

PREVENTION OF AN ARMS RACE IN OUTER SPACE

Introduction

Outer space is critical to global society. Militaries rely heavily on man-made satellites in orbit around the earth, which are used for communication, targeting and GPS. Societies also depend on satellites for telecommunications and scientific research. All countries rely upon space-based technology in some way, even if they do not travel in space themselves. Due to the global advantage of simply being in space and the unique dangers space weapons pose, a debate has emerged over the past few decades on *whether militaries should be allowed to station weapons in orbit, and what kinds of weapons*. The main concern is that if militaries are allowed to have weapons in space, it may lead to an **arms race** in outer space. It is important to resolve this issue in order to maintain national security. The young commercial space industry, eager to orbit near Earth and mine the asteroid belt for resources, is also keenly interested in keeping space peaceful and developing clear international law governing military use of space.

History

The **weaponization** of space has long been a concern of the United Nations. In 1963, the General Assembly adopted a resolution calling on all Member States to not place nuclear weapons or other weapons of mass destruction in orbit or from putting such weapons on other planets, moons, asteroids, and so on. The General Assembly also noted that the principles of the United Nations Charter, particularly those prohibiting the use or threat of use of force, apply in space as well.

In 1967, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (commonly known as the "Outer Space Treaty") entered into force. This treaty is the main instrument of international law governing the use of outer space, and it also bans countries from putting nuclear weapons and other weapons of mass destruction in orbit or on any celestial body. It does not ban conventional weapons in space or the use of conventional weapons launched from the surface of the Earth to destroy objects in space. The Outer Space Treaty currently has 104 States Parties, including all Member States with significant space-traveling capability. Another 24 Member States have signed but not ratified the treaty. Efforts to develop and enforce multilateral treaties regarding this topic have not met with success.

In 1979, Member States proposed the adoption of the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (commonly known as the "Moon Treaty"). The treaty never gained significant traction, partly because it would have required Member States to share **space-derived resources** and the technologies for extracting such resources. It has been ratified by only 14 Member States, none of which have space-launch capability.

In 1985, the Conference on Disarmament, where this topic has also been debated at length, established the Ad Hoc Committee on the Prevention of an Arms Race in Outer Space. The Ad Hoc Committee disbanded in 1994 after failing to generate any formal agreements. Discussion on this topic in the General Assembly has continued through the end of the Cold War to the present day. In recent resolutions related to this topic, the General Assembly encouraged the adoption of provable measures to prevent an arms race in space, including the creation and implementation of better transparency and confidence-building measures among space-traveling States.

Current Importance

The first way that an arms race in space could erupt is by putting existing nuclear weapons such as **inter-continental ballistic missiles (ICBMs)** in orbit. So far, nuclear weapons have not been used in combat since the bombs at Hiroshima and Nagasaki. Countries are deterred from attacking each other with nuclear weapons because of other countries' ability to **retaliate** if any nuclear attack take place. Because space-based nuclear weapons would respond much faster than even ICBMs, if one side uses space weapons it would threaten the balance of power. This could potentially lead to an arms race of ever-faster and more responsive nuclear satellites. However, space weapons could also be something as simple as a satellite that drops rods of concrete or even tiny rocks. When dropped from 60+ miles up, virtually any object that can survive reentering Earth's atmosphere can become a deadly missile. Therefore, the extent to which conventional weapons in space should be banned is a key part of the debate.

In addition, countries may want to destroy other countries' military satellites in space, not just drop weapons to Earth. But destroying one satellite, whether it is from a space-based weapon or a surface-to-space missile, could create a chain reaction of explosions. The explosions would fill low-earth orbit with debris and make it unusable for any satellites or human and robotic exploration missions. This situation, known as **Kessler Syndrome**, would have a catastrophic effect on global society. While some GPS and other highly specialized satellites orbit high enough to be out of reach of such a disaster, the majority of satellites are in low-earth orbit, including most scientific and weather satellites, communications satellites, and the International Space Station. Losing all of these capabilities in a short period of time would have far-reaching effects, such as cutting communications from remote regions of the Earth and a decreased ability to predict natural disasters. Low-earth orbit is also by far the cheapest orbit to launch a satellite in and has a many advantages. It takes less time in low-earth orbit to cover more of the Earth with only one satellite. Therefore, it would be very costly to shift satellite development and launch satellites to higher orbits.

Recently, this debate has become more urgent due to signs that some States are gearing up to wage space-based warfare or to develop the capacity to destroy another State's belongings in space. The United States military reserved \$2 billion for developing space weapons in 2016, saying that its military has become so dependent on satellites that they must be better protected. In 2007, the People's Republic of China destroyed one of their own satellites with a surface-to-space missile, 530 miles above the Earth's surface. The United States has also destroyed one of its own satellites in similar fashion, and Russia has successfully tested its own anti-satellite missile.

Key terms to know

Arms race: A competition between nations to develop and collect weapons faster. This especially happened between the US and the former Soviet Union during the Cold War.

Weaponize: To supply or equip with things meant to cause damage.

Space-derived resources: Materials, supplies, and other things that come from space.

Inter-continental ballistic missiles: Guided missiles launched into the air that can travel long distances, primarily designed to carry nuclear weapons.

Retaliate: To attack in return for a similar attack against you, like getting revenge.

Kessler syndrome: A chain reaction where space junk and debris collide with each other, break apart, and create more smaller bits that hit each other more and more often as more bits are created.

What to do now?

The threat of an arms race in outer space is real, and it is up to the General Assembly to do something about it. Not only are nations in physical danger of space-launched weapons, but telecommunications, research, and GPS technologies are also at risk of being damaged. On top of that, if an explosion causes Kessler syndrome to happen, people will need to spend much more money in order to try to maintain communications and other technologies in higher levels of space orbit. Debate has taken place as to whether to extend the provisions of the Outer Space Treaty or develop other bilateral or multilateral treaties that go further toward banning weapons in space. The Space Preservation Treaty, which would ban all weapons in space, including conventional weapons, was proposed to the General Assembly in the mid-2000s; to date it has not been signed by any Member State. In 2008 and again in 2014, at the Conference for Disarmament, Member States proposed a “draft treaty on the prevention of the placement of weapons in outer space and of the threat or use of force against outer space objects.” This treaty has not yet come to the General Assembly. What should the General Assembly do now in 2017 in order to protect national security and also to ensure that humans can continue to develop and explore outer space?

Things to consider

1. What should be considered a “weapon” in space?
2. How can an agreement, treaty, or other mechanism limiting the use of weapons in space also leave room for civilian, scientific and other harmless operations to continue to operate?
3. How can existing United Nations arms treaties be modified to better address the prevention of an arms race in outer space?
4. Are new multilateral agreements necessary to incorporate into the framework of other agreements that ban or limit space weaponization?

5. How can the United Nations improve existing agreements that deal with space weapons?
6. What lessons can be learned from the failure of the Moon Treaty to gain any significant traction?

For further research

- Reaching Critical Will: Militarization, weaponization, and the prevention of an arms race in outer space:
<http://www.reachingcriticalwill.org/resources/fact-sheets/critical-issues/5448-outer-space>
- The proposed PAROS treaty:
<http://www.nti.org/learn/treaties-and-regimes/proposed-prevention-arms-race-space-paros-treaty/>
- UN papers related to preventing an arms race in outer space:
<https://www.un.org/disarmament/geneva/cd/documents-related-to-prevention-of-an-arms-race-in-outer-space/>
- Arms Control: Avoiding a Space Arms Race blog post:
https://www.armscontrol.org/act/2007_04/focus
- News article: In space, the looming threat of a new arms race
<https://phys.org/news/2016-10-space-looming-threat-arms.html>

Additional research suggestion: Try searching in the News tab on Google for your assigned country and “arms race in outer space”.

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