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SHOULD THE WOLF AMENDMENT BE REPEALED?

Dan Hart and Dean Cheng

with Introduction and Conclusion by Brian Weeden of The Aerospace Corporation

This paper is part of a series published by the Center for Space Policy and Strategy called "The Debate Series." Each of these papers includes two essays written by analysts and pundits external to The Aerospace Corporation who hold different positions from one another. After having written their essay, the external authors had the opportunity to review the opposing essay and offer a rebuttal. Although these essays do not necessarily reflect the views of the Center for Space Policy and Strategy, the center is publishing these essays to clarify debates on important space policy issues and to try and make them accessible to a broader audience.

Introduction

Brian Weeden

In 2011, a relatively small addition was made to the annual appropriations bill from the U.S. House of Representatives Appropriations Subcommittee for Commerce, Justice, Science, and Related Agencies. The language prohibited the National Aeronautics and Space Administration (NASA) and the White House Office of Science and Technology Policy (OSTP) from spending money on any bilateral "policy, program, order, or contract of any kind" or to "participate, collaborate, or coordinate bilaterally in any way with China," including Chinese government agencies as well as any Chinese-owned company.[1] In addition, no government funds could be used to host Chinese visitors or facilitate visits of Chinese nationals to any NASA facilities. The language, which permitted some exceptions based on certifications that activities posed no risk of technology transfer, was inserted by the then-chair of the subcommittee, Representative Frank Wolf (R-VA). The addition would become known as the *Wolf Amendment.*

At the time the Wolf Amendment was put in place, the United States had just completed assembly of the International Space Station (ISS), the flagship program of international space cooperation that brought together both allies and former adversaries in peaceful space cooperation. Four years earlier in October 2007, the Chinese vice minister of science and technology had expressed interest in participating in the ISS program.[2] China had successfully orbited its own astronauts in 2003, becoming the third country to independently do so after Russia and the United States, and had rapidly expanded a broad range of space activities. However, some of those

activities, most notably China's destructive anti-satellite test in February 2007, generated global concerns about its intentions in space. Outside of space, Washington was also still trying (through multiple lines of effort) to nudge China's development in the direction of a non-adversarial capitalist democracy and to address human rights abuses; space cooperation was considered by some an important part of that effort.

Nearly 15 years later, the Wolf Amendment remains in place and has become a hotly debated issue as the space relationship between the United States and the People's Republic of China (PRC) has grown in significance. Subsequent appropriations have not only kept it in place but also added the National Space Council to the list of covered entities and required the Federal Bureau of Investigation (FBI) to review any certification made for an exemption.[3] The debate over the Wolf Amendment reflects many of the core geopolitical and philosophical issues at the heart of the debate over the broader U.S.-China relationship. Is space cooperation a diplomatic tool that can shape the relationship between two adversaries to avoid war, or is cooperation a byproduct of an existing positive relationship? To what degree, if any, is it possible to steer a rising power's internal policies and intentions towards peaceful coexistence with an established power, or are the two countries destined to become adversaries? Is outer space a domain that can bring out the best aspects of humanity and shape our collective destiny for the betterment of future generations, or is it just another domain in which we play out our millennia-old tendencies for conflict and conquest?

The following essays address these questions by offering contrasting views on whether to repeal the Wolf Amendment.

Dan Hart is a veteran of some of the biggest and most influential "old" and "new" space companies; his commentary below favors *repealing* the amendment. Hart argues the Wolf Amendment has not accomplished the goals it was created to achieve—incenting China to alter its record on human rights or hindering China's technological development in space—and has in fact been counterproductive by accelerating China's development of a robust indigenous space program that is now seen as a threat to the United States' soft and hard power in space. Hart further argues the Wolf Amendment has added more bureaucracy and waste to an already burdensome system of federal government restrictions on space and other advanced technologies, ultimately hindering scientific advancement and commercial innovation. Hart expresses concern that the Wolf Amendment has narrowed the range of available diplomatic options that could help steer the U.S.-China relationship away from one of outright conflict in outer space, an outcome that would have devastating consequences for both sides as well as the entire world.

Taking the opposing stance is Dean Cheng, an analyst on Chinese political and security affairs, including the technological implications of its space program and the dual-use issues associated with China's industrial and scientific infrastructure. Cheng argues that the Wolf Amendment should be *retained* because it prevents against excessive optimism that space cooperation can shape Chinese behavior in a desirable direction. Cheng discusses the origins of congressional distrust with previous White House efforts based on such thinking and notes that the restrictions put in place by the Wolf Amendment are narrowly bounded, leaving open plenty of other avenues for bilateral and multilateral engagement with China. Moreover, Cheng questions the evidence that China is interested in peaceful cooperation with the United States in space (should the Wolf Amendment be repealed) and argues any effort to do so would entail cooperating with the Chinese military, which has an outsized role in China's space efforts. Cheng ultimately argues that more civil space engagement with China should *follow*, not lead, real changes in the PRC's expressed intentions and actual behavior.

Each of these authors was selected to contribute to this debate because of his unique perspectives as an analyst and businessperson, both of which offer different but useful worldviews on this complex issue. Their written arguments are presented here in no preferential order, followed by their rebuttals.

◄◄ Argument That the Wolf Amendment Should Be Repealed

Dan Hart

The Wolf Amendment is a self-imposed obstacle that should be quietly disposed of. The amendment created additional bureaucracy and over-politicized any space engagement between the United States and China. The Wolf Amendment's main effect has been to all but remove space diplomacy from the United States' toolset for managing its most important, complex, and fraught relationship with an adversarial peer competitor. In its place, the United States should engage with China on a new, bilateral agreement to further joint space science and exploration in ways that benefit U.S. interests and in the context of that agreement, the Wolf Amendment should be retired.

Long-Forgotten Conflict and Unintended Consequences

The Wolf Amendment is a vestige from an earlier time that has taken on a life of its own. It originated from a personal dispute between then-Congressman Frank Wolf and leaders at OSTP and NASA about a fact-finding trip to China to explore potential joint U.S.-China civil space activities. The trip was supported by the Obama White House; Congressman Wolf objected to it. In a public webinar in 2021, the NASA administrator at the time, Charles Bolden, recalled that, upon his return from China, Congressman Wolf told him, "he [Congressman Wolf] was going to make us pay," and the Wolf Amendment was hastily born.[4]

The Wolf Amendment has not succeeded in accomplishing its goals. It has not slowed the pace of China's space efforts, and it arguably has, in part, achieved just the opposite. Nor has it motivated human rights improvements: there is no sign that the withholding of space cooperation has incented China to change their policies. At the same time, denying China any participation in the International Space Station or other U.S. space programs has inadvertently strengthened China's resolve to develop their own independent and competitive station. Instead of being a partner in the ISS, China now has the Tiangong Space Station in full operation. Beyond low-Earth orbit, China is establishing a China-led International Lunar Research Station, which is being developed completely independently from the U.S.-led Artemis program and with its own set of partner nations.

Creating More Bureaucracy and Waste

The current Wolf Amendment language requires that, for nearly all bilateral interactions between the covered federal entities and any Chinese entity, no matter the subject or size, a detailed certification report must be submitted to Congress. The most recent iteration of the Wolf Amendment also requires that the covered entities obtain concurrence from the Federal Bureau of Investigation (FBI), an organization which is not at all known for expertise in space technology. This is a warping of congressional oversight, and it drives Congress well into needless micromanagement. An example of this useless bureaucracy is illustrated by NASA's recent efforts to gain access for U.S. scientists to the lunar rock and soil samples gathered by China's Chang'e 6 lunar sample return mission.[5] The Wolf Amendment required NASA to certify to Congress, and gain concurrence from the FBI, that obtaining access to lunar samples for study by U.S. scientists would not constitute a threat to national security.

What was the point of such an exercise? Was anyone truly concerned that allowing our scientists to receive lunar rocks from China would possibly compromise national security? Are we to believe that the leadership at NASA is unable to follow well-established technology protection policy and make reasonable judgements without being policed by Congress on a contract-by-contract basis? Do we somehow think that the extensive security apparatus already supporting those agencies is incapable of implementing the security protocols needed to protect sensitive technology? If there were serious doubts about these core competencies, one would expect immediate action be taken to fix the root cause of the problem instead of overlaying reviews, policing functions, and certifications.

Missing the Big Picture

The Wolf Amendment does little to secure U.S. technology and it is largely redundant to the technology regulatory framework that is intended to do so. While it binds the hands of NASA, it has no jurisdiction over countless U.S.-China collaborations taking place nearly every day. For instance, the amendment does not cover the

more than $700 billion of annual commercial trade between the two countries, trade that is transacted by thousands of companies, many of whom produce highly sophisticated, technically advanced products. The amendment also has very little effect on activities of the multitude of U.S. universities engaged in cooperative agreements and exchange programs with China. And finally, the Wolf Amendment does not have jurisdiction over the myriad of U.S. government agencies beyond OSTP, NASA, and the National Space Council that interact with Chinese organizations, such as the Federal Aviation Administration, the National Oceanographic and Atmospheric Administration (NOAA), or even the Department of Defense (DOD).

To be clear, there is a disturbing history of U.S. innovation and defense-related technology leaking into China that requires our diligence. However, there are other much more efficient and effective mechanisms in place to address them than by Congress reviewing contracts. Maintaining and improving these primary policies and regulations is where Congress and executive branch agencies should put their full focus. Commercial technology transfer policy is mainly managed via regulations under the auspices of the Department of State and Department of Commerce. For military-related technology, the International Traffic in Arms Regulations (ITAR) guards against transfer of the most sensitive weapons-related information, while Export Administration Regulations (EAR) safeguards against transactions involving other less-damaging, dual-use goods and technology. Nearly every space technology and system already falls under one of these two export control regimes.

For all federal agencies, the U.S.-China Science and Technology Cooperation Agreement provides the U.S. policy for U.S-.China interaction.[6, 7] At the heart of the agreement is the Critical and Emerging Technologies List Update, which was updated in February 2024 and clearly identifies the technologies that must be excluded from any U.S. agency agreement with a Chinese entity.[8] The National Science and Technology Council was charged with constructing the list in consultation with a wide variety of other agencies. Each agency identified the sensitive technologies that need to be protected to either safeguard U.S. national security or to protect U.S. leadership in emerging technologies. The Critical and Emerging Technologies List provides direction to all U.S. agencies in their dealings with their Chinese counterparts. With all of these other regulations in place, the Wolf Amendment is redundant and superfluous.

Losing the Benefits of Engagement

Aside from this duplication of effort, the biggest effect the Wolf Amendment has is its chilling effect on all forms of U.S.-China engagement on civil space matters. The benefits of engagement between the United States and China in space, even short of full programmatic cooperation, are many. They span everything from advancing state-to-state diplomacy to providing options for enhancing the safety of astronauts, and accelerating humanity's understanding of our planet, solar system, and beyond.

As an example—as we venture further, to the Moon, Mars, and beyond, contingencies and backup options will become more and more vital for astronaut safety. Both the United States and China are signatories of the international treaty on the Rescue and Return of Astronauts, which pledges all states' parties to provide any help possible to any astronaut in distress.[9] But the complexity of space travel and systems makes it highly unlikely that astronauts from separate nations could effectively provide aid without sustained engagement between countries at technical and operational levels. For instance, how would a Chinese astronaut connect and supply the right pressure to provide oxygen to an American astronaut in distress without first having the right connecting gear and knowing the pressure settings?

Despite the acrimony of the U.S.-U.S.S.R. Cold War and the active military space considerations and planning of the time, leaders on both sides strove to counter military conflict by pursuing a higher ideal. In President Lyndon B. Johnson's letter to the Senate in 1967, he observed that those "who have worked together to reach the stars are not likely to descend together into the depths of war and desolation."[10] Currently there are virtually *zero* joint U.S.-China space science and exploration projects, while the broader U.S.-China relationship slips closer to crisis. Tensions over Taiwan, the South China Sea, the Russia-Ukraine War, and countless other issues have created another de facto Cold War. Yet missions like Apollo-Soyuz and the development and operations of the International Space Station have provided the world with

vivid reminders that different nations with conflicting perspectives can unite to accomplish common goals. These examples stand as powerful symbols and result in what has often been described as "soft power." Each joint project gives rise to personal and organizational connections as well as broader public awareness, which can help to bridge geopolitical divides. But by making each and every cooperative activity between the Chinese National Space Administration (CNSA) and NASA literally an act of Congress, the Wolf Amendment effectively eliminates gradual engagement and subtle space diplomacy, substituting instead the public spectacle and paralyzing effects of Congressional grandstanding.

This is not to suggest that we should ignore China's military activities in space and their burgeoning national security space capabilities. The United States should be prepared for worst-case scenarios, including for a potential armed conflict that extends into space.

Yet the broader goal continues to be avoiding conflict in the first place, and diplomacy is a key avenue that can lead to agreements on norms of behavior in space to prevent mistakes, misperceptions, and miscalculations that could escalate to war. Former Secretary of Defense James Mattis said it well in that his "real job description….is how do you keep the peace one more year, one more month, one more week, one more day, one more hour, so the diplomats can work their magic, our allies can work with us, and we keep another tragedy of war from breaking out."[11] The near elimination of any U.S.-China engagement in space science and exploration under the Wolf Amendment takes an important tool, a piece of the "diplomatic magic" Mattis was referring to, out of the hands of the diplomats.

Repealing the Wolf Amendment

Given the above, it's clear that the Wolf Amendment should be repealed. However, the amendment has been a part of U.S. policy for over a decade, and in the current climate, a unilateral repeal by the United States would be viewed as a concession to the PRC. Therefore, the best path forward would be for the United States to encourage bilateral dialogue with the aim of increasing engagement and establishing new, possibly minor, agreements on areas such as effecting in-space rescue, exchanging data from respective scientific missions, and developing international standards for future lunar infrastructures. Of course, these initiatives hinge upon Beijing's willingness to participate. Washington and Beijing need to take a step forward together and only following that moment Congress finally should strike down the Wolf Amendment.

▶▶ Argument That the Wolf Amendment Should Be Retained

Dean Cheng

For many in the space community, the Wolf Amendment has become a *bête noire*, blamed for many of the perceived faults and challenges with the U.S.-China relationship in space. A close examination of the amendment and how it actually operates reveals that many of these complaints are off-base and do not address the real issues that actually bedevil U.S.-China space relations.

Debates over Congressional Oversight and Executive Authority

In 2010 and 2011, then-President Barack Obama sought to expand contacts and ties with the PRC. One of the avenues under consideration was through cooperation in space. Congressional Republicans, including Representatives John Culberson and Frank Wolf, clashed with administration officials over this policy, ultimately leading to what became known as the "Wolf Amendment." Part of this action was rooted in concerns about Chinese human rights violations. Representative Wolf was well known as a champion of human rights concerns and felt that interacting with the PRC on space issues, given their abysmal human rights track record, was sending the wrong signal.

President Obama's initial conciliatory attitude toward Beijing also raised bipartisan alarms. The president's refusal to meet with the Dalai Lama during his 2009 visit had drawn fire from then-Speaker of the House Nancy Pelosi, as well as Republicans. This was exacerbated by questions of executive and legislative authorities.[12] Congress had previously challenged the administration regarding scientific exchanges with the Chinese. NASA administrator Bolden refused to brief Congress on his visits to China, which led to the original Wolf Amendment. Dr. John Holdren, then-head of OSTP, subsequently deliberately conducted meetings, spending some $3,500 in the process, to challenge congressional authority in this regard, on the grounds that foreign affairs is an executive, not legislative, responsibility—after which Congress effectively responded to Holdren by relying on its unquestioned "power of the purse" to reduce the budget for OSTP and reinforce the restrictions in the Wolf Amendment.[13]

Other Avenues for Engagement

It is important to note that the Wolf Amendment *does not pose an absolute prohibition on contact* between U.S. space organizations and the PRC.

First, the amendment in its current form applies only to NASA, OSTP, and the National Space Council. These are not the only U.S. federal agencies with space responsibilities. The Department of Commerce, through the National Oceanic and Atmospheric Administration (NOAA), also has extensive space responsibilities. Indeed, NOAA has often had contacts with Chinese space counterparts in its work on space weather and space-based data for meteorology and forecasting on Earth. Similarly, the U.S. military has a significant space capacity. The 18th Space Defense Squadron keeps track of all human-generated objects in Earth orbit and regularly provides advisories on potential conjunction events—including to the PRC.[14]

Second, the amendment applies to bilateral contacts only. NASA officials have engaged Chinese officials within multilateral institutions and at international conferences, such as the United Nations and the International Astronautical Congress, without violating the law.

Third, the amendment specifically notes that, "the limitations described…shall not apply to activities which the covered entities have certified pose no risk of resulting in the transfer of technology, data, or other information with national security or economic security implications to China or a China-owned company." There have been cases where NASA has, in fact, both sought and obtained certification to allow bilateral contacts with the PRC.

In this last regard, it should be noted that the limitations imposed on these space entities are similar to those imposed on the DOD, and the Wolf Amendment is consistent with the broader effort to limit Chinese ability to access American knowledge and capabilities. For example, since the FY2000 National Defense Authorization Act (NDAA), Congress has prohibited the Secretary of Defense from authorizing any military contact with the Chinese People's Liberation Army (PLA) that might lead to "inappropriate exposure" across 12 operational areas. These include:

- Force projection operations
- Nuclear operations
- Advanced combined arms and joint combat operations
- Logistical operations
- Chemical and biological defense capabilities and other aspects related to weapons of mass destruction
- Surveillance and reconnaissance operations
- Joint warfighting experiments and military transformation
- Military space operations
- Arms sales and military technology transfers
- Release of classified or restricted information
- Access to DOD national laboratories
- Other advanced capabilities[15]

NASA is expected to behave much like other government agencies with regard to what is now widely considered the "pacing threat" confronting the United States.

Nonetheless, there are many who still question the Wolf Amendment's utility. One example is a 2019 essay that explicitly denounces the Wolf Amendment as a "bad idea," arguing that the amendment has "incentivized China to accelerate its space development programs," apparently being a factor in "creating a serious challenger to U.S. leadership in this vital domain of exploration."[16] [16] Moreover, the essay argues, the amendment has "neither discouraged Chinese space ambitions nor altered China's behavior on human rights." Instead, the essay suggests that eliminating the Wolf Amendment and promoting U.S. space cooperation with China could have several benefits; the two most often cited are that it would allow the United States to better understand the goals and capabilities of the Chinese space agency and it would establish avenues of communication and trust.

This set of arguments is premised on several problematic assumptions. In the first place, the United States maintains any number of policies based on China's poor human rights record, including sanctions imposed after the Tiananmen massacre of 1989. There are few proponents of relieving any of those sanctions or altering those policies, even when they've been in place longer than the Wolf Amendment, and it is not clear why the threshold for relief should be different in the realm of space activities.

While it is true that the Wolf Amendment has not discouraged Chinese space ambitions, it is not clear that there is ***any*** American policy that could have had such an effect. This is because the Chinese space program has been a national priority, backed by China's leaders, since the inception of the Space Age. In 1958, Chinese paramount leader Máo Zédōng declared, "We too should produce man-made satellites."[17] For the PRC, space is a strategic domain, and the space industrial sector is a central part of expanding China's "comprehensive national power." There is nothing the United States can do to prevent that, especially given the rapid growth of China's indigenous space economy, so making this a metric of success for any U.S. policy, not just the Wolf Amendment, is a fool's errand.

For the same reason, to claim that the Wolf Amendment's prohibitions incented China to become "a serious challenger" to U.S. space capabilities is to badly misread longstanding Chinese motivations, Chinese programs, and China's own stated goals. China's space efforts predate the Wolf Amendment and include its anti-satellite capabilities, notably demonstrated publicly in 2007 but which certainly started much earlier. The Chinese efforts in space are no more a response to the Wolf Amendment than they are a response to U.S. export controls on aerospace systems, which have been in place since the early 2000s. Thus, if the assessed "badness" of the Wolf Amendment is founded on questionable assumptions, the assessed benefits of repealing it are equally problematic.

Does China Even Care about Cooperation?

Opponents of the Wolf Amendment argue that it is an obstacle to mutual understanding. But this begs the question of whether the *Chinese* are interested in promoting this greater mutual understanding. The Chinese space program is perhaps the most opaque in the world, far less transparent than even the Soviet space program during the Cold War. Even such basic data as the overall level of Chinese space expenditures is a mystery. How China's space program is managed, the relationship between the CNSA and the PLA, and other operational

concerns are all deliberately obscured. None of this is the result of the Wolf Amendment but it is integral to Chinese efforts to prevent outsiders from understanding Chinese policymaking. The PRC does not place the same emphasis as the West does on transparency; indeed, one argument the PRC still makes is that "it is not for the weak to reveal to the strong," where they see themselves as the weaker party relative to the United States.

Another serious obstacle to the notion of better U.S.-China cooperation in space is exactly with whom on the Chinese side we can cooperate. The CNSA is not the bureaucratic counterpart to NASA, despite Chinese efforts to portray it as such. Indeed, with regards to programmatic management and facilities staffing, the PLA plays an outsized role. This raises the fundamental question of whom, exactly, would NASA *actually* be cooperating with should the Wolf Amendment be rescinded?

As for building trust, Chinese behavior with regard to confidence-building measures in other national domains gives little reason to believe that things would be different in space. Chinese ships and aircraft have behaved in dangerous, "unprofessional" manners despite multiple forums and protocols, including the Military Maritime Consultative Agreement (MMCA) and the Code for Unplanned Encounters at Sea (CUES).[18] Chinese behavior in the South China Sea toward American, Australian, and Philippine vessels suggests little interest in obtaining more understanding or in reducing tensions.

Nonetheless, opponents to the Wolf Amendment argue that, if it were removed, avenues could be established for greater communications and cooperation. In the wake of the revelations of Volt Typhoon[19] and Salt Typhoon cyber penetrations of critical U.S. telecommunications infrastructure, both ascribed to the PRC,[20] would greater communications and cooperation include allowing emails, text, and data access between the United States and the PRC? Would those who advocate for this policy be comfortable taking their own computers, cell phones, and tablets to the PRC or vice versa? Or what about allowing their Chinese counterparts to bring their computers, cell phones, and tablets into American space facilities?

In conclusion, advocates for repealing the Wolf Amendment center their arguments on the hopes that increased U.S.-China space cooperation will reduce overall tensions, facilitate greater cooperation, and perhaps even induce the PRC to become more transparent in their space activities. But the patterns of Chinese behavior, whether in space or terrestrially, suggest that these expectations are the ultimate of hope over experience. The PRC has shown no indication of becoming more transparent in any strategic domain. Space cooperation has typically been a lagging indicator, that is, it is the *consequence* of reduced tensions, rather than the motivator. Ironically, few believe that greater space cooperation will affect China's human rights policy, the original motivation for the amendment.

◄◄ Rebuttal to the Argument that the Wolf Amendment Should Be Retained

Dan Hart

Missing in Cheng's argument is any recognition of the United States' interest in an improved U.S.-China relationship, and the role that space science and exploration can play in support of that objective. Cheng argues to maintain the status quo, even as every administration over the past 15 years, including the present administration, has sought to forge a better deal for the United States with China. With its strong symbolic value, space cooperation can be a powerful ingredient in a healthier future state of relations between the two space powers.

Another salient objective is the reduction of unnecessary bureaucracy. My research on this topic has found bipartisan agreement that the Wolf Amendment is a clear example of congressional overreach and is largely redundant with existing regulations regarding technology protection. Yet the amendment is also ineffective as its review requirement does not include the several key organizations the United States relies upon to both manage the U.S.-China engagement and gauge risk to national security. Superfluous and wasteful, the Wolf Amendment is an example of poor governance.

Cheng correctly points out that the Wolf Amendment does not completely prohibit NASA, OSTP, and the National Space Council from engaging with Chinese organizations. However, he does not recognize the amendment's effect on the government bureaucracy and its leadership. The process it imposes on NASA heightens the risk that members of Congress will politicize proposals and budget negotiations. Coupled with the extra leadership time and staff work required, it heavily discourages NASA leadership from proposing U.S.-China projects, no matter how useful they may be, which has led to the current near-zero civil space engagement with China.

Finally, Cheng's assertion that space cooperation is a lagging indicator is incorrect. Space science and exploration are aspirational by nature, and leveraging them for increased global engagement, even with adversaries, has always been a core tenet of civil space programs. Multiple U.S. presidents of both parties, scientific leaders, and space visionaries have all expressed this vision. This same aspiration drove negotiations in the middle of a bitter and dangerous Cold War to yield the Apollo-Soyuz handshake in space and drove the current ISS partnership that cemented America's current global leadership in space.

▶▶ Rebuttal to the Argument that the Wolf Amendment Should Be Repealed

Dean Cheng

Hart starts with the argument that the Wolf Amendment has led to an independent Chinese space station and an increase in Chinese soft power. But Chinese documents detail the development of a Chinese space station as the third part of Project 921, the Chinese overall development effort for human spaceflight. The number "921" refers to "January 1992," when the program was initiated nearly 20 years before the Wolf Amendment was passed. As the Chinese Manned Space Agency notes on its own website, a Chinese space station was envisioned when the program was formally inaugurated on September 21, 1992.[21]

Beyond this, Hart's arguments focus on the ideal of expanding space cooperation with the PRC, but this begs the question of whether this is an appropriate goal. For example, Hart cites the ISS as an example of space cooperation demonstrating how to bring different nations with different goals together. But the ISS came about only *after* the collapse of the Soviet Union, reinforcing that space cooperation is typically a lagging, not leading, indicator of broader interstate relations.

More importantly, Hart argues that repealing the Wolf Amendment is necessary to allow greater cooperation with the Chinese space program. His argument makes no mention of the omnipresent role the PLA has in China's "civil" space program. All of China's space infrastructure is staffed by the PLA, such as China's Manned Space Engineering Office, which is led by a senior PLA officer who also heads the PLA's Equipment Development Department.[22] Cooperating with China in space will inevitably mean cooperating with the PLA, the same PLA that also conducts a variety of cyber espionage operations against the United States government and its industry.

Thus, the debate about the Wolf Amendment is really a debate about expanding cooperation with the PLA in space. Those who advocate for this expansion owe it to their readers to explain how they plan on interacting with the Chinese military and maintaining security over American space information systems, data, and personal information.

Conclusion

Brian Weeden

Over the last few years, the United States and China have emerged as the dominant global space powers. Both are currently leading coalitions of countries to return humanity to the Moon, with the intention of building a permanent presence that serves as a launching pad for the first human presence on Mars. At the same time, both countries are developing or upgrading a broad range of national security space capabilities that they can leverage in a potential future armed conflict against each other, as well as counterspace capabilities that can be used to deny the other its own use of space in such a conflict. Meanwhile, both countries see their burgeoning commercial space sectors as a key source of innovation and economic growth that will enable their future vision of space economic growth and development to come true.

Thus, the nature and evolution of the U.S.-China relationship is arguably the most important determinant of whether humanity can ever achieve the oft-cited vision of outer space as a peaceful domain of human expansion and progress. The positions and rebuttals contained in this debate represent two conflicting, and perhaps irreconcilable, perspectives on the nature of that relationship and the prospects for shaping it in a positive direction. They agree that any U.S. policy intended to discourage or to dissuade China from becoming a space power is doomed to fail, but the conclusions differ on the importance and feasibility of U.S.-China civil space collaboration in shaping the bilateral relationship and as to whether cooperation is a leading or lagging indicator of the state of the overall relationship. Yet, despite the challenge of reaching agreement on even the fundamental concepts of this debate, the salience of the U.S.-China relationship in space means we must continue to try and find a path forward that avoids the worst-possible outcome.

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