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Peaceful Use of Outer Space: Preventing Weaponization

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Introduction

Space has been used for military purposes since shortly after the launch of Sputnik, the first orbital satellite, in October 1957. Space is militarized; something accepted by the international community and—in the form of satellite verification of arms control treaties—even required under international law. But space has not been weaponized, with deployment of weapons in space or use of weapons fire-armed from Earth. Although weapons fire-armed from Earth fly through space—as do long range ballistic missiles—no weapons detonate there. But several countries, including China, Russia and the United States have experimented with weapons to be based or detonated in space, provoking fears of a new arms race or outright war in a delicate and vital environment.

In January 2007 China test launched a missile that successfully destroyed one of its aging weather satellites. The Chinese anti-satellite (ASAT) test was followed by another test conducted by the United States in February 2008 in which it also successfully destroyed one of its own satellites. These two tests sparked international concern that space was about to become a new battlefield, threatening the common view of space as a peaceful sanctuary. Since 1982 the United Nations has been the main forum for discussing and negotiating an international agreement that would prevent an arms race in space.

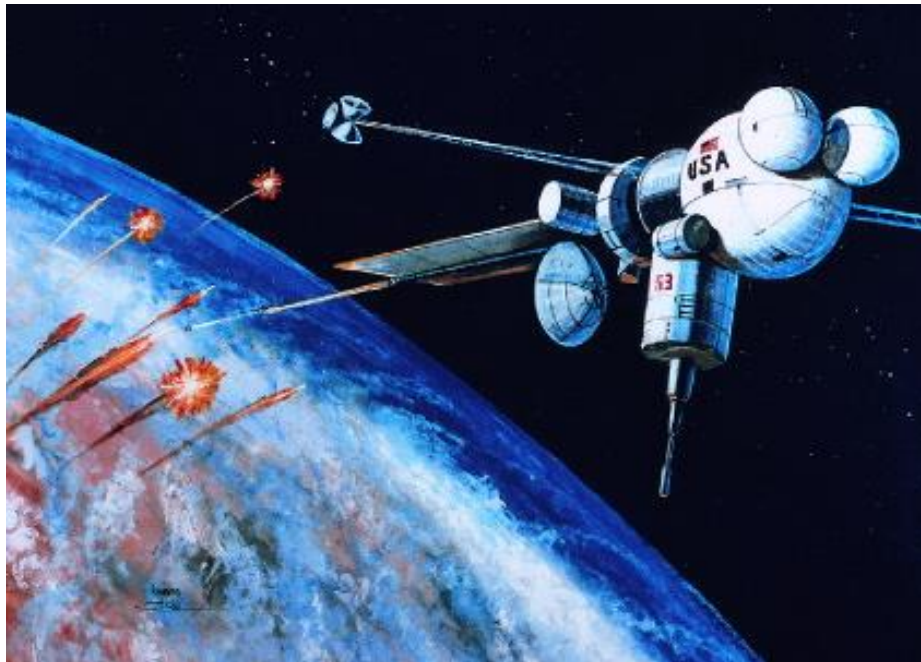
History

Concern over the peaceful use of space arose along with the dawn of the space age. During the 1960s as both the United States and the Soviet Union engaged in the space race, the technology that was developed for space exploration was quickly used for military purposes, such as the development of reconnaissance and communications satellites and the use of rockets as ballistic missiles armed with nuclear warheads.

Yet the race to the Moon also established the idea of space as a peaceful sanctuary, a heritage for all mankind, where science and technological progress was idealized and its benefits would be provided to all. The Partial Test Ban Treaty of 1963 prohibited the testing of nuclear explosions in the atmosphere and space (which on one occasion disabled several satellites due to an electromagnetic pulse and lingering radiation) and the 1967 Outer Space Treaty furthered fortified the international consensus of space as a sanctuary by banning the placement of weapons of mass destruction in orbit (such as nuclear weapons).

The possibility of space weapons emerged during this period but was constrained by technological and scientific limits. Much of the concern over space weapons was linked to the nuclear arms race as space was viewed as the ideal environment to deploy any type of defense against ballistic missiles. In the 1980s, the United States considered developing an anti-ballistic missile defense with new technologies which would include space systems, leading to international concerns over the weaponization of space.

**Figure 1. Plans for the U.S. Strategic Defense Initiative (SDI) in 1983
(never deployed)**



The Soviet Union raised concerns over advances in technology and the possibility of development of space weapons in 1981, introducing a resolution at the United Nations General Assembly aimed at preventing an arms race in space, because there was concern that the existing international legal framework covering space issues was insufficient to stop an arms race in space. The issue would be debated for the next 30 years, but no agreement on prohibiting space weapons has ever been established.

Current situation

Today space plays a central role in everyday life; hundreds of satellites orbit the Earth and are essential for commerce and finance, scientific research, weather forecasting, telecommunications, navigation, and intelligence collecting and military operations. Over 130 United Nations members operate a space program, and over 60 nations operate their own satellites. The need to protect satellites and maintain their operations has become a central concern by many member states.

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The ASAT tests conducted by China and the United States in 2007 and 2008 revived the possibility and concern of weapons in space and of transforming this environment into a battlefield. One of the main concerns is that the current ASAT weapons systems that have been tested (missiles that hit and destroy orbiting satellites) generate orbital debris, that is, space junk.

Orbital debris has accumulated since the beginning of the space age through normal space launches and was becoming a major issue as the enormous amount of space junk was beginning to threaten space operations. The Chinese ASAT test was estimated to have increased the amount of orbital debris by 10% of the total accumulated in over fifty years of space exploration. These bits and pieces of debris (some as small as bolts and others as large as rocket stages) orbit the Earth at enormous speeds threatening to collide with other satellites and manned spacecraft. A hit by even a small piece of debris can be the equivalent of a bullet impact.

In 2009 and Iridium communications satellite collided with an old Russian Kosmos satellite generating an increase of orbital debris that could hit more satellites, damaging them or destroying them and creating more debris, leading to a cascading effect. With time, so much orbital debris would make the launch, orbiting and operation of new satellites impossible because of the amount of debris and risks of collision. The International Space Station has had to maneuver several times in recent years to avoid such pieces. Since orbital debris has been identified as a common threat to all nations which operate satellites, its mitigation has been identified as a common interest of all spacefaring nations and been the focus of discussions. Limits to space weaponization have been raised because the proved ASAT systems are debris generators.

Space is already “militarized”, meaning it is used for military means, but it is not yet “weaponized,” meaning there are no space weapons in which satellites can destroy other satellites, or attacks to the surface of the Earth cannot be launched from space, but the ability to destroy satellites from the surface of the Earth has been tested and proven. The possibility of weaponization of space risks the viability of sustained space exploration if weapons were to be deployed and used, destroying other satellites and generating more orbital debris.

As more nations develop their own satellites, and even space launch capabilities, space is becoming ever more “congested, contested and competitive,” requiring the cooperation and coordination of all member states. The allocation of satellite orbits and even assignment of radio frequencies pushes states to coordinate and cooperate. There is recognition on the need for “rules of the road” or codes of conduct that all spacefaring nations could agree upon, such as limiting any activities that generate debris, or reduce debris generated from space launches, that could harm or interfere with the operation of other nations’ satellites. The European Union has proposed a “Code of conduct for outer space activities” aimed at enhancing “the security, safety and sustainability of all outer space activities.”

Space technologies are inherently dual use, for example, any launch vehicles (rockets) can be used either as ballistic missiles or scientific rockets launching satellites into orbit. This has been the main challenge in defining what a space weapon is, and consequently of establishing verification measures that would confirm a state’s compliance if an agreement on a space weapons ban were to be established.

Launch warnings and registration of satellites and their missions could also help reduce suspicions that a state was developing space weapons technologies. Thus transparency and confidence building measures (TCBMs) have been considered and proposed so as to increase trust and facilitate cooperation among states on space issues.

Role of the United Nations

Since 1981 the United Nations General Assembly has supported a resolution calling for the “Prevention of an arms race in outer space” (known as PAROS). The resolution does not define space weapons but instead emphasizes the need for “further measures with appropriate and effective provisions for verification to prevent an arms race in outer space.” States with “major space capabilities” are called upon to “contribute actively to the objective of the peaceful use of outer space and of the prevention of an arms race in outer space and to refrain from actions contrary to that objective and to the relevant existing treaties in the interest of maintaining international peace and security and promoting international cooperation.”

In 2002 Russia and China proposed at the UN Conference on Disarmament an outline of an agreement that would ban space weapons. In 2008 the outline both countries had previously presented was introduced as a draft treaty titled *Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects*. The draft defined “weapons in outer space” as “any device placed in outer space, based on any physical principle, specially produced or converted to eliminate, damage or disrupt normal function of objects in outer space, on the Earth or in its air, as well as to eliminate population, components of biosphere critical to human existence or inflict damage to them.” The draft also defined a weapon “placed” in outer space “if it orbits the Earth at least once, or follows a section of such an orbit before leaving this orbit, or is stationed on a permanent basis somewhere in outer space.”

Negotiations on an agreement on space weapons were determined to be conducted primarily through the UN Conference on Disarmament in Geneva. But within the United Nations First Committee, the topic of space weaponization can be brought to the fore and attention to the needs and coalitions necessary for common understandings and establishment for a long term agreement can be debated and outlined.

Landmark UN Resolutions

The United Nations has been the primary forum for establishing space treaties, such as the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including Other Celestial Bodies* (the Outer Space Treaty of 1967), the *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies* (Moon Treaty of 1979), the 1972 *Convention on International Liability for Damage Caused by Space Objects* and the 1975 *Convention on Registration of Objects Launched into Outer Space*. The UN has also repeatedly approved since 1982 a resolution calling for the “Prevention of an arms race in outer space” (Resolution A/RES/66/27).

Country Positions

The United States is the primary user of space systems, but also the most dependent on satellites. It has been critical of a comprehensive treaty that would prohibit space weapons because of problems of definitions and in the case of the Chinese and Russian proposal, do not cover ASAT weapons launched from the surface of the Earth. The United States has demonstrated willingness to negotiate a code of conduct, but as the most technologically

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advanced space power, views the possibility of space weapons as favorable in securing its security interests.

China and **Russia** have proposed within the Conference on Disarmament a draft treaty outlining a ban on space weapons. Yet the draft does not propose any verification mechanisms, instead proposing voluntary measures to “promote transparency and confidence building measures” and the possibility of negotiating an additional protocol for verification later on, nor does the language of the text rule out ASAT weapons launched from Earth, only the ban on orbiting space weapons.

The European Union countries, recognizing the importance of space for economic development and the need to preserve a safe environment for satellite operations, have proposed a code of conduct for spacefaring nations that would have as their key commitment a “refrain from any action which intends to bring about, directly or indirectly, damage, or destruction, of outer space objects unless such action is conducted to reduce the creation of outer space debris and/or is justified by the inherent right of individual or collective self-defense in accordance with the United Nations Charter or imperative safety considerations.”

Other countries in general are supportive of a ban on space weapons and the establishment of a clear agreement on limiting an arms race in space.

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For more articles and reports on space security within the United Nations, consult the [United Nations Institute for Disarmament and Research](#)

Biography

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