Giant Leap for Mankind: The Case for Space Cooperation

By Vance Trefethen

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Giant Leap for Mankind: The Case for Space Cooperation with China

Dutch scientist Christiaan Huygens said prophetically in 1698 QUOTE:

“How vast those Orbs must be, and how inconsiderable this Earth, the Theatre upon which all our mighty Designs, all our Navigations, and all our Wars are transacted, is when compared to them. A very fit consideration, and matter of Reflection, for those Kings and Princes who sacrifice the Lives of so many People, only to flatter their Ambition in being Masters of some pitiful corner of this small Spot.”[[1]](#footnote-1)

END QUOTE. Please join us as we affirm that: The United States Federal Government should substantially reform its policies toward the People’s Republic of China

OBSERVATION 1. DEFINITIONS

Substantial:

“large in amount, size, or number” (*Merriam Webster Online Dict. 2016* <http://www.merriam-webster.com/dictionary/substantial)>

Reform:

“to improve (someone or something) by removing or correcting faults, problems, etc.” (*Merriam Webster Online Dict. 2016* [*http://www.merriam-webster.com/dictionary/reform*](http://www.merriam-webster.com/dictionary/reform)*)*

Policy:

“a high-level overall plan embracing the general goals and acceptable procedures especially of a governmental body” (*Merriam Webster Online Dict. 2016* [*http://www.merriam-webster.com/dictionary/policy)*](http://www.merriam-webster.com/dictionary/policy))

OBSERVATION 2. INHERENCY. Two key facts about Status Quo policies

FACT 1. US/China space cooperation is blocked under current law

Dr. Ronald E. Turner 2015 (PhD; *Distinguished Analyst at Analytic Services Inc*) 6 May 2015 Should the United States Cooperate with China in Space? <http://www.anser.org/babrief-us-china-space-coop>

Since April 2011, NASA has been legally prohibited from any cooperative activities with China, at the insistence of Rep. Frank Wolf (R-Virginia) while he was Chairman of the subcommittee responsible for NASA funding. Rep. John Culberson (R-Texas) took over the role of Chairman after Wolf left Congress. Culberson has publicly stated his desire to continue the ban, which reads, in part:  
None of the funds made available by this Act may be used for the National Aeronautics and Space Administration (NASA) or the Office of Science and Technology Policy (OSTP) to develop, design, plan, promulgate, implement, or execute a bilateral policy, program, order, or contract of any kind to participate, collaborate, or coordinate bilaterally in any way with China or any Chinese-owned company unless such activities are specifically authorized by a law enacted after the date of enactment of this Act.   
NASA solicitations allow foreign participation via non-U.S. organizations, subject to NASA’s policy of no exchange of funds, in which each government supports its own national participants and accounts for associated costs. Foreign nationals are permitted to support NASA research if they are legally employed by a U.S. organization and that organization follows U.S. export control restrictions. This allows, for example, foreign graduate students at a U.S. university to contribute to NASA space research activities. However, the prohibition in place against China is significantly more restrictive, as stated in a NASA solicitation: “Proposals must not include bilateral participation, collaboration, or coordination with China or any Chinese-owned company or entity, whether funded or performed under a no-exchange-of funds arrangement.”

FACT 2. China has invited international cooperation in space but NASA cannot accept

Tim Fernholz 2015 (journalist) “NASA has no choice but to refuse China’s request for help on a new space station” 13 Oct 2015 QUARTZ <http://qz.com/523094/nasa-has-no-choice-but-to-refuse-chinas-request-for-help-on-a-new-space-station/>

The chief designer of China’s space program, Zhou Jianping, [said his country](http://spacenews.com/chinas-space-station-planners-put-out-welcome-mat/) would solicit international partners for a space station it plans to launch in 2022, with opportunities ranging from shared experiments and spacecraft visits by foreign crews to building permanent modules to attach to the main station. The European and Russian space agencies already have signed preliminary agreements with China, but NASA will have to snub the project. The ban on cooperation between NASA and the China Manned Space Program is a legacy of conservative lawmaker Frank Wolf, who [cut off any funding](http://qz.com/159570/the-us-and-china-may-work-together-in-space-now-that-this-guy-is-retiring/) for work with China in protest of political repression there and for fear of sharing advanced technology; he retired in January, but the restrictions remain in place.

OBSERVATION 3. The PLAN.

1. Congress and the President repeal the ban on US/China space cooperation the day after an Affirmative ballot

2. NASA accepts China’s invitation to participate in the Chinese space station.

3. NASA invites Chinese astronauts to participate in the International Space Station  
4. Funding from existing budgets of existing agencies and general federal revenues.

5. All Affirmative speeches may clarify.

OBSERVATION 4. ADVANTAGES

ADVANTAGE 1. Reduced threat of Chinese attack

Cooperation in space increases incentives for China not to threaten US military space systems

Dr. Ronald E. Turner 2015 (PhD; *Distinguished Analyst at Analytic Services Inc*) 6 May 2015 Should the United States Cooperate with China in Space? <http://www.anser.org/babrief-us-china-space-coop>

As the Chinese increase their reliance on space systems, they will be less inclined to employ counterspace attacks, thus reducing the Chinese threat to U.S. military space systems. Attacks that destroy all space systems (via orbital debris or other means) will also take out their own systems. The Chinese may be less inclined to develop more sophisticated counterspace methods, such as covert co-orbital intercept, since this could lead to a counterspace arms race, which, the Chinese recognize, the United States is in a better technological position to win.

ADVANTAGE 2. Better US national security

Cooperation with China give US better management of strategic space environment than competition alone

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

Pursuing deter, defend and defeat through counterspace measures alone not only decreases the potential for strategic success, but can be counterproductive in much the same way export control laws consequent to the 1999 Cox Committee Report proved to be. Further, due to the global commons nature of the space environment and the importance of sustainability of that environment, the U.S. must seek common ground with China in areas of common interest. Consideration of what China is doing in space and what we think we know about why is useful in identifying these common interests. I have provided my assessment of that information in my written testimony. To summarize, the U.S. cannot control Chinese space ambitions. Even influence is limited due to imperfect knowledge of Chinese decision-making, operating procedures, and, perhaps most importantly, Chinese space stakeholders have no incentive to inhibit aggressive or reckless Chinese behavior because they are not tethered to any obligations, interests or benefits they might obtain through cooperation with the United States. Nor can the U.S. control space in the same way that it controls airspace. Yet space is a global commons, the sustainability of which is critical to U.S. national security. Consequently, increased cooperation with China is in the best interest of U.S. national security.

ADVANTAGE 3. Intelligence gathering

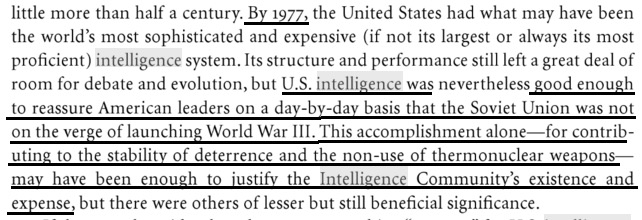
Link: Space technology always has dual civilian/military applications. Cooperation with China would allow us to learn how they actually intend to use it, and clear up confusion or preconceived ideas.

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

Because of the largely dual-use nature of space technology, virtually any space activity can be deemed as military. Therefore it is (relatively) easier to know *what* China is doing in terms of space activities than *why*. A co-orbital rendezvous and proximity operation satellite in space can, for example, be observed. Whether the satellite is intended for such benign operations as assessing damage to another satellite, or whether for nefarious purposes such as ramming into another satellite, or both, can rarely be determined based on hardware. A multiplicity of views regarding underlying drivers for space activity in China, just as there are in the United States, further complicates assessments. China is a country of such size, and with a rapidly increasing number of media and internet outlets for expressing views and dispersing information, that “evidence” can be found for almost any assessment, thereby accommodating the substantiation of preconceived assumptions as analysis. Consequently, analysis of intent through written statements inherently involves speculation and so careful scrutiny of sources backing such speculation becomes especially imperative. Unquestionably though, the best way to assess intentions is through dialog and cooperation.

Impact: War prevented. A good example is how US intelligence during the Cold War helped clarify Soviet intentions and prevented a nuclear World War 3

Michael Warner 2010. (historian for the Office of the Director of National Intelligence) The Oxford Handbook of National Security Intelligence, “The Rise of the US Intelligence System” p. 119. <https://books.google.com/books?id=X7i_I_np11IC&pg=PA116&lpg=PA116&dq=intelligence+enemy%27s+intentions+calming&source=bl&ots=x_KHQ_Gksi&sig=4-Sfly3JE8arsa1dlFC7enL3_Os&hl=en&sa=X&ved=0ahUKEwi2x9bD5sjKAhVC5CYKHbzKAKwQ6AEIKzAD#v=onepage&q=intelligence%20enemy's%20intentions%20calming&f=false>



ADVANTAGE 4. Global quality of life

Link: Space cooperation with China would advance scientific research in other fields and improve global quality of life

Dr. Ronald E. Turner 2015 (PhD; *Distinguished Analyst at Analytic Services Inc*) 6 May 2015 Should the United States Cooperate with China in Space? <http://www.anser.org/babrief-us-china-space-coop>

Chinese researchers, both indigenously trained and those who study abroad, could contribute significantly to a wide range of challenging problems (such as the underlying mechanisms responsible for global warming, a topic inherently global in scope and requiring data that can be obtained only from space). Similarly, simple space-based technological applications can improve quality of life around the world and do not require “rocket science” to accomplish—for example, increased maritime monitoring for search and rescue of ships (and aircraft) in distress. We should encourage Chinese cooperation in such endeavors.

Impact: Space technology is key to the economy, communications and defense

Dr. Alanna Krolikowski 2015 (Princeton-Harvard China and the World Fellow, Fairbank Center for Chinese Studies, Harvard Univ.) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

Third, it is difficult to overstate the significance of the U.S.-developed space systems that literally shape the world we live in today: the hidden plumbing sustaining our economy, our communications and our defense. The U.S. Global Positioning System is an example of such a system. Perhaps the most important action that U.S. policymakers can take now is to continue supporting the next generation of transformative space technologies - in other words, the next space technologies that would be as impactful as GPS - here within the United States.

ADVANTAGE 5. Controlling space debris

Link: US/China cooperation is key to controlling space debris

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

This rebuttal to Congressman Wolf’s views assumes that the United States has a choice regarding whether or not to work with China. If, however, sustainability of the space environment upon which the U.S. generally and the U.S. military specifically relies upon for advantages is to be maintained, the space debris issue alone requires that the U.S. not exclude diplomacy as a policy option. While missile defense/ASAT testing has been conducted in ways to minimize debris issues since 2007, the potential threat to the space environment in non-test circumstances has become clear. If there was any upside to the 2007 Chinese test, it was the frightening realization by all countries of the fragility of the space environment. With regard to China specifically, since this 2007 test China has done nothing further in space that can be considered irresponsible or outside the norms set by the United States. Mankind’s dependence on space assets thereby makes it in the best interests of all spacefaring nations to cooperate to maintain that environment.

Impact: Space debris will wreck the economy, emergency response systems, and electrical power grids

Megan Ansdell 2010 (second year graduate student in the Master in International Science & Technology program at George Washington Univ. Elliott School of International Affairs) ACTIVE SPACE DEBRIS REMOVAL: NEEDS, IMPLICATIONS, AND RECOMMENDATIONS FOR TODAY’S GEOPOLITICAL ENVIRONMENT <https://www.princeton.edu/jpia/past-issues-1/2010/Space-Debris-Removal.pdf>

It is likely that space debris will become a significant problem within the next several decades. Predictive studies show that if humans do not take action to control the space debris population, an increasing number of unintentional collisions between orbiting objects will lead to the runaway growth of space debris in Earth’s orbit (Liou and Johnson 2006). This uncontrolled growth of space debris threatens the ability of satellites to deliver the services humanity has come to rely on in its day-to-day activities. For example, Global Positioning System (GPS) precision timing and navigation signals are a significant component of the modern global economy; a GPS failure could disrupt emergency response services, cripple global banking systems, and interrupt electric power grids (Logsdon 2001).

2A EVIDENCE: Space Cooperation

INHERENCY

PL 113-235 bans China/NASA cooperation

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) 7 Aug 2015 “US-China Civil Space Dialogue” THE DIPLOMAT <http://thediplomat.com/2015/08/us-china-a-civil-space-dialogue/> (brackets added)

Though Wolf retired in 2014, the new House CJS chairman, Rep. John Culbertson (R-TX), has said he agrees with Wolf’s position. The [final law](http://www.spacepolicyonline.com/news/u-s-china-agree-to-bilateral-civil-space-cooperation-dialogue) that Wolf put in place, and which remains in effect (P.L. 113-235, the Consolidated and Further Continuing Appropriations Act, 2015), bans funding by NASA or OSTP [Office of Science and Technology Policy] to “develop, design, plan, promulgate, implement, or execute a bilateral policy, program, order, or contract of any kind to participate, collaborate, or coordinate bilaterally in any way with China or any Chinese-owned company unless such activities are specifically authorized by law after the date of enactment of this Act.”

Current US/China efforts on space debris are not enough, current limitations block success

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

While U.S. efforts to provide collision-avoidance information to other countries – including China – are admirable, as an increasing number of countries place an increasing number of satellites in orbit, improving current techniques and increasing collaboration and cooperation on exchanges of information must be aggressively pursued. And while the U.S. has rhetorically supported the European led efforts toward an International Code of Conduct, continued Congressional restrictions regarding bilateral U.S.-China space cooperation sends a powerful signal regarding U.S. seriousness regarding its intent to work with all space faring nations for the good of the space environment. Anything less than a comprehensive effort to constructively deal with issues related to the “space commons” can yield limited success at best.

Cox Committee recommendations led to cutting US/China space cooperation. They were wrong and it didn’t work

Dr. Joan Johnson-Freese 2014 (Professor of national security studies at US Naval War College.) “Commentary | Two Perspectives on U.S.-China Space Cooperation” 14 July 2014 SPACE NEWS <http://spacenews.com/41256two-perspectives-on-us-china-space-cooperation/>

U.S.-Sino relations had basically been moribund since the sensationalist 1999 Cox Committee report alleging theft of information on American thermonuclear weapons and transfer of sensitive missile technology by profit-hungry American aerospace companies. Though nonpoliticized analysis from experts at institutions such as Stanford University largely discredited the report, congressional caterwauling successfully pushed the United States into the impossible position of trying to isolate Chinese space activities in a globalized world, and ended up primarily hurting U.S. aerospace companies through the draconian export control measures issued consequent to the Cox Committee report.

ADVOCACY / SOLVENCY

Chinese would like to cooperate in space with America

Mark A. Stokes 2015 (Executive Director, Project 2049 Institute) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

I think it's fairly--I think the Chinese engineers have significant respect for U.S. technological capacity in space, both in terms of space launch vehicles and satellite systems. My impression is that they would love nothing more than to get back to the way things were in the late '80s and all the way up to '96 in terms of that type of economic interaction, in terms of them launching U.S. satellites or maybe even buying U.S. satellites. However, as they continue the technological progress, it's not clear how much of a demand there would be for even U.S. communication satellites when they may be able to provide it themselves, but I think politically they certainly have an interest in sort of achieving and being able to at least offered a seat at the table along with the world's greatest spacefaring nation, which is the United States. I think that gives them a significant degree of political legitimacy that I think that they're really after.

“Chinese engineers wouldn’t want to cooperate” – Response: Might be reluctant at first, but if we open up, they will

David Axe 2012 (American military correspondent) A Giant Leap Forward PACIFIC STANDARD 23 Oct 2012 <http://www.psmag.com/books-and-culture/a-giant-leap-forward-48493>

Chinese engineers might not be amenable to teaming up with the U.S. in orbit, though, at least not at the moment. More than two decades of U.S. restrictions on Chinese space efforts, says Gregory Kulacki, of the Union of Concerned Scientists, have had “enormous costs in terms of negative attitudes towards the U.S. that this engenders in the young, well-educated cohort of Chinese aerospace engineers who feel they’ve been excluded from the international space community.” Breaking down the space-related trade barriers could begin to defuse this hostility. Given a chance and time, these engineers should be willing to team up with their counterparts in the U.S., Russia, Europe, and other countries in sustaining the International Space Station as Earth’s sole orbital outpost. “If China were allowed to participate in the ISS, China might not develop the Tiangong space station,” says Wang, the Chinese-trained aerospace engineer.

NASA Administrator + National Academy of Sciences recommend cooperation w/China

Dr. Ronald E. Turner 2015 (PhD; *Distinguished Analyst at Analytic Services Inc*) 6 May 2015 Should the United States Cooperate with China in Space? <http://www.anser.org/babrief-us-china-space-coop>

NASA Administrator Charles Bolden is no stranger to China and the Chinese space program. He went to China in November 2014 and, following an aviation conference there, “met with his Chinese counterparts.” Bolden had previously visited China as NASA Administrator in October 2010, prior to the Congressionally initiated ban,  and he met again with Chinese space leaders at a conference in Washington, DC, in January 2014. Based on his responses to questions in various forums, he clearly seems to believe that limited cooperation between NASA and China could be in the best interest of the United States, and he is not alone in thinking this. A National Academy of Sciences study charged with reviewing “the goals, core capabilities, and direction of human space flight” noted, “It is also evident that given the rapid development of China’s capabilities in space, it is in the best interests of the United States to be open to its inclusion in future international partnerships.”

Space cooperation would open communication with China and wouldn’t require trading hi-tech hardware

Dr. Ronald E. Turner 2015 (PhD; *Distinguished Analyst at Analytic Services Inc*) 6 May 2015 Should the United States Cooperate with China in Space? <http://www.anser.org/babrief-us-china-space-coop>

While it is prudent to continue export control of leading-edge, militarily significant space technologies, it may be time to remove the comprehensive restrictions on NASA’s cooperation with China in space science and space exploration, which would open lines of communication to the Chinese space enterprise but would not require exchange of technologically sophisticated space hardware. Two specific near-term objectives should be considered:    
-Join the European Space Agency in ongoing discussions with the Chinese for joint space science in the next five years    
-Invite a Chinese astronaut to the International Space Station

ADVANTAGES

Advantage 1: Reduced Chinese Threat

Cooperation would make Chinese authorities more friendly toward the US and inhibit aggressive behavior

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

Perhaps most importantly, cooperation would politically empower Chinese individuals and institutions who are stakeholders in Chinese space policy to be more favorably inclined toward the United States. A cooperative civil and commercial relationship creates interests that could inhibit aggressive or reckless behavior, as opposed to Chinese space policy being untethered to any obligations, interest or benefits it might obtain through cooperation with the United States.

Advantage 2. US National Security / better management of space

In a few years, China may be the only country with humans in space

Dr. Alanna Krolikowski 2015 (Princeton-Harvard China and the World Fellow, Fairbank Center for Chinese Studies, Harvard Univ.) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

China is only the third country in history to place humans in space and built orbital habitats. China is now the only country possessing and operating an independent, stand-alone facility capable of supporting short-term stays on orbit by humans. If the program proceeds on schedule, at the end of this decade China may be the only country to operate an independent national space station capable of supporting humans on medium- to long-term stays in space.

Failure to project power into space will be a dangerous situation we will never recover from

Prof. Lamont Colucci 2014. (chair of politics and government at Ripon College, a former Fulbright scholar to the Diplomatic Academy of Vienna) 29 July 2014 US NEWS & WORLD REPORT To the Moon and Beyond <http://www.usnews.com/opinion/blogs/world-report/2014/07/29/why-the-us-military-needs-to-control-the-moon-and-space>

If the United States fails to determine the terms of this issue, it will be placed in a dangerous situation that it will not recover from. 19th century strategic planners realized that projection of power would be determined by those that controlled the sea lanes. 20th century strategists understood this to be the aircraft carrier. Dominance in space in the 21st century is the simple, logical next step. The country can ignore it, laugh at it and complain about the cost during difficult budget times, but none of this matters to the geostrategic reality that will be imposed on us if another nation reaches this point first.

Isolating China hurts US relationship with our allies over space exploration

Tate Nurkin 2015 (Senior Director, IHS Aerospace, Defense and Security Thought Leadership HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

A longer-term concern related to U.S. refusals to engage China collaboratively on space science and technology issues is that over-time U.S. relationships with allies and partners could suffer, especially after the early 2020s when, barring a shift in current plans, China will be the only country in the world with a habitable space station. Space connections between U.S. allies and partners and both Russia and China are already being made. In early 2012, ESA openly discussed the possibility of Chinese space craft docking at the International Space Station--the U.S. has prohibited China’s ability to access the station--or that a European spaceship will dock at the Chinese space station. Russia, too, has discussed similar manned spacecraft exchanges with China and is working with ESA on the ExoMars program after NASA removed itself from the program in 2011.

Advantage 3. Intelligence gathering

Cooperation with China would build trust by opening up information about how they are using their space technology

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

Second, Wolf’s rationale assumes the United States has nothing to gain by working with the Chinese. On the contrary, the United States could learn about how they work — their decision-making processes, institutional policies and standard operating procedures. This is valuable information in accurately deciphering the intended use of dual-use space technology, long a weakness and so a vulnerability in U.S. analysis. Working together on an actual project where people confront and solve problems together, perhaps, a space science or space debris project where both parties can contribute something of value, builds trust on both sides, trust that is currently severely lacking.

Advantage 4. Global Quality of Life

Space development boosts global economic growth

World Economic Forum 2014 (Members of the World Economic Forum’s Global Agenda Council on Space Security, chaired by Kazuto Suzuki, Professor, International Political Economy, Public Policy School, Hokkaido University, Japan.) *Bringing Space Down to Earth* <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiy0NzIxMHNAhVCOiYKHUAqAjgQFggcMAA&url=http%3A%2F%2Fwww3.weforum.org%2Fdocs%2FWEF_Bringing_Space_Down_to_Earth.pdf&usg=AFQjCNHPEc9gHmOk-hqy_HZBMNEB-BOPtA&sig2=smJ4zy43mjpbe2MyLsTteg&bvm=bv.125596728,d.eWE>

Over the past eight years, the global economy grew by 85%, from US$ 164 billion in 2004 to US$ 304 billion in 2012. The space sector is one of the fastest growing in the world, with average annual growth rates between 5% and nearly 8%. Overall, space-based infrastructure supports an ever-growing selection of downstream products and services across multiple users and markets. Not only wealthy nations are reaping these benefits: as global competitiveness expands and new satellite technologies become cheaper, developing countries are making the necessary investments in space with the goal of growing their economies.

Advantage 5. Space Debris

Space debris threatens human life – space station crews are at risk

NASA 2013. (US National Aeronautics & Space Administration)“Space Debris and Human Spacecraft“ 26 Sept 2013 <https://www.nasa.gov/mission_pages/station/news/orbital_debris.html>

NASA has a set of long-standing guidelines that are used to assess whether the threat of a close approach of orbital debris to a spacecraft is sufficient to warrant evasive action or precautions to ensure the safety of the crew. Debris avoidance maneuvers are planned when the probability of collision from a conjunction reaches limits set in the space shuttle and space station flight rules. If the probability of collision is greater than 1 in 100,000, a maneuver will be conducted if it will not result in significant impact to mission objectives. If it is greater than 1 in 10,000, a maneuver will be conducted unless it will result in additional risk to the crew. Debris avoidance maneuvers are usually small and occur from one to several hours before the time of the conjunction. Debris avoidance maneuvers with the shuttle can be planned and executed in a matter of hours. Such maneuvers with the space station require about 30 hours to plan and execute mainly due to the need to use the station’s Russian thrusters, or the propulsion systems on one of the docked Russian or European spacecraft. Several collision avoidance maneuvers with the shuttle and the station have been conducted during the past 10 years.

Space debris problem is getting worse – will triple by 2030. It’s lethal to military and commercial systems

Gen. William Shelton 2011 (commander of U.S. Air Force Space Command) 9 May 2011 “Ugly Truth of Space Junk: Orbital Debris Problem to Triple by 2030” quoted by Leonard David, columnist with Space Insider at SPACE.com <http://www.space.com/11607-space-junk-rising-orbital-debris-levels-2030.html> (ellipses in original)

"We catalog those routinely and keep track of them. That number is projected to triple by 2030, and much of that is improved sensors, but some of that is increased traffic," Shelton said. "Then if you think about it, there are probably 10 times more objects in space than we're able to track with our sensor capability today. Those objects are untrackable … yet they are lethal to our space systems -- to military space systems, civil space systems, commercial -- no one’s immune from the threats that are on orbit today, just due to the traffic in space."

DISADVANTAGE RESPONSES

“US leadership/hegemony in space threatened” – Response: Future of space is commercial, not nation-state oriented.

Dr. Ronald E. Turner 2015 (PhD; *Distinguished Analyst at Analytic Services Inc*) 6 May 2015 Should the United States Cooperate with China in Space? <http://www.anser.org/babrief-us-china-space-coop>

The emerging commercialization of space exploration may mute the public relations value of a go-it-alone human space exploration program for any nation. The United States is encouraging this expansion by actively supporting commercial access of both crew and cargo to the ISS. It is possible, if not yet likely, that a future human habitat on the Moon may have a commercial venture logo, rather than any national flag.

“Losing US space leadership” – Response: It’s already declining, and excluding China makes it worse

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

The reality is that space, as with other areas of international relations, will likely be a multipolar environment in the future. America’s unipolar moment is over, and as long as it is reluctant to work with rising partners such as China, the perception of its space leadership will continue to decline as well.

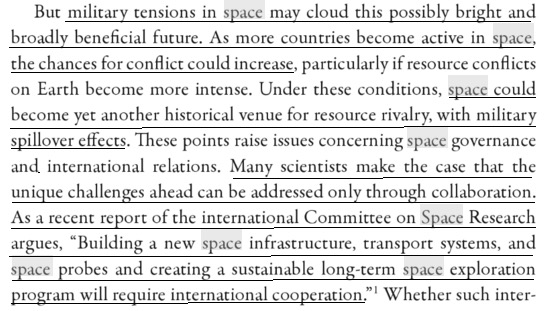
“Lost US leadership/hegemony in space” – Response: Non-unique, we already lost it. Turn: US tech sharing restrictions accelerate the decline

Dr. Ronald E. Turner 2015 (PhD; *Distinguished Analyst at Analytic Services Inc*) 6 May 2015 Should the United States Cooperate with China in Space? <http://www.anser.org/babrief-us-china-space-coop>

The United States is still the world’s preeminent spacefaring nation. Its military and civil space programs are the best-funded and most technologically advanced in the world. However, the rest of the world is catching up in most areas, and leads in some. Continued restriction of space technology exports in general, and to China specifically, has created economic incentives for other nations and private enterprises. The U.S. human space exploration program is widely seen as lacking vision and commitment, in spite of demonstrable progress via the ISS and development of a new heavy lift launch vehicle and a new deep-space spacecraft.

“Risk to US military dominance in space” – Response: Cooperation is key to reducing military risk

Prof. James C. Moltz 2014 (US Naval Postgraduate School, Monterey, Calif.) CROWDED ORBITS <https://books.google.com/books?id=nsbbAgAAQBAJ&pg=PA210&lpg=PA210&dq=Dolman+space+security&source=bl&ots=6_abHG3cv1&sig=3zWBEppBf5injP9aIBtoxiBZ69M&hl=en&sa=X&ved=0ahUKEwiKk97j6-PKAhWFOCYKHbjzBDoQ6AEIWjAJ#v=onepage&q=Dolman%20space%20security&f=false>



“China has human rights issues” – Response: Space cooperation shouldn’t be linked to human rights. Turn: Isolation reduces opportunities for dialog

Dr. Ronald E. Turner 2015 (PhD; *Distinguished Analyst at Analytic Services Inc*) 6 May 2015 Should the United States Cooperate with China in Space? <http://www.anser.org/babrief-us-china-space-coop>

-China’s government does not respect basic human rights for its people  
The United States has a long history of engaging its enemies to pursue change. The most recent example is the about-face in the U.S. relationship with Cuba. Isolation complicates opportunities to have effective give-and-take dialogue. Even when the broader posture is to restrict trade or other exchanges, at times the United States has made space or science an exception, thus opening doors to an adversary and providing valuable ways to learn more about how the other side perceives the United States and the motivations and actions it uses to counter the United States. A classic example is U.S.-Soviet cooperation in the 1970s, which gave the United States valuable insight into the tightly closed Soviet space industry.

“Need to punish China for communism and human rights issues” – Response: It’s not working and hurts US interests

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) 7 Aug 2015 “US-China Civil Space Dialogue” THE DIPLOMAT <http://thediplomat.com/2015/08/us-china-a-civil-space-dialogue/>

It has repeatedly been demonstrated though that sanctions, denying a country “things” that it wants, only works when all countries possessing whatever the desired thing cooperate in denial. If the rationale for snubbing China is to deny it space-related technology, it should be considered that other space-faring nations do not share U.S. views toward China. Other Western countries have shown themselves eager to work with and sell to China, with restrictions and enforceable controls on dual-use technology, negating the effectiveness of U.S. actions. That leaves only defending the moral high ground – the U.S. as a democracy doesn’t work with communist authoritarian governments – as a rationale for the Congressional position. Sometimes, however, realism isn’t pretty, as it fundamentally involves acting in your own best interests. And while the United States would like to always work with countries sharing its values, in pursuing those interests that has not always proven possible, witness Iraq under Saddam, Iran under the Shah, and numerous other examples. Further, as President Richard Nixon showed with China and Ronald Reagan demonstrated during his second term with the Soviet Union, diplomacy does not equate to appeasement, as seems currently to be the popular Washington beltway interpretation.

“Chinese aggression in space” – Response: China isn’t the Soviet Union and limiting our options won’t help, regardless of China’s intentions

Dr. Joan Johnson-Freese 2015 (Professor of national security studies at US Naval War College) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

Regardless of whether Chinese intentions are merely ambitions or more nefariously aggressive, the United States must use all tools of national power – not just those related to deter, defend and defeat – to achieve the space-related goals set out in the NSS, the NSP and the NSSS. Congressman Wolf’s statement largely restates the reasons most often used for why the United States should not working with China on space issues - technology transfer concerns, values, and nothing to gain – thus limiting U.S. policy options necessary for achieving stated policy goals. Additionally, especially among those who grew up during the Cold War, there is a tendency to equate China with the Soviet Union, despite the vast difference between them and in the context of today’s globalized world versus the post-World War II world. Limiting U.S. options has never been in U.S. national interest and isn’t on this issue either.

“Technology leakage” – Response: China developed its space program without US technology and despite tight controls

Dr. Alanna Krolikowski 2015 (Princeton-Harvard China and the World Fellow, Fairbank Center for Chinese Studies, Harvard Univ.) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

If these three factors - resources, vision, and volume - are the main factors behind the success of China's programs, it follows that China's advance in space is a largely domestic process. It also follows then that the major factors driving China's progress in space activities are beyond the reach of U.S. policymakers. Even if U.S. policymakers seek to affect China's pursuit of space capabilities, the tools with which they could pursue this goal are few and limited. The most important of these tools, export controls, is already used to the fullest. U.S. export control policy decisions have undoubtedly had impacts on Chinese space activities. But these impacts were felt over a decade ago. Today, China's space establishment, like the U.S. space establishment, has adjusted to an international landscape shaped by tight U.S. controls on space items - or at least tight U.S. controls on the legal trade in space items.

“Technology leakage” – Response: US export controls have not stopped China’s space program

Dr. Alanna Krolikowski 2015 (Princeton-Harvard China and the World Fellow, Fairbank Center for Chinese Studies, Harvard Univ.) HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION, ONE HUNDRED FOURTEENTH CONGRESS, FIRST SESSION, 18 Feb 2015 <http://origin.www.uscc.gov/sites/default/files/transcripts/February%2018%2C%202015_Transcript.pdf>

Whether or not U.S. policy has in fact had the hindering effects identified by Chinese experts, China has achieved an impressive record of national firsts in space technology while U.S. export controls have been in place. Further complicating the assessment is the fact that China’s high-technology industries have made significant advances both in areas that are tightly export-controlled, such as space technology, and in areas that are more loosely controlled, such as aeronautic technology.

1. <http://www.spacequotations.com/earth.html>. *Christiaan Huygens,*The Immense Distance Between the Sun and the Planets*, 1698* [↑](#footnote-ref-1)