . [continues] . . .

This chain of events resulted in the present sad situation of the U.S. satellite industry. American companies that produce satellites have great difficulty competing in the world market due to a rigid interpretation of ambiguous statutory requirements and a cumbersome and confusing licensing process that leads to long delays and uncertain outcomes.⁶

One measure of the problem is the increasing mean time for licensing, which, according to the reports from U.S. manufacturers, has gone from 104 days in 2000 to 169 days in 2001 and 150 days in 2002.⁷ The United States is even more restrictive in controlling satellite technology. The situation is compounded by the uneven application of relevant international agreements. In 1996, commercial satellites became subject to the multilateral Wassenaar Arrangement, a voluntary system for coordinating controls on exports of conventional arms and dual-use goods and technologies.⁸ The Wassenaar Arrangement covers trade in commercial satellites but it does not control satellite technology unless that technology is viewed by member states as having strategic or military value. In addition, not all satellite-producing nations are members. Thus, companies in Europe, Japan, Canada, and Russia are not subject to the same restrictions and oversight on satellite components as American companies. To make matters worse, the U.S. takes a very restrictive approach to countries like China and shows no preferential treatment for allies, including

Canada. In the past, U.S. companies frequently prevailed in international competition, as the international industry considered American technologies superior and American satellites more reliable than those manufactured by other nations. Today, because of export control regulations, U.S. companies find themselves at a serious competitive disadvantage in the international satellite market.

Based on Satellite Industry Association data, the U.S. share of global satellite sales plummeted from 64 percent of the \$12.4 billion market in 1998 to 36 percent in 2002.⁹ Foreign customers, even from allied nations, are unwilling to purchase satellites from U.S. manufacturers when they face restrictions on the acquisition of technical and test data and operating information on their purchased satellite, as well as significant delays in obtaining approvals. Indeed the costs, delays, and complications that accompany the use of U.S. components in satellites built by other companies in other nations are so notorious that certain European manufacturers have begun advertising their products as "ITAR free" to attract customers. While the State Department's regulations are more restrictive than those of the Commerce Department, the State Department is also less specific about precisely what is to be controlled. As a result, U.S. companies are unable to judge the likelihood that their license request will be approved or even when a decision will be made. Foreign clients prefer to avoid such uncertainty, especially when they can buy from companies in countries where these problems do not exist. The ESA and the French Space Agency, Centre National d'Etudes Spatiales (CNES), are providing funding of \$500 million to aid Alcatel and Astrium, two French companies supported by equipment suppliers from all over Europe, in the development of a next-generation telecommunication satellite bus, AlphaBus.¹⁰ ESA and CNES have also embarked on a \$33.4 million program called the European

Component Initiative, which will develop production lines for systems that are critical to satellites and currently available only from U.S. companies.¹¹ These programs, along with America's overly restrictive policies, ensure that the Europeans will continue to gain a larger and larger market share. The U.S. commercial satellite industry no longer leads the way and U.S. technology is no longer the benchmark. The adverse effect of export controls on the U.S. space industry is an immediate result of present regulatory policy. These policies also affect U.S. space science, engineering, and technology. Export controls apply to people, including scientists and graduate students, as well as to technologies and products. Ambiguity in the regulations and a slow and cumbersome process of review and approval can hinder progress for research scientists in universities and government laboratories. The pressure of the government on universities to restrict the access of foreign students and research collaborators to space science laboratories and projects adds to the problem. The United States, long the world leader in most fields of space science, engineering, and technology, is in imminent danger of losing that place.

No export control reform now

Foust 3-29-10

(Jeff, editor and publisher of The Space Review, Prospects and concerns for export control reform, March 29, <http://www.thespacereview.com/article/1595/1>)

"We're working hard to change export controls, so that our industry can more easily compete in the international market," Gary Payton, the deputy under secretary of the Air Force for space programs, said in a speech Friday at a Space Transportation Association luncheon on Capitol

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Hill. He wants to see such changes to improve the robustness of the industrial base that also supports his missions. "The House had done some good work there. We'd like to see the Senate pick up that same motivation." It's not certain, though, that Congress will follow through, particularly during what is shaping up to be a particularly contentious election year. In his 11 years on Capitol Hill, Fite said, "I have never seen an environment that has been this partisan." Reinsch concurred. "The danger is that this will become a political issue in an election year, which means it's not going to be addressed on its merits, it will be addressed by slogans."

Intl Coop with China

Wortzel 05

(Larry Wortzel, vice president for foreign policy and defense studies at The Heritage Foundation, The Rules of Engagement: The Russia Model, Ad Astra, <http://www.nss.org/adastra/volume17/v17n1.html>)

Nonetheless, within the context of the existing ISS program, there are a number of things that can be done with China. Research on the nature of proteins and enzymes useful for possible disease treatments and new drug development can be carried out in cooperation with China. Here, China must demonstrate that it will honor intellectual property rights agreements if it is to be allowed to participate in such programs. The same is true of the types of tissue culture and flames, fluids and metal interaction experiments that are carried out in the ISS. Basic research in these areas--provided China is a contributor and not a consumer of research--is something the ISS partners, including the U.S., could explore. The ISS project already involves Canada, Japan, the European Space Agency, the United States and Russia. Brazil and Italy are also contributing to the station. Thus, there is room here to include China when its own programs are ready to permit cooperation with others. Cooperation with China in space also offers unique opportunities to observe China's intentions in space, monitor its activities, and develop international legal protocols. Congress must take some action before the United States can engage in cooperation in space with China. The Export Administration Act, which establishes controls over dual use items, i.e., those items with both civil and military application, has not been substantially revised since 1979. There have been well-reasoned attempts over the past five years in Congress to draft a new act that accounts for advances in technology since 1979, without success. Congress must hold hearings on the Export Administration Act, with a goal of establishing technology controls and an export monitoring system that can carry the United States into the future, and protect technologies with vital military application. Appropriate national controls on exports have to be established and coordinated with allies so that national security controls help to foster international commerce.

E) Space Development:

Space-based solar power

New Scientist 12/22/08 Will Obama pursue space-based solar power?

<http://www.newscientist.com/blogs/shortsharpscience/2008/12/will-obama-pursue-space-based.html>

The key advantage over Earth-based solar power is that such satellites would enjoy nearly continuous sunshine. A major challenge for Earth-based solar power is that it is so inconstant - it isn't available at night or when skies are cloudy. You could solve this problem by storing energy for later use, but it's difficult to do this in a cost-effective way, and something people are still researching. The major disadvantage for SBSP is that it's so costly to launch stuff into space. But advocates of the idea point to new launch vehicles being developed, like SpaceX's Falcon 9 rocket, which could bring down the cost of access to space, and make SBSP more attractive. Advocates for SBSP are hoping to secure some support for developing the technology from the Obama administration, given the incoming president's pledge to make developing alternative energy sources a top priority. They have posted a white paper on the topic on the transition website, change.gov. One thing that surely helps their cause is that one of Obama's transition team members for NASA is George Whitesides, who has been a vocal advocate for SBSP. Whitesides is currently on leave from his post as executive director of the National Space Society, where he helped push for SBSP research. On the downside, earlier this month NASA cancelled early work on a proposed SBSP demonstration project, which apparently could have involved putting a demonstration device on the International Space Station. But it sounds like the decision owes more to a tight budget at NASA than anything else, and I see no reason why the project couldn't be revived if the next administration takes an interest in SBSP. So I wouldn't count out

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S BSP just yet. On the other hand, I'm sure S BSP will be competing with lots of other alternative-energy ideas seeking research dollars. And even though Whitesides has a record of strong advocacy for S BSP, this doesn't guarantee that the Obama administration will go for it. There are more highly placed people who will undoubtedly get a bigger say in this, like energy secretary nominee Steven Chu, who hasn't said much publicly about S BSP. I think it's fair to say that this could be a crucial moment for S BSP, however, so it's definitely something to watch over the next few months. What do you think? Is S BSP the way to go, or is some other alternative-energy source a better bet? David Shiga, physical sciences reporter (Illustration: Mafic Studios)

Build Moon dust shields- solves climate

Angel and Worden 06

(Roger and S. Pete, Making Sun-Shades from Moon Dust, Ad Astra, Volume 18 Number 1, Summer 2006)

Open any newspaper and you will likely see some mention of global warming—usually on the front page. The latest spate of Gulf Coast hurricanes has fueled the contentious debate that global warming is responsible for the increase in these storms. Conversely, support for the exploration of the Moon and Mars is fairly lukewarm. An October 2, 2005, Washington Post editorial urges terminating the new Vision for Space Exploration and using the funds for addressing such problems as recent hurricane damage. The same issue of that newspaper includes a survey on global warming: that shows that 56-percent of Americans are worried about global warming and want the government to do something about it. We believe that over the next half-century we might be able to use lunar resources to construct a great shield at the Earth-Sun equilibrium point, or Lagrange L-1 point, about a million miles toward the Sun. Such a shield could block solar input exactly enough to counteract global-warming temperature increases. Moreover, the funding for this mammoth undertaking could be obtained from private sources. Here's how. In our research, we have explored the technical feasibility of a giant parasol to counteract human-induced global warming. It would be 1,000 miles across, to reduce solar input by 0.1 to 0.2 percent, and would be built using lunar resources. It would not be a single structure, but a constellation of a very large cloud of small, free-flying parasols of gossamer-thin, lunar-made glass. The value of such an undertaking might be some trillions of dollars, just a few percent of the world GNP over five decades. It might, for example, be undertaken by private industry funded through carbon credits. Although the scale of the project is gigantic, we can identify no showstoppers that would clearly make it financially or technically impossible. We urge that key technical issues be investigated now, so that the cost and feasibility of this option will become better understood over the next decade. Examples of key studies would be the manufacture of non-solarizing glass and structural alloys from lunar material, and the deployment, at L1 of a few (Earth-made) free-flyer parasol units to test station-keeping by solar sailing.

II. The Aff- K Affs

Space exploration raises lots of important ethical questions, for example, debates around how we treat the environment, how we interact with other life, how we seek knowledge ect. We don't have great cards here but we have faith you could do better.

Stewardship

McLean-assistant director of the Markkula Center for Applied Ethics at Santa Clara University-6

<http://www.scu.edu/ethics/about/people/directors/healthcare/mclean/homepage.html>

With yesterday's budget proposal, President Bush put money behind his January 2004 promise: "We will build new ships to carry man forward into the universe, to gain a new foothold on the moon, and to prepare for new journeys to worlds beyond our own." In the budget unveiled on Monday, almost \$17 billion will fly into NASA's coffers with around \$5.3 billion dedicated to space exploration. The Crew Exploration Vehicle and Launch Vehicles will be built; new spacecraft on their way to the moon and Mars will be whizzing overhead by 2014. NASA chief Michael Griffin claimed that this new budget would set the stage for "the expansion of human presence into the solar system." But before we think about exploring-and potentially exploiting-"the final frontier," we would do well to remember that we do not have a very good track record in protecting our planet home. We have expanded human presence into pristine forests resulting in the disruption of migratory routes, soil erosion, and species extinction. What can be learned from our presence on Earth about the potential impact of our forays into the outer reaches of the solar system? We are the only earthly creatures with the capacity to extend our influence beyond the 4 corners of the globe. This puts on us the responsibility to acknowledge that, despite the depths of space, it is not so limitless as to be able to weather mistreatment or suffer every demand we may place on it. One way to think about expanding our presence in the solar system is through the lens of stewardship. Stewardship envisions humans not as owners of the solar system but as responsible managers of its wonder and beauty. Stewardship holds us accountable for a prudent use of space resources. Such responsibility may support exploration of the final frontier, but at the same time it warns against exploitation of its resources. We must account for our urges and actions in terms of their impact on others, the universe, and the future. As we boldly plan to extend ourselves to places where no one has gone before, we would do well to consider the following principles: 1. Space preservation requires that the solar system be values for its own sake, not on the basis of what it can do for us. 2. Space conservation insists that extraterrestrial resources ought not to be exploited to benefit the few at the expense of the many or of the solar system itself. 3. Space sustainability asks that our explorations "do no harm" and that we leave the moon, Mars, and space itself no worse-and perhaps better-than we found them. As we expand human presence into the solar system, we ought not to park ethical considerations next to the launching pad. We must take our best ethical thinking with us as we cross the frontier of space exploration.

Strong literature base for ethics and space exploration

Billings-SETI Institute-6

How shall we live in space? Culture, law and ethics in spacefaring society http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V52-4M3BCF4-

[1&_user=10&_coverDate=11%2F30%2F2006&_rdoc=1&_fmt=high&_orig=search&_sort=d&_docanchor=&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=bd252ceb366b016d29b865df27d6247c](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V52-4M3BCF4-1&_user=10&_coverDate=11%2F30%2F2006&_rdoc=1&_fmt=high&_orig=search&_sort=d&_docanchor=&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=bd252ceb366b016d29b865df27d6247c)

The US civilian space program is focused on planning for a new round of human missions beyond Earth orbit, to realize a 'vision' for exploration articulated by President George W. Bush. It is important to examine this 'vision' in the broader context of the global enterprise of 21st century space exploration. How will extending a human presence into the Solar System affect terrestrial society and culture? What legal, ethical and other value systems should govern human activities in space? This paper will describe the current environment for space policy making and possible frameworks for future space law, ethics and culture. It also proposes establishment of a World Space Conference to aid deliberations on the above.

Lin-Astrpolitics Journal-6 <http://www.nanoethics.org/paper042406.html>

Space Ethics: Look Before Taking Another Leap for Mankind

Space Exploration Paper

Commercial space travel is looking more like a real possibility than science fiction, but tied to that ambition, we may be held back by the gravity of emerging ethical dilemmas. This paper is a “think piece” that surveys a range of social, economic and political questions as well as critically evaluates reasons why we should explore space.

The usual ethical issues related to environmental and safety concerns are only the tip of this iceberg and are not so much the focus here. Rather, there are many other interesting questions, such as: What would be a fair process for commercializing or claiming property in space (as opposed to a chaotic land-grab similar to that with Internet domain names)? How likely would a separatist movement be among settlements who want to be free from their mother nations on Earth? Are reasons such as for adventure, wanderlust or “backing up the biosphere” good enough to justify our exploration of space?

The point here is not that we shouldn’t explore space; rather, if we are to move forward with our journey, which may be unstoppable anyway, then we should seriously consider these issues. At the least, this would give the public more confidence that we are looking ahead before we take another leap for mankind.

Ethical basis for space exploration important policy consideration

Miah-PHD FRSA-1/27/10 Extraterrestrial Ethics

<http://hplusmagazine.com/editors-blog/extraterrestrial-ethics>

In a time of potentially catastrophic climate change, our need to consider the exploration of outer space is greater than ever. This need is made visible by the rise of various networks that are contributing to the establishment of governmental policies that will oversee our move into outer space, either as visitors or inhabitants. The importance of ethical debate within such conversations is signaled by the work of such

organizations as UNESCO, which held its first congress on the ethics of outer space in 2004. Applying ethical guidelines that will accommodate the wide and diverse interests of a global community presents considerable challenges and inhibits the willingness of space agencies to commit wholeheartedly to any such implementation.

After all, haven't societies been trying to find common ground on such values for at least half a century? Are there no ethical principles we can share to help guide our colonization of outer space? If not, then how do we deal with some of the fundamental questions that govern such work? For instance, what obligations do we owe to the various life forms we send there, or those we might discover? Can we develop a more considerate approach to colonizing outer space than we were able to achieve for various sectors of Earth? And what are our expectations of astronauts? What are we actually asking them to do and will they be aware of what they're getting themselves into? Could our inevitable public surveillance of their behavior become too much of an infringement on their personal privacy? While it is tempting to believe that an astronaut's time in outer space involves a lot of free floating antics and admiring the view, astronauts are hooked up to monitoring devices and poked and prodded ad infinitum to find out what happens to

biology when it is outside of Earth's atmosphere. Humanity has a moral obligation to discover, create and support emergent life forms via space exploration. This obligation arises from the discovery itself, the mere possibility of developing such technology. However, to understand the value of such achievements and why we should pursue them further requires that we connect space exploration to a long chain of other discoveries that have incrementally extended our reach. Consider that the first liquid-fuelled rocket was launched in 1926 by the American Robert Goddard, the same year that John Logie Baird demonstrated the first true television system. Our neglect of the intimate set of connections that describe technological histories limits our ability to make sense of present-day interventions or their politics. Moreover, our failure to use these achievements wisely limits our ability to survive as a species. I am not going to argue that the end is nigh unless we find a way of colonizing outer space, though there are some people that would find little difficulty in accepting this proposition. But our obligation goes beyond the pursuit of new frontiers for its own sake, or our own survival. To this end, the exploration of outer space is far from a luxury. Rather, it is an integral component of a flourishing society. Without pursuing the most complex scientific challenges, we will want for solutions to many of our immediate social needs.

Moreover, the goods of space exploration far exceed the symbolic value of landing on the moon or orbiting the earth. A vast amount of research and development derives from space exploration. For example, the United Kingdom's 2007 Space Policy inquiry indicated that the creation of space products contributes two to three times their value in GDP. Admittedly, many will have reservations about investing into space exploration given ongoing economic doom and gloom. This is why we should derive our imperative from moral, rather than scientific reasons.

Consider for a moment the holy grail of space exploration: the discovery of life outside of Earth, not just some kind of water, but sentient life -- the kind that has eyes. While there is a limit to how much one should be distracted by such ideas, it is useful to illustrate how the pursuit of extraterrestrials is increasingly aligned with other human practices. After all, how should we treat the creation of new life forms, which derive from a range of cross-genetic breeding practices? Our own modification of the species pool through selection, modification, or transgenics creates a situation where distinct species properties emerge as a result of radical human-made interventions. We might even claim that such interventions transcend evolutionary processes. In what sense should such entities be reasonably claimed as Earthly? When an asteroid enters the Earth -- or when a shuttle returns -- does our planet become less Earthly? It seems to me that we need to debunk the idea that Earth can be treated as an isolated structure, since we know it is not. We are already extraterrestrial in the most meaningful sense of the term. Thus, extraterrestrial ethics applies to life in general. It meets with the expansion of recently developed concepts such as *ecosystem health* as a broad area of moral concern along with the principle of *procreative beneficence* -- the idea that our capacities of begetting new lives should be utilized to optimize human flourishing in its broadest sense. It promotes the principle of autonomy, while recognizing that

individual decisions have consequences for others. For me, the appeal of pursuing outer space begins with the imagination of new life forms. It is necessary that we consider our obligations to such lives and what responsibilities we should articulate for their continued survivability. Decades after the beginnings of the first space race began, the next giant leap for humanity seems more to do with coming to terms with what we want from the next era of space exploration. To answer this question, we will need more than just scientists to tell us what is possible.

Environmental Ethics and space policy

FRODEMAN-Prof Phil UNT-8

Space Exploration Paper

SEPARATED AT BIRTH, SIGNS OF RAPPROCHEMENT ENVIRONMENTAL ETHICS AND SPACE EXPLORATION

<http://www.britannica.com/bps/additionalcontent/18/32132419/SEPARATED-AT-BIRTH-SIGNS-OF-RAPPROCHEMENT-ENVIRONMENTAL-ETHICS-AND-SPACE-EXPLORATION>

Although environmental philosophy and the human exploration of space share common beginnings, scholars from either field have not given adequate attention to the possible connections between them. In this essay, we seek to spur the rapprochement and cross-fertilization of philosophy and space policy by highlighting the philosophic dimensions of [space exploration](#), pulling together issues and authors that have had insufficient contact with one another. We do so by offering an account of three topics: planetary exploration, planetary protection and the search for [extraterrestrial life](#), and terraforming. The resulting synthesis seeks to change our thinking about earthbound environmental ethics as it considers the philosophical dimensions of space exploration, and introduces the possible benefits of a humanities-oriented approach to space policy.

III. Neg Ground- Disads

The core disads that would link to most affs are politics and spending. Other potentially good disads include Chinese or Russian politics, US diplomatic credibility bad, and international space coop trade-off. For those of you out there who lament the death of the case debate, the space topic can deliver on a broad and deep debate space exploration good/bad debate.

**We could debate the Obama Bad DA-
GOP likes potential plans**

Space Politics 4-15-10

(Members of Congress weigh in on NASA, <http://www.spacepolitics.com/2010/04/15/members-of-congress-weigh-in-on-nasa/>)

Although the president won't be speaking about space policy until this afternoon, several members of Congress are getting in the two cents in advance of the speech, based in part on the details of the slightly-revised plan released late Tuesday by the White House. In an op-ed in the Orlando Sentinel today, Sen. Kay Bailey Hutchison makes the case for extending the shuttle and developing "a NASA-owned shuttle replacement", with commercial systems as only a "supplement" to NASA capabilities. The decision to end the shuttle in 2010 was based on also ending the station in 2015, thus an extension of the ISS's lifetime means that "flying the remaining shuttles scheduled for this year before completing an analysis of the station's needs based on the new service date is a mistake." Hutchison also made similar comments in a speech on the Senate floor on Monday. In the Houston Chronicle, Reps. Gene Green (D-TX) and John Culberson (R-TX) argue that US human spaceflight "lies in deep peril" and that if Congress goes along with plans to cancel Constellation it will be "effectively ending the era of American leadership in space." "The arguments for maintaining the Constellation program are simple", they claim, noting the shutdown costs if Constellation is canceled and the costs and risks of paying the Russians to fly astronauts on Soyuz spacecraft. (They state that "there will be nothing to stop the Russians from raising our costs" once they have a monopoly on crew access, but when NASA extended its existing contract with Russia earlier this month the cost increase was rather modest, and attributed to inflation.) "Constellation is our only hope to close the current five-year gap in U.S. access to space," they add, a conclusion that would appear to be in conflict with the final report of the Augustine Committee. Sen. Bob Bennett (R-UT) issued a press release yesterday calling for the president to "fully revive" all of Constellation, including the Ares launch vehicles. "The president is wasting billions of taxpayer dollars to simply reinvent the wheel and develop another rocket after canceling the safe, cost-efficient and tested Ares rocket booster," he said, referring to plans to select a design for a new heavy-lift vehicle by 2015. And as you might expect, Sen. Richard Shelby (R-AL) isn't particularly keen on the tweaked NASA plan. "While the Administration may have finally realized that its initial budget request was a complete disaster, the new plan, from the same team, still ends human space flight," he stated. "It is clear that the Administration does not believe that American leadership in human space flight is a priority worth fighting for." Ironically, he issued a press release the same day titled "Time to Bury 'Too Big to Fail'", about government bailouts of financial firms and automakers. That sentiment does not appear to extend to human spaceflight.

Space + Florida = Midterms link

Space Politics 10

(District 19, April 3, <http://www.spacepolitics.com/2010/04/03/district-19/>)

RealClearPolitics 4-15-10

Obama Drops Into Florida's Political Frenzy,
http://www.realclearpolitics.com/politics_nation/2010/04/obama_florida_political_frenzy.html

President Obama makes his fourth visit to Florida today, one of only a half dozen states outside the Beltway he's visited that many times since entering the White House. He'll find a Sunshine State again rich with political intrigue, where major developments in the gubernatorial, Senate and Congressional races just this week point to an election cycle as busy as any in recent memory. Obama's visit - to deliver an address on his space policy and to raise money for the Democratic National Committee - of course points to his own political interest in the state. Not since 1976 had a Democratic presidential nominee

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won 51 percent of the vote in Florida, as Obama did two years ago. But recent polling shows that his standing has slipped there as in many battlegrounds from 2008, something that could affect the entire Democratic ticket this fall.

Politics link- export controls aff

Foust 10

(Jeff, editor and publisher of The Space Review, Prospects and concerns for export control reform, March 29, <http://www.thespacereview.com/article/1595/1>)

It's not certain, though, that Congress will follow through, particularly during what is shaping up to be a particularly contentious election year. In his 11 years on Capitol Hill, Fite said, "I have never seen an environment that has been this partisan." Reinsch concurred. "The danger is that this will become a political issue in an election year, which means it's not going to be addressed on its merits, it will be addressed by slogans." Reinsch said export control reform could become a partisan issue, with Republicans seizing on any reforms proposed by the White House as evidence that they're soft on national security. He said he was particularly concerned that the president linked export control reform with jobs in his speech earlier in the month. "You can't win an export control reform fight talking about jobs and exports," he said. "The only way to win an export control fight is talking about national security." "The Republicans in the Congress, particularly in the Senate, are already sharpening their rhetoric, their talking points for this," he warned. When those attacks come, he said, the question will be whether the president fights back. "Will he persist and push it through, or will all the Democrats fold?" he asked. "That's why my optimism is tempered with caution."

Spending DA

DeGroot-author of Dark Side of the Moon: The Magnificent Madness of the American Lunar Quest-2/25/09
Daily Telegraph The space race is a pointless waste of money

Forget giant leaps for mankind, Nasa is a machine for spending money. That fact has been driven home by the ignominious failure of the Orbiting Carbon Observatory, a \$278 million package which blasted off from Vandenberg air force base on Tuesday and promptly crashed into the Pacific. The satellite, we were told, would advance the study of global warming. But Nasa isn't interested in global warming; it simply realises that wearing green is a way to get government money. While most Americans have moved on, Nasa is stuck in the 1960s. That explains the desire to go to Mars, an aspiration given the seal of presidential approval in 2004. Bush's project, priced at \$400 billion, was inspired by his desire to stay ahead of the Chinese in the new space race. Just as in the 1960s, the ability to make shallow gestures in space is still assumed to be an indicator of a nation's virility. During a recent radio programme, a Nasa astronaut asked me how the American people might react if the next man on the moon were Chinese. I replied with a question: "why are Americans so insecure?" If the Chinese want that worthless rock, so be it. Obscenely expensive manned missions mean that practical, earth-based science suffers, as does the genuinely valuable satellite research so essential to the way we live today. It is no wonder that the most articulate opposition to the Apollo missions came from Nobel scientists who objected to the way their budgets were bled in order to fund an ego trip to the moon. Recently, Stephen Hawking has argued that we must colonise other planets to ensure mankind's long-term survival. Much as I admire Hawking, that's nonsense. The Earth is indeed doomed, but where might refugees go? Mars makes Antarctica seem like paradise. As for distant galaxies, a spaceship capable of travelling at a million miles per hour (20 times faster than Apollo) would take 4,000 years to reach the nearest star system that might theoretically be hospitable. The time has come to pull the plug on meaningless gestures in space. An expensive mission to the moon (especially at a time of global recession) seems like lunacy when terrestrial frontiers such as disease, starvation and drought cry out for cash. Furthermore, expensive space missions add credence to fundamentalist allegations about American spiritual vacuity.

Space Exploration Paper

Maybe a Chinese nationalism DA?

Space policy is an important source of international prestige for China

Space Issues 2/19/10

Prestige, Power Projection, International Cooperation, and Space

<http://www.space-issues.com/blog/?p=369>

Space missions have long been used to foster international cooperation based on prestige and power projection. The Soviet Union and the United States frequently sent foreign nationals into orbit as part of their Cold War strategy of courting supporters and projecting power. This is still done as part of international goodwill missions, and space science is seen as a particularly safe endeavor on which states can partner. China has undertaken a similar prestige-driven view of space in organizing the Asia-Pacific Space Cooperation Organization (APSCO) with Bangladesh, Indonesia, Iran, Mongolia, Pakistan, Perú, and Thailand. None of these countries' independent space programs is on par with that of China. The APSCO exists so that China can project the image of being a global power and cement a cooperative relationship with these partner states. The other members of the organization gain the benefits of space technology they would be unable to access alone, as well as enhancement of their technological and industrial bases.

Energy Consumption DA to exploration

Space Daily 7/30/03 Has Humanity Already Shot Their (Space) Bolt

<http://www.spacedaily.com/news/oped-03zs.html>

The 1960's was an euphoric decade for space enthusiasts. Starting from almost nothing a program to carry members of humanity to Earth's Moon was designed and built. After this great step, the subsequent decade saw not only the end of human travel to outer-space but another less glamorous but more telling event. This event was the peak in conventional oil production for the United States. Activities in space require an inordinate amount of direct energy (i.e. launches) and indirect energy (i.e. launch technicians commuting to work). Without allocating another significant amount of the earth's resources and especially energy to space endeavours there will be no settlements in space nor precious little for space enthusiasts to be happy about. What does a peak in conventional oil production have to do with human space settlement? First, let's consider the value of oil. In a nutshell, oil enables more and more people on Earth to expect and get more and more resources for their daily living whether watching plasma televisions, commuting to work in SUV's or flying to business meetings. The production, distribution and operation of the devices used in these activities rely predominantly on energy derived from oil. Oil and other nonrenewable resources have been consumed at an exponential rate since the start of the industrial age. The most significant per capita consumption occurs in North America and Europe. Yet, for example, the United States since 1970 has had a decreasing oil production. They are not an isolated case. Nonrenewable resources are being depleted all across the globe. Educated estimates for the occurrence of global peak production is somewhere between the years 2005 to 2010. At some moment during this time the amount of oil being produced worldwide will begin inexorably to shrink. What exasperates this scenario further is that the 'cheap' energy sources are already almost completely used. Just look at the oil industry in Texas. At one time this oil was near the surface and close to market. Now, it is all but consumed. The estimated profit factor for extracting oil during the 1940's was about 100 (i.e. It takes one unit of energy to extract 100 units of energy of oil). The factor for oil discovered today is at or less than 10. A tiny fraction of energy comes from renewable resources yet these have a profit factor of 3 or less except for a few instances from geothermal and hydroelectric sources. With more and more energy being used just to extract energy there is relatively less and less available for use in people's daily lives. Even though the production of oil has peaked in the United States and is nearing a peak world wide, the usage of oil/energy has not peaked. In the United States, both the per capita energy consumption and the population continues to increase. This trend is repeated for almost all countries except for a few that have diminishing populations. None have a decrease in energy usage. The net result of this increasing consumption of oil/energy coupled with a peak in the production of nonrenewable resources is an increased allocation of energy resources to maintain people's standard of living and a decrease of energy resources for research or infrastructure especially on the scale of a space settlement. A somewhat overly-optimistic estimate of 10 to 25 years is needed to en place a colony on the moon. Upon completion this lunar base would facilitate further expansion into space. Commensurate with its completion would be a considerable addition to humanity's knowledge base. However, this space settlement would not improve people's standard of living nor provide an appreciable source of energy. Rather, depleting the earth's dwindling energy resources to the tune of \$100B US to \$500B US would have an immediate detrimental effect on people's standard of living. Even more challenging is that this base or any space settlement would be constructed either when oil peak production occurs or more likely after it occurs. People's standard of living will be decreasing due to the decrease in nonrenewable resources, I expect they will be loath to give up more of their standard of living for the minimal short term benefit of a lunar colony or any other space settlement. I would like to think that humanity's future is brighter than the dim picture portrayed above. Maybe people will devise an energy source that would permit the continual increase of the standard of living of an every increasing population. Even better, this new energy source would have a surplus to allow for continual research and infrastructure development including space settlements. However, without this new source I think people will be putting more and more effort into maintaining their existing standard of living and less and less on building for the future. The bolt that was the Apollo program may have been humanity's one and only opportunity to shoot out to space.

III. Neg Ground- Counterplans

Possible generic counterplans include the free market CP, conditions CPs, multilateral CPs, and agent CPs. Though we did not include any specific cards on this question, for many of the potential aff areas, there are many different proposals debated in the literature that would make for good PICs and advantage CPs.

Free-Market CP

Garmong-Ayn Rand Institute-4 Privatize Space Exploration: The Free-Market Solution For America's Space Program <http://www.capitalismmagazine.com/index.php?news=3763>

There is a contradiction at the heart of the space program: space exploration, as the grandest of man's technological advancements, requires the kind of bold innovation possible only to minds left free to pursue the best of their thinking and judgment. Yet, by placing the space program under governmental funding, we necessarily place it at the mercy of governmental whim. The results are written all over the past twenty years of NASA's history: the space program is a political animal, marked by shifting, inconsistent, and ill-defined goals. The space shuttle was built and maintained to please clashing constituencies, not to do a clearly defined job for which there was an economic and technical need. The shuttle was to launch satellites for the Department of Defense and private contractors--which could be done more cheaply by lightweight, disposable rockets. It was to carry scientific experiments--which could be done more efficiently by unmanned vehicles. But one "need" came before all technical issues: NASA's political need for showy manned vehicles. The result, as great a technical achievement as it is, was an over-sized, over-complicated, over-budget, overly dangerous vehicle that does everything poorly and nothing well. Indeed, the space shuttle program was supposed to be phased out years ago, but the search for its replacement has been halted, largely because space contractors enjoy collecting on the overpriced shuttle without the expense and bother of researching cheaper alternatives. A private industry could have fired them--but not so in a government project, with home-district congressmen to lobby on their behalf. There is reason to believe that the political nature of the space program may have even been directly responsible for the Columbia disaster. Fox News reported that NASA chose to stick with non-Freon-based foam insulation on the booster rockets, despite evidence that this type of foam causes up to eleven times as much damage to thermal tiles as the older, Freon-based foam. Although NASA was exempted from the restrictions on Freon use, which environmentalists believe causes ozone depletion, and despite the fact that the amount of Freon released by NASA's rockets would have been trivial, the space agency elected to stick with the politically correct foam. It is impossible to integrate the contradictory. To whatever extent an engineer is forced to base his decisions, not on the realities of science but on the arbitrary, unpredictable, and often impossible demands of a politicized system, he is stymied. Yet this politicizing is an unavoidable consequence of governmental control over scientific research and development. Nor would it be difficult to spur the private exploration of space--it's been happening, quietly, for years. The free market works to produce whatever there is demand for, just as it now does with traditional aircraft. Commercial satellite launches are now routine, and could easily be fully privatized. The so-called X Prize, for which SpaceShipOne is competing, offers incentive for private groups to break out of the Earth's atmosphere. But all this private exploration is hobbled by the crucial absence of a system of property rights in space. Imagine the incentive to a profit-minded business if, for instance, it were granted the right to any stellar body it reached and exploited. We often hear that the most ambitious projects can only be undertaken by government, but in fact the opposite is true. The more ambitious a project is, the more it demands to be broken into achievable, profit-making steps--and freed from the unavoidable politicizing of government-controlled science. If space development is to be transformed from an expensive national bauble whose central purpose is to assert national pride to a practical industry, it will only be by unleashing the creative force of free and rational minds.

China Conditions CP

Hitchens and Chen 08

(Theresa and David, Forging a Sino-US “grand bargain” in space, Space Policy, <http://www.cdi.org/pdfs/HitchensGrandBargain.pdf>)

Nevertheless, without an agreed upon understanding, the incentive to strike at what many Chinese strategists consider the Achilles’ heel of the US military machine is likely to remain a dominant consideration in China’s space strategy. Clearly, China’s leaders are driven by the strategic imperative to protect and project national sovereignty. This motivation has resulted in the Shenzhou manned spaceflight program and the Chang-e lunar probe mission, as well as the formation of cooperative associations such as the Asia-Pacific Space Cooperation Organization. An important dividend of these programs is the promotion of China’s national prestige, both domestically and abroad. As the defenders of China’s sovereignty and international image, the Chinese Communist Party (CCP) relies on such programs as a bulwark for the regime’s claim to legitimacy. Yet, even as the CCP stokes nationalistic zeal, it fears losing control of its citizens, making constructive outlets for nationalism, such as can be offered through international space cooperation, of vital importance. The next US president must recognize these incentives in the regime’s calculus, and leverage them as key points for agreeing on limits to the nascent space arms race. 4. All options on the table Considering Chinese investment in its space program as a centerpiece of national prestige and as a lever for economic development, the USA has the opportunity to link a variety of related economic incentives with opening, and concluding, negotiations on a code of conduct in space, including Chinese abandonment of destructive antisatellite weapons programs. These potential bargaining chips include such options as participation in the International Space Station (ISS), joint exploration missions, reform in US policies restricting sales of commercial satellite hardware, and licensing of Chinese launch services. In exchange, China might willingly restrict behaviors that could lead to strategic miscalculation in space, as well as certain forms of counter-space capabilities. Providing what the Chinese want in civil and commercial space arguably would cost the USA little, and in this value-cost differential exists the potential of a mutually beneficial agreement. In international prestige, no greater prize currently exists for China than to be recognized and be admitted as a partner in the ISS. While the ISS program would benefit from Chinese investment and the potential use of Shenzhou modules for crew or cargo transport, the reality is that China needs ISS more than ISS needs the Chinese, even with the imminent retirement of the Shuttle fleet. With the successful docking and cargo transfer of the European Space Agency’s Automatic Transfer Vehicle in March 2008, the need for a backup to Soyuz is not yet a dire urgency [10]. The approach can be gradual, with perhaps the visit of a Chinese space tourist to the station, before the docking of a Shenzhou cargo vehicle, then perhaps the inclusion of a Chinese module to the station, culminating in a routine rotation of Chinese personnel on the station. Indeed, ISS participation offers a stepwise schedule of incentives in negotiations with the Chinese.

III. Neg Ground- Kritiks

We didn't cut a whole lot of cards here, but I'm sure you could put together very nice versions of Heidegger, Nietzsche, and the Cap K. Also various environment Ks depending on the aff's advantages.

Also, epistemology Ks-

K of how science claims to know space...

Bullock 05

(Mark, "Cosmology and Ethics," Encyclopedia of Science, Technology, and Ethics, Carl Mitcham, ed., Macmillan Reference, Detroit, 2005, http://www.boulder.swri.edu/CSEPR/cosmo_ethics.pdf)

For many scientific disciplines, the cause-and-effect relationship between scientific outcomes and the well being of people is of extreme importance. Simply put, scientific results and their technological progeny are the dominant forces shaping our world's future. What role science will play in determining the quality of life for every human being on the planet is, of course, determined by the elite that funds it. In this way, all of scientific enterprise is embedded in the greater moral problem of how individuals and groups should conduct themselves. Is it better for the powerful to channel their efforts solely for competitive self-benefit, or to distribute knowledge and technology among all people? What are the consequences of pushing technologies on societies that may not want them? For some fields, these issues spring immediately from contemplating the promise and implications of their projects. If we can choose the human qualities of a future person through genetic engineering, who is to decide what these will be, and to whose progeny they will go? Other subjects may be further afield, but the stunning conceptual shift forced on us by the quantum nature of the infinitesimal in the 1920's has led to by far the most transforming technology in history: electronics. Cosmology evokes a sense of the most benign, most pure of sciences. The fascination of contemplating what's out there, combined with the fact that we can't do anything to it lends the study of space its alluring innocence. That of course, is the old view – cosmology today is coming dangerously close to asking God some rather direct questions. To some degree, scientific disciplines can be categorized by how influential ethics is thought to be in the field. Indeed, the ethical weight of astronomy, compared with that of genetics, lends it a kind of lightness and purity, which is perceived by the people who fund it. Virtually everyone on the planet has at one time or another gazed up and rested briefly in that human space where we wonder what it all is and what it all means. The pursuit of these wonders feels ennobling, partly perhaps because of the human space it comes from, and partly because it is difficult to imagine how contemplation of the stars above us could remotely alter our own fate. The modern science of cosmology is perhaps as far removed from the day to day concerns of humanity as any human endeavor could be. Futurists may conjure colorful uses for the discoveries of scientific research on the nature and origin of the Universe, but we are not dealing here with transistors or life-extending drugs. No one argues that cosmology is studied because of its economic impact. Does this mean that the study of the Universe has no economic impact? Not at all. The latest discoveries in astronomy have always depended upon progress in computer, space, and detector technology (Tegmark 2002). Synergism between the astronomical sciences and industrial and military concerns is strong and growing. Both enterprises benefit. Conclusion As self-aware beings, we share a special, emergent property of the Universe -- consciousness. Is the quality of this aspect of Nature in some way different from, say, the way space is curved from the distribution of mass in the Universe? What is special about the way living, replicating systems employ available resources to thrive, to evolve, and to produce beings that are capable of probing the deepest questions about their existence? Is mind a statistically unlikely property to emerge from a Universe with 1,000,000,000,000,000,000 solar systems? Or is the quality of mind something ubiquitous and unifying – like gravitation or other universal physical laws? Science is now engaged in exploring the origin and nature of the Universe like never before, and possibly the role of life and consciousness within it. Every culture has or had a cosmology. Science has become the sine qua non of truth, and its revelations today are taken as gospel. Science's insights into the nature of the Universe are therefore assumed to or allowed to subsume all prior knowledge. It is incumbent upon all scientists to ask if their work speaks to living together in harmony, or whether it interferes. Where is the role of heart or spirit in the exploration of the cosmos, or for that matter, in any scientific endeavor? The scientific study of the origin and structure of the Universe is an incredible journey, yielding answers to questions that were once the purview of religion and myth. What is done with this knowledge, and what its ultimate meaning for us may be, should be an essential component of the science of cosmology.

Space Exploration Paper

Arendt Kritik of Space exploration

AMB-The Point is to Change It-12/7/09 The Conquest of Space... Again?

<http://thepointistochangeit.blogspot.com/>

Back in 1963 Hannah Arendt wrote an essay, The Conquest of Space and the Stature of Man, in it she questioned the validity and purpose of conquering space. Now in 2009 soon to be 2010 and mankind's childish dreams of conquering space have once again surfaced with the discovery of ice on the moon and before that landing a rover on Mars. Does Arendt's arguments written back in '63 still hold true today. One of the arguments that She pointed to in her essay was how the scientific mathematical language was so coded that people speaking the common language wouldn't be able to understand. Arendt quoted Plank stating that all information from mathematics needs to be converted into the common language in order to be of any value. Today's space exploration has developed a real common language of understanding. Why to put so many resources to the task? When scientist used all their scientific data and super computers to crash a satellite into the moon they did so for one reason, options. When our current planet Earth reaches a stage of no longer being able to support life where will mankind go? The issues of sustainability on our planet have come into greater question in the past five years and have motivated space invaders to find a second earth. Originally, Mars was thought to be a potential barren land of promise. Now that our own Moon can give a lunar community water and fuel source the scientist are packing their imagination and abstract bags. Arendt's argument still holds some truths concerning how scientist are so busy trying to leave the Earth to reach the Archimedean point they in a way forget about humanity. She commented on how they were so quick to split the Atom without considering the consequences. The question arises if we are looking for a second earth then what about the one we currently live on? The amount of resources to successfully establish a colony on the moons seems a misplacement of energy. If the same amount of money and resources were spent by our government on conserving what we have maybe we would never want to leave? I know that is a nonsensical question to ask, because no matter how sustained life is on Earth mankind will always be looking towards the stars. As Arendt pointed out several times in her essay mankind can ever only explore a very limited amount of this universe. Even if we are able to reach the Archimedean point we still need the Earth as a reference for any of mankind's discoveries. It seems to be the case that no matter how far we stretch our necks to peer into space our feet are still on the ground.

Space Exploration as Manifest Destiny

Sage-Institute geography University of Wales-8

Framing Space: A Popular Geopolitics of American Manifest Destiny in Outer Space

Geopolitics, Volume 13, Issue 1 January 2008 , pages 27 - 53

This paper examines how 'ways of seeing' landscape, as practised within the little-known American astronomical art community, can be used to examine the popular geopolitical scripting of an American manifest destiny in outer space. A significant body of work in critical geopolitics has sought to recognise the way in which culturally manifest representations of space and place, together with embedded visual practices, can reproduce and elucidate the construction of geographical imaginations. Despite this, cultural representations of outer space have frequently been overlooked in readings of American popular, geopolitical discourse and associated geographical understandings. As a response to this lacuna, this paper interrogates how visual motifs of an American manifest destiny, developed in nineteenth-century American romanticism, have been mobilised through American astronomical art to explain and popularise conceptions of outer space that invite American human space exploration. By way of conclusion, the paper stresses how the inscription of outer space under the rubric of an American manifest destiny continues to frame the way in which the American space programme, and by extension American geopolitical and geographical imaginations, can be understood today.

IV. Wording Issues

The previous college and high school space exploration topics had similar wordings. Many might now find these topic wordings to be too unlimiting. Creating area and list topic wordings would help write a resolution that limits the aff to core goals or actions. Other issues related to the topic wording follow below.

Previous space exploration topic wordings:

College- 1984-1985

RESOLVED: "That the United States federal government should significantly increase exploration and/or development of space beyond the earth's mesosphere."

High School- 1990-91

Resolved: that the United States Government should significantly increase space exploration beyond Earth's mesosphere.

Definitions:

Space Exploration

<http://encyclopedia2.thefreedictionary.com/space+exploration>

space exploration, the investigation of physical conditions in space and on stars, planets, and other celestial bodies through the use of artificial satellites satellite, artificial, object constructed by humans and placed in orbit around the earth or other celestial body (see also space probe).

http://en.wikipedia.org/wiki/Space_exploration

Space exploration is the use of astronomy and space technology to explore outer space.[1] Physical exploration of space is conducted both by human spaceflights and by robotic spacecraft. While the observation of objects in space, known as astronomy, predates reliable recorded history, it was the development of large liquid-fueled rocket engines during the early 20th century that allowed physical space exploration to become a reality. Common rationales for exploring space include advancing scientific research, uniting different nations, ensuring the future survival of humanity and developing military and strategic advantages against other countries. Various criticisms of space exploration are sometimes made.

4 areas of space exploration- from US Space Exploration Policy (Vision for Space Exploration 2004):

VSE 04

<http://www.space.commerce.gov/general/nationalspacepolicy/2004-VSE.pdf>

The Administrator of the National Aeronautics and Space Administration will be responsible for the plans, programs, and activities required to implement this vision, in coordination with other agencies, as deemed appropriate. The Administrator will plan and implement an integrated, long-term robotic and human exploration program structured with measurable milestones and executed on the basis of available resources, accumulated experience, and technology readiness. To implement this vision, the Administrator will conduct the following activities and take other actions as required: A. Exploration Activities in Low Earth Orbit Space Shuttle • Return the Space Shuttle to flight as soon as practical, based on the recommendations of the Columbia Accident Investigation Board; • Focus use of the Space Shuttle to complete assembly of the International Space Station; and • Retire the Space Shuttle as soon as assembly of the International Space Station is completed, planned for the end of this decade; International Space Station • Complete assembly of the International Space Station, including the U.S. components that support U.S. space exploration goals and those provided by foreign partners, planned for the end of this decade; Focus U.S. research and use of the International Space Station on supporting space exploration goals, with emphasis on understanding how the space environment affects astronaut health and capabilities and developing countermeasures; and • Conduct International Space Station

Space Exploration Paper

activities in a manner consistent with U.S. obligations contained in the agreements between the United States and other partners in the International Space Station. B. Space Exploration Beyond Low Earth Orbit The Moon • Undertake lunar exploration activities to enable sustained human and robotic exploration of Mars and more distant destinations in the solar system; • Starting no later than 2008, initiate a series of robotic missions to the Moon to prepare for and support future human exploration activities; • Conduct the first extended human expedition to the lunar surface as early as 2015, but no later than the year 2020; and • Use lunar exploration activities to further science, and to develop and test new approaches, technologies, and systems, including use of lunar and other space resources, to support sustained human space exploration to Mars and other destinations. Mars and Other Destinations • Conduct robotic exploration of Mars to search for evidence of life, to understand the history of the solar system, and to prepare for future human exploration; • Conduct robotic exploration across the solar system for scientific purposes and to support human exploration. In particular, explore Jupiter's moons, asteroids and other bodies to search for evidence of life, to understand the history of the solar system, and to search for resources; • Conduct advanced telescope searches for Earth-like planets and habitable environments around other stars; • Develop and demonstrate power generation, propulsion, life support, and other key capabilities required to support more distant, more capable, and/or longer duration human and robotic exploration of Mars and other destinations; and • Conduct human expeditions to Mars after acquiring adequate knowledge about the planet using robotic missions and after successfully demonstrating sustained human exploration missions to the Moon. C. Space Transportation Capabilities Supporting Exploration • Develop a new crew exploration vehicle to provide crew transportation for missions beyond low Earth orbit; Conduct the initial test flight before the end of this decade in order to provide an operational capability to support human exploration missions no later than 2014; • Separate to the maximum practical extent crew from cargo transportation to the International Space Station and for launching exploration missions beyond low Earth orbit; Acquire cargo transportation as soon as practical and affordable to support missions to and from the International Space Station; and Acquire crew transportation to and from the International Space Station, as required, after the Space Shuttle is retired from service. D. International and Commercial Participation • Pursue opportunities for international participation to support U.S. space exploration goals; and • Pursue commercial opportunities for providing transportation and other services supporting the International Space Station and exploration missions beyond low Earth orbit.

Important Questions for topic wording research:

1) how to best limit the topic- is substantial enough? How small do we want to let the aff be?

2) how to deal with cases that indirectly increase exploration? Is “develop wireless energy transfer” an aff? Or improve city planning to reduce light pollution?

3) do we want to give the aff international cooperation, or do we want the neg to have the multilateralism CP?

4) do we want to give the aff ground to incentivize private/commercial exploration activities? Again, there are cool affs here, but it eliminates the private sector CP as a core negative strategy and allows the aff to be in the direction of the Squo...

Some of these issues could probably be handled by writing a resolution that includes “its” and/or iterates the type of exploration activities the aff should do.

Using the VSE as a basis for defining areas of space exploration, a potential resolution could look like this:

Resolved: The USFG should significantly increase its space exploration beyond Earth's mesosphere in one or more of the following areas: exploration in low Earth orbit, exploration beyond Earth orbit, and/or development of space transportation capabilities supporting exploration.

**** A wording like this might limit out the export control reform aff, which is one of the “big stick” affs in the literature**

V. More on the UQ if you are interested

1) I read about the Space Posture Review and it worries me. Will it potentially threaten the topic in the way the NPR did for the nukes topic?

Probably not.

a) its not nearly as of a big deal as the NPR was, in fact, if you search “2010 Space Posture Review” on google, you get 16 hits. Unfortunately this means there isn’t a core negative strategy to be found here like the NPR CP, but it also means it shouldn’t threaten the aff much.

b) The SPR will be delayed at least a year anyways.

Foust 1-23-10

(Jeff, editor of Space Politics, “On posture and policy,” <http://www.spacepolitics.com/2010/01/23/on-posture-and-policy/>)

Last week Defense News reported that the Defense Department’s 2010 Space Posture Review would be delayed by at least several months, and perhaps by up to a year. That has also been reported by DoD Buzz, which added an interesting item: the review may recommend that the US scrap building several additional GPS satellites in favor of working more closely with Europe and its satellite navigation system, Galileo, currently under development. So what can we expect in terms of military space policy? Speaking at an event about the Space Security Index Thursday at the Canadian Embassy in Washington, Peter Hays, an SAIC senior scientist working at the National Security Space Office, offered some insights. While not directly involved in the development of the review, and also speaking solely for himself, he said he understood that the current plan was to release a “shorter, non-perscriptive” version of the review early next month, along with the FY2011 budget request. That would be the same time as the Defense Department plans to release the Quadrennial Defense Review, an overall defense policy report that the Space Posture Review was designed to support. Hays said one unnamed person who was involved with the review process described the debate about it as splitting into four camps: “ostriches” who saw no reason to change what we do in space; a “steroids camp” that advocated doing the same as what we’re doing today in space, but more of it; soft power advocates who wanted more international cooperation and commercial partnerships as well as negotiations for “rules of the road” in space; and a “hard power” group that would increase the “less benign” capabilities of the Defense Department to protect US space capabilities. “Clearly if you have these kinds of divergent views and no resolution amongst them, it’s going to be difficult to fashion a holistic and theoretically, foundationally based clean-sheet approach to all of this.” Hays said. The rest of the work that had gone into the review would be reworked, he said, as part of a “national security space strategy”. That would come out after the completion of a new overall national space policy. The current schedule calls for completing that policy by early summer, although Hays was skeptical that schedule could be kept. He noted that it took several years for the Bush Administration to develop its national space policy, a process that started in 2002 and was not completed until August 2006, thus he thought it was unlikely the current administration could complete its own space policy so quickly. “Perhaps the Obama Administration has a time machine, but I’m not optimistic that they’re going to be able to do all this work on the timeline that they’ve outlined,” he said.

2) Didn’t Obama’s recent speech have *some* commitment to increase space exploration?

Obama committed money, but stripped space exploration policy of its concrete goals. Current policy gets it all wrong.

MacKinnon 4-18-10

(Douglas, a long-time consultant on space and a former White House and Pentagon official, “Obama’s space plan adds insult to injury,” <http://www.orlandosentinel.com/news/opinion/os-ed-douglas-mackinnon-space-041810-20100416,0,161855.story>)

Space Exploration Paper

With all due respect to President Obama, regarding his speech in Florida on "Space Exploration in the 21st Century," I simply have to ask, "Are you kidding me?" As one who has consulted on and written extensively about our space program, worked in the White House and drafted a speech or two, I know shameless pandering filler when I read it.

The president's speech had more useless and suspect filler than a New York City street hot dog — part of that filler being when the president recognized his chief science adviser, John Holdren. This is the same man who just told students the United States couldn't be No. 1 in science forever. When the nation and the program most needed honesty, true direction and an unwavering belief in the promise of space, the president chose to add insult to the injury that is the dismantling of our human spaceflight program. To quote Neil Armstrong, James Lovell and Eugene Cernan, the president's decision to "...cancel the Constellation program, its Ares 1 and Ares V rockets, and the Orion spacecraft, is devastating."

Three heroic and history-making astronauts take the unusual step of writing an open letter to warn of this "devastating" action, and the president responds with a pedestrian speech that makes a mockery of a dire situation. Worse, for purely political reasons, he decided to pit the Apollo 11 moonwalkers against each other. To try and blunt the criticism of him by the first man to step on the surface of the moon, Obama not only flew Buzz Aldrin with him on Air Force One for the event at Kennedy Space Center, but led his remarks by referring to Aldrin as a legend. Aldrin may be the only one not aware of his role as a prop of the White House political operation. It's not a stretch to imagine Chief of Staff Rahm Emanuel turning to David Axelrod and saying, "If the first man on the moon is going to strongly and publicly criticize us, then let's use the second man to walk on the moon as validation for our 'promise them anything but deliver nothing' new vision." In a speech void of detail, the president said, "By the mid-2030s, I believe we can send humans to orbit Mars and return them safely to Earth." Where have I heard something like that before? That would be President George H. W. Bush in July 1989 when he spoke of landing Americans on Mars. Twenty-one years later, Obama gives us a watered-down version of that speech. In 1989, much of the media rightfully took President Bush to task for an open-ended goal that lacked specifics and would

have carried a price tag in the hundreds of billions of dollars. Say what you will about Bush's half-hearted effort, at least his astronauts would have landed on the Red Planet. Under Obama's fictional plan, for our investment of more than \$100 billion, our astronauts would only get to wave at Mars as they zipped around it, with a landing saved for a future mission. Can't we just wave at it for free from here on Earth? The president betrayed both his lack of interest in human spaceflight as well as his ignorance of the subject when he said, "Now, I understand that some believe that we should attempt a return to the surface of the moon first, as previously planned. But I just have to say pretty bluntly here. We've been there before. Buzz has been there..." By that thinking, European explorers should have abandoned the New World and President Jefferson should have ignored the explorations and discoveries of great natural wealth made by Lewis and Clark. For reasons of cost, commercial enterprise, science and national security, it makes sense for us to establish bases, observatories, mines and potentially even military operations on the moon. If we don't, others — particularly the People's Republic of China with its military-controlled space program — most assuredly will. President Obama has played the space community for fools, and he's hoping he will get away with it. Unfortunately for us all, China, Russia and others share his hope.

VI. Further Reading

Space Exploration/Space Policy reports:

Aldridge Commission Report, <http://www.nss.org/resources/library/spacepolicy/2004-AldridgeCommissionReport.pdf>
Vision for Space Exploration (2004), <http://www.space.commerce.gov/general/nationalspacepolicy/2004-VSE.pdf>

Journals:

Space Policy

Ad Astra: <http://www.nss.org/adastra/backissues.html>

Good Blogs:

<http://www.thespaceview.com/>

<http://www.spacepolitics.com/>

<http://www.nasawatch.com/>

<http://www.newspacejournal.com/>