
Viewpoint

Seeking a Better Approach to Space Security

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Outer space is a territory that remains unconquered by mankind but will play crucial role in its future. In particular, the management of outer space is increasingly tightly linked to international security. With the rapid development of advanced technologies and the increasing blurring of civilian and military technologies—particularly with the extensive use of satellites in high technology warfare—space security and its relationship to global stability has become a major topic of debate in the international community. How to achieve space security, however, is a very contentious issue, on which views are sharply divided.

Outer space is the common heritage of mankind. Space exploration not only promises huge economic benefits, but it also contributes directly to changes in people's lifestyle and mindset. It is a clear trend therefore that states are increasingly dependent on activities in outer space to pursue their economic, cultural and social development, as well as ensure their security. Over the past half-century, mankind has taken great strides in space exploitation and achieved major progress. As a result of this process, human society and outer space are becoming increasingly inseparable. The use of outer space has become part and

parcel of the everyday activities of many states in a wide variety of areas, such as telecommunications, navigation, meteorology, and remote sensing. What is particularly worth mentioning is that space technology has become the key in high technology development. It has been driving the growth of other related technologies. And as a result, continuing secure access to space has become a necessity for economic, social, and cultural development.

But developments since the end of the Cold War threaten to undermine the peaceful use of space. In particular, U.S. plans to establish and maintain "dominance" of outer space will likely trigger a new round of instability and arms racing. This viewpoint discusses some of the challenges facing the international community as it attempts to manage the future development of outer space, the common treasury of mankind. It analyzes the problems likely to be caused by current U.S. policies, and concludes by arguing that the most desirable and feasible way to ensure space security for all nations is the conclusion of a legally binding international agreement banning the weaponization of space.

NEW CHALLENGES TO SPACE STABILITY

The importance of space has been clear for several decades, and even early space activities gave rise to intense competition among states, particularly between the two superpowers during the Cold War. The U.S.-Soviet rivalry found especially clear expression in the military field, which threatened to spill over into outer space. Faced with the looming escalation of this superpower competition, other states realized the risk of weaponization in outer space, which would turn it into another arena for the arms race. This understanding led to a consensus that steps must be taken to prevent such an outcome. Owing to their joint efforts, the members of the international community succeeded in working out legally binding agreements to regulate space activities, with the aim of preventing the proliferation of weapons of mass destruction (WMD) in outer space. These legal instruments, which included treaties like the Limited Test Ban Treaty (1963) and the Outer Space Treaty (1967) among others, codified some important principles, such as the protection of space vehicles, international liability for damage caused by space objects, confidence-building measures, prohibition of the placement of nuclear weapons or other WMD into orbit around the earth or on celestial bodies, prohibition of the militarization of the moon, and prohibition of the development, testing, and deployment of missile defense systems and their components in outer space. Despite some flaws and loopholes, these agreements played an important role in limiting the proliferation of WMD in space. They prevented an arms race in this last common area of future development for mankind, promoting its peaceful exploitation and utilization. As a result, a certain measure of stability emerged in outer space.

The end of the Cold War, however, has dramatically changed the security landscape, and ended what one might term complacency about security in outer space. Technology is the major factor driving the emergence of these new threats. But a significant complicating factor is the unraveling of the bipolar world structure. The collapse of the Soviet Union has left the United States as the only superpower, and it now displays increasing strength and ambition. As a result of these developments, security in outer space is facing major new challenges. If these are mishandled, the resulting fallout could lead to further vulnerabilities in outer space and instabilities on earth.

Three major future challenges have emerged: First of all, the development of dual use space technology has greatly expanded the potential for military utilization of

space. With the development of high technology, the borderline between military and civilian technology is increasingly blurred. This fuzziness is reflected not only in the overlapping of key technologies in the military and civilian fields, but also in the overlapping of future development trends for these different key technologies. Space technologies are a case in point. They can be used to benefit the economic development of all nations; they can also be used to obtain military advantage. In several recent conflicts, the U.S. military has fully employed the potential of space. In the 2003 Iraq War, for example, the United States used more than 100 satellites to provide all kinds of support to its military forces, ranging from gathering intelligence, to enabling global communication, to issuing early warning of hostile missile launches.

In addition, space technologies are enabling the U.S. military to increase its global reach and capability to strike targets in a timely manner. With such space assets, the U.S. military has enhanced its situation awareness capability, on the basis of which it was able to see more distantly, act faster, and attack more directly than the Iraqi troops. All these advantages were fully embodied in the dramatic improvement in the process of Observe-Opinion-Decision-Action (OODA) adopted by the U.S. military on the battlefields in Iraq. Thanks to this fast growing space-based capability, the results achieved have been remarkable: it took almost two days for the U.S. military to finish the process from detecting a hostile target (like a Scud missile) to striking it in the 1991 Gulf War; in the 1999 Kosovo War, the time needed to complete this process was reduced to 1-2 hours; in the 2001 Afghanistan War, the time was further reduced to 19 minutes; in the Iraq War, the time was again shortened to no less than 10 minutes. According to the U.S. military, in future conflicts it will take only 7 seconds to complete this cycle, since the U.S. missiles used against the identified target will be able to automatically adjust their flight path after launch. On the other hand, since the effective use of space assets has become a determinative factor in war, it has now become highly likely that satellites and other space assets could become targets subject to attack or deception during a major conflict. Even primarily civilian satellites will likely be attacked, as they play a significant supplementary and substitute role for military satellites. Thus, the dual use of space technology and the extensive military use of space are in effect pushing further the very weaponization of outer space that the international community has been working so hard for so many years to avoid.

Secondly, recent changes in U.S. space policy are running a great risk of reigniting a new round of competition among the major powers and generating new vulnerabilities in space. Taking advantage of its technological superiority, the United States has taken great pains to put into use all the technologies available as well as to develop new technologies to enhance and integrate its military power. Based on the understanding that the center of gravity of the future battlefield is a effective system of command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), the most critical part of which are all kinds of satellites, the U.S. military is trying hard to establish an integrated battlefield, by further engaging space power into global military deployments.

What merits particular attention is that U.S. space policy appears to aim not only at the heavy use of its space assets, but also at gaining a sole monopoly over the use of space. One can clearly perceive this ambitious motivation in the recently released U.S. military doctrines and guidelines with regard to the use of space. Notions such as “space control” have been unveiled, defined by the U.S. military as the ability to “assure freedom of action in space and deny same to the enemy.”² Accordingly, the U.S. Department of Defense is restructuring its space operations. Secretary of Defense Donald Rumsfeld has tasked the U.S. Air Force with being ready for “prompt and sustained offensive and defensive space operations.”

In order to achieve and sustain U.S. supremacy and monopoly in space, the Bush administration is also developing a ballistic missile defense (BMD) program, involving basing missile interceptors in space as early as 2008. In 2003, an official of the U.S. Department of Defense Missile Defense Agency (MDA) stressed the effort to create a so-called space-based test bed, comprising at least three satellites as the preliminary stage of development.³ One component of the BMD program is the Space Based Laser, a prototype of which is slated for testing in 2012. As a number of analysts have noted, however, the use of the Space Based Laser is expected to go far beyond missile defense. According to the system program director for the Space Based Laser, additional uses could include “defense/offensive counter space operations” (i.e. anti-satellite missions); “deny access to space” (for example, knocking out enemy launchers as they blast off); “deny flow of information to/from satellite” (perhaps using low-power beams to disrupt rather than destroy a satellite); “defense/offensive counter-air operations”; and “knocking out high-altitude aircraft, cruise missiles, or

unmanned aerial vehicles.”⁴ Although the effectiveness of the Space Based Laser is unclear, it signals an irreversible trend of weaponization of space. If that trend continues, it will put many of the peaceful achievements of mankind in space at risk.

Thirdly, owing to recent developments related to space, the existing international framework regulating space activities is increasingly unable to address the new challenges of space security. The existing international treaties regarding outer space have obvious flaws and loopholes. The scope of activities prohibited by some of them is quite limited, preventing them from addressing current problems. For example, the 1967 Outer Space Treaty only prohibits the deployment of nuclear weapons and other WMD in outer space, but says nothing about the deployment of other types of weapons. Other legal instruments which had stricter constraints have now ceased to be effective, such as the 1972 Anti-Ballistic Missile (ABM) Treaty. Still other agreements have too few signatories, like the 1979 Moon Agreement. Thus, the present mechanism is too weak to cope with the reality of the accelerating development of space technology, especially the looming threat of weaponization of space. As a matter of fact, neither the development of space weapons (other than WMD) nor the use of these weapons in space are legally banned. This unfortunate situation poses a major challenge the maintenance of space security.

PROBLEMS WITH THE U.S. APPROACH TO SPACE SECURITY

The enthusiasm of the Bush administration for developing U.S. military capability in space has also led it to adopt a hostile attitude toward any proposals for the international community to work out effective measures to prevent weaponization of space while ensuring its peaceful use by all nations. The justification used by Washington is that the United States must act to maintain its security when the technologies are available. But it is clear to many observers that in adopting such an approach, the Bush administration is seeking absolute security for the United States at the expense of the security of all other countries. The question is: Can the United States really achieve this ambitious aim through the weaponization of space? A close appraisal raises strong doubts.

First, it is all but impossible to achieve absolute security. As Karl Mueller, an analyst at the U.S. Air Force School of Advanced Airpower Studies, writes, “the United States would not be able to maintain unchallenged hege-

mony in the weaponization of space, and while a space-weapons race would threaten international stability, it would be even more dangerous to U.S. security and relative power projection capability, due to other states' significant ability and probably inclination to balance symmetrically and asymmetrically against ascendant U.S. power.⁶⁵ In other words, U.S. efforts to obtain military superiority in space may well backfire because of the likely reaction of other states. So, some analysts are wondering if the Bush administration is running after its own shadow—an impossible job.

Secondly, it is impossible for the U.S. to monopolize outer space, since no country is able to monopolize technological superiority forever, particularly in the information age. History is rich in examples of short-lived technological monopolies. At the initial stage of the Cold War, from 1945-49, Washington desperately tried to monopolize nuclear technology. However the U.S. nuclear monopoly lasted only a few years, and was then followed by a fierce nuclear arms race, which produced thousands upon thousands of nuclear warheads, well beyond the requirements of rational defense needs. U.S. actions in space are not likely to escape from such a pattern. Technological diffusion makes it very unlikely that the United States would be able to monopolize the military use of space for anything more than a short period.

A third factor also ensures the United States will not achieve absolute security by militarizing outer space. U.S. steps to militarize space will inevitably lead to a vicious cycle of chain reactions by other states. These reactions, in turn, will generate instabilities that will not be in the best interests of the United States itself. Other space powers, for example, will almost certainly take countermeasures in response to U.S. efforts to monopolize the military use of space, triggering a new round of the arms race in outer space. These reactions will not be limited to those countries that currently have space assets. Countries that lack such assets will fear that the United States could take advantage of its superiority in space to resort to preemption against them. The logical option for them might be to adopt asymmetric response measures, such as the acquisition of WMD. Thus, if the U.S. pushes ahead with its ambitious plans for space dominance, one may find a new warmth by certain nations for WMD. Space systems also always include significant segments on earth, which could be more vulnerable to attack than space assets. These ground-based components could be easy targets for asymmetrical attacks. In the Iraq war, the global positioning system (GPS) played a critical role in U.S. military ac-

tions. But the war also showed that these systems were vulnerable to jamming by the enemy on the ground. As a matter of fact, Iraqi forces did use jammers—reportedly bought from Russia—to achieve some success on the battlefield, which annoyed the Bush administration a great deal. In short, a dynamic analysis suggests that it is highly unlikely that the U.S. effort to dominate the control of space will result in the real security for itself.

Interestingly, the U.S. preoccupation with strengthening its military use of space may seriously jeopardize the prospects for further development of its civilian space technology sector. There are already signs that the U.S. civilian space industry has become victimized and is losing its competitive position vis-a-vis other space powers such as European countries as a result of stringent control of civilian technology transfer implemented by the Bush administration. Such stringent controls are justified by the administration as necessary to prevent the transfer of sensitive dual use technology to countries that are potential adversaries of the United States, however remote the possibility of conflict with them may be. As a result, the U.S. civilian space industry is losing increasingly its market share.

The Bush administration has also argued that because the United States is more dependent on space than any other nation, it must develop predominant military capability to protect its space assets. The contention is that all U.S. military space programs are purely for defense. This position is not very convincing. In the first place, few countries currently have an operational anti-satellite (ASAT) weapon that threatens U.S. satellites or weapons in space. There is little hard evidence that any other country or hostile non-state actor possesses either the technology or the intention to seriously threaten U.S. military or commercial operations in space using space-based weapons. Everybody knows the potential costs of contemplating an attack on U.S. space assets. Contrary to the arguments made by the Bush administration, space powers like Russia, China, and other countries are currently pressing for negotiations on preventing an arms race in outer space at the UN Conference on Disarmament (CD), an effort Washington is opposing. They have neither the interest nor the capability to develop space weapons and engage in a new round of arms race in space.

As a result, many question the validity of the so called the vulnerability of the U.S. space assets. Indeed, if Washington feels vulnerable and threatened in space, what about the other space powers or nations who have nothing to exploit in space? These countries fear about being

threatened by U.S. efforts to weaponize space is completely understandable. After all, the Bush administration is planning not only to develop space systems for defense but also systems for offense that will deny potential adversaries the ability to exploit space forces.

In short, it is very clear that the U.S. approach will lead to a future that is contrary to the desire of the majority of world nations—to ensure the peaceful use of outer space, prevent the weaponization of outer space, and avoid an arms race in outer space. That is why the international community should increase the urgency of calls for immediate actions to put space arms control efforts on the right track. From a Chinese point of view, it is high time that the CD should reestablish an Ad Hoc Committee on Preventing an Arms Race in Outer Space (PAROS) to negotiate and conclude an international legal instrument preventing the weaponization of outer space at an early date. In order to be effective, this international legal instrument should at a minimum include pledges by the signatories:

- not to test, deploy, or use in outer space any weapons, weapon systems or their components;
- not to test, deploy, or use on land, in the sea or atmosphere any weapons, weapon systems or their components that may be used for war-fighting in outer space;
- not to resort to the threat or use of force against any outer space objects;

- not to assist or encourage other states, groups of states or international organizations to participate in activities prohibited by the treaty, etc.⁶

Once such an international consensus has been established through a legally binding document, the international community will have removed one major destabilizing element in the future international security situation. Such an agreement would also go a long way toward building a more stable and peaceful world and ensuring sustained peaceful utilization of space. All peace-loving people have every reason to make concerted efforts to achieve this lofty goal.

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² Theresa Hitchens, "Rushing to Weaponize the Final Frontier", *Arms Control Today* 31 (September 2001), < http://www.armscontrol.org/act/2001_09/hitchenssept01.asp > .

³ Wade Boese, "U.S. Aims to Deploy Space-Based Missile Interceptors in Five Years," *Arms Control Today* 33 (March 2003), < http://www.armscontrol.org/act/2003_03/space_mar03.asp > .

⁴ See Colonel William N. McCasland's speech on briefing at the Huntsville conference July 18, 2001

⁵ Karl Mueller, "Space Weapons and U.S. Security: The Dangers of Fortifying the High Frontier," paper prepared for the 1998 Annual Meeting of the American Political Science Association, Boston, MA.

⁶ See Qiao Zhonghuai, "An Effective Way to Prevent an Arms Race in Outer Space: The Early Negotiation and Conclusion of an International Legal Instrument," presentation at the United Nations Conference on Disarmament at Beijing on April 2, 2002. < <http://www.fmprc.gov.cn/eng/29794.html> > .

