



# Global Security Institute

Policy Brief

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## POLICY BRIEF

# Advancing a Cooperative Security Regime in Outer Space

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The exploration and use of outer space benefits all mankind. This principle is embodied in the Outer Space Treaty of 1967 (OST). Moreover, the dependence on space for intelligence purposes has enhanced security for all, by, for instance, monitoring threatening conduct and compliance with arms control duties. With increasing reliance on the peaceful uses of outer space has come an increased understanding of the risks posed by unmitigated space traffic and the dangers of weaponizing this theater.

There is no longer a debate over whether to cooperatively address these risks. Today, most governments agree that a rules-based approach to outer space is necessary to ensure humanity's continued prosperity. The debate now must focus on the best way forward.

There exist several proposals for advancing a security regime in outer space. These proposals vary from voluntary, behavior-modifying regimes, such as a "Rules of the Road", to more comprehensive, legally-binding treaties prohibiting an entire class of weapons systems. This paper seeks to explore these varying proposals and spark a robust debate on the best way forward. It is offered as part of the Global Security Institute's ongoing efforts to promote a cooperative security regime in outer space, based on the rule of law.

#### **Peaceful Cooperation In Outer Space**

Through the OST, the cornerstone of outer space law, states "recogniz(e) the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes." Further, the treaty aims "to contribute to broad international cooperation" in the use of outer space.

While never legally defined, "peaceful purposes" as they relate to outer space has generally come to refer to all commercial, scientific and military applications of space, ranging from, *inter alia*, telecommunications, weather monitoring, remote sensing, navigation, treaty compliance monitoring, intelligence and Earth-to-Earth weapons systems operations.

While the OST does not prohibit the weaponization of outer space (only nuclear weapons and other weapons of mass destruction are prohibited) the principles of cooperation and the common interest are clearly codified. As such, it does not prohibit unilateral, self-serving uses of outer space. However, such unilateral activities, if they

threaten other states' access to and benefits from outer space, are prohibited by the OST through these codified principles.<sup>1</sup>

### **Threats posed by and to outer space**

Threats to space assets grow with our ever-increasing uses of outer space. At present, there are over 800 commercially used satellites in orbit.<sup>2</sup> Orbital paths are further cluttered by deserted spacecraft, discarded rocket debris and other “space junk” shed from hardware. A piece of space debris, with an average impact speed of 36,000 kilometers per hour,<sup>3</sup> could destroy a satellite. While a collision of two operating satellites is predictable (yet nonetheless worrisome), the overcrowding of orbital paths heightens the risk of radio frequency interference, causing harmful disruptions in communication.

Beyond the severe economic repercussions resulting from disrupted commercial satellite communications, hostile actions in space can result in grave security threats, especially in times of war. Militaries rely on satellites for monitoring of and communication with troops on the ground. If a military satellite was deceived, disrupted, denied, degraded or destroyed, commanders lose their communication capabilities, resulting in mounting tensions and an escalation of conflict. A worst-case scenario could involve inadvertent use of nuclear weapons; without satellite-enabled monitoring capability in a time of tension, or, if early warning systems give a false reading of an attack, governments may resort to using nuclear weapons.

The dangers of overpopulated orbital paths will exponentially increase should one or several countries actively pursue space weapons programs.<sup>4</sup> In addition to the

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<sup>1</sup> Principles of cooperation and the common interest of humanity are contained throughout the OST, in both preambular as well as operative paragraphs. They are also reiterated in Article IX, which requires states to undertake international consultations should an activity in outer space threaten the activities of others states: “In the exploration and use of outer space... States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space...with due regard to the corresponding interests of all other States Parties to the Treaty.... If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space...would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space...it shall undertake appropriate international consultations before proceeding with any such activity or experiment....”

<sup>2</sup> Union of Concerned Scientists' Satellite Database, found at:

[http://www.ucsusa.org/global\\_security/space\\_weapons/satellite\\_database.html](http://www.ucsusa.org/global_security/space_weapons/satellite_database.html). Updated April, 2007.

<sup>3</sup> NASA's Space Operations Mission Directorate, December 20, 2004. See:

[http://www.nasaexplores.com/show2\\_article.php?id=04-072](http://www.nasaexplores.com/show2_article.php?id=04-072).

<sup>4</sup> There is no consensus on a legal definition for the term “space weapons.” For the purposes of this paper, we define space weapons as suggested in CD/1779, a working paper submitted to the Conference on Disarmament by Russia and China in May 2006: “any devices, installations or establishments based in outer space, including the Moon and other celestial bodies, which strike and damage objects in outer space, in the atmosphere, on the ground, in the sea or disrupt their normal functions, as well as any devices or installations based on the ground, in the sea or in the atmosphere, that strike and damage space objects, impair their normal functions or change their orbits.” See: <http://daccessdds.un.org/doc/UNDOC/GEN/G06/615/77/PDF/G0661577.pdf?OpenElement>

enormous debris caused by some weapons tests,<sup>5</sup> active anti-satellite (ASAT) systems would deter investment in peaceful uses of outer space, and smother the economic cooperation and competition that enhances life on Earth.

At present, no country has yet deployed space weapons. In the 1980s, the US and USSR tested several different ASAT weapons, but, recognizing the grave threat that such testing posed to outer space assets, both superpowers ceased such tests well before the end of the cold war. China broke this moratorium when it tested its first ASAT weapon on January 11, 2007.

### **Avenues for Progress**

Concerted action to obviate the threats to outer space security is needed. The scope and reach of current proposals to move the cooperative regime forward vary widely. Some advocate for voluntary, confidence-building measures while other, more ambitious proposals seek to prohibit the weaponization of space through multilateral negotiations.

#### *Confidence-Building Measures (CBMs)*

Confidence-building measures are voluntary protocols by which states opt to abide. They are not usually legally-binding or inclusive of verification mechanisms. Instead, they work to promote dialogue and interaction, facilitate information-sharing and increase trust between states.

CBMs are easier and arguably quicker to negotiate and implement than treaty-based regimes. Negotiating a CBM for outer space activities, for instance, could circumvent difficult definitional issues, such as “space weapons”, “peaceful uses” or even “outer space”. CBMs also do not require parliamentary ratification, and are therefore more expeditiously implemented.

There are several precedents for CBMs governing military and commercial activities. Some of the more successful CBMs include the Hague Code of Conduct for Missile Proliferation, or the Incidents at Sea and Prevention of Dangerous Military Activities Agreement. Such precedents further contribute to the attractiveness and feasibility of a CBM approach.

One of the more popular CBM proposals is a Rules of the Road or a Code of Conduct, such as that advocated by the Stimson Center.<sup>6</sup> Such a code would seek to:

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<sup>5</sup> The January 11 ASAT test by China generated 2 million pieces of debris measuring 1 mm to 1 cm, 40,000 pieces measuring 1 cm to 10 cm, and another 800 pieces greater than 10 cm. The Union of Concerned Scientists, using a NASA model of calculation, estimates that this debris will remain in orbit for up to 20 years. See: [http://www.ucsusa.org/global\\_security/space\\_weapons/debris-from-chinas-asat-test.html](http://www.ucsusa.org/global_security/space_weapons/debris-from-chinas-asat-test.html).

<sup>6</sup> For a draft Code of Conduct, see: <http://www.stimson.org/space/?SN=WS200702131213>

- avoid collisions and dangerous maneuvers in space;
- create special “caution and safety areas” around satellites;
- develop safer traffic management practices in space;
- prohibit simulated attacks and anti-satellite tests in space;
- facilitate information exchanges, transparency and launch notification measures; and
- encourage more stringent space debris mitigation measures.

Such a Code of Conduct, while not necessarily legally-binding, does not preclude the possibilities of a future treaty; rather, it could be complementary or elemental to a future, multilaterally-negotiated, legally-binding mechanism. It has already amassed significant support from various militaries, national and international space agencies and commercial space industry leaders.

Confidence-building measures, while promoting dialogue and cooperation, are not long-term answers. Short of becoming law, they do not constitute a global norm. Their non-binding nature results in ambiguous compliance. Space debris caused by peaceful uses may be mitigated, but such mitigation is rendered irrelevant in the face of the dangers posed by potential weaponization of outer space.

Moreover, focusing on such a limited regulatory system may detract from the momentum to address these longer-term threats. Worse, disavowing a comprehensive, multilateral approach to outer space security in favor of more limited measures may have deleterious effects. In the 1960s, for example, when strontium 90 was showing up in mother’s milk, there was a strong movement for progress on disarmament and testing prohibitions. This movement represented a powerful convergence of environmental, disarmament and feminist concerns. But the quest to prohibit nuclear testing devolved into the negotiation of a Partial Test-Ban Treaty, which permitted nuclear explosions underground. As a result, nuclear testing continued for decades and the political momentum dissipated. A Comprehensive nuclear Test-Ban Treaty was not negotiated until 1996, and in 2007 it has still not entered into force. Faced with the possibility of a stricter regulatory regime, weapons makers may be incited to expedite the research and development of weapons systems, thereby expediting their possible deployment.

#### *Legally-binding options*

Cognizant of the limitations of CBMs, many states favor the negotiation of a legally-binding, multilateral, comprehensive treaty. The General Assembly of the UN has passed dozens of resolutions, oftentimes with unanimous support, for the start of such negotiations.<sup>7</sup> The Geneva-based Conference on Disarmament (CD), as the sole

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<sup>7</sup> The 2006 resolution supporting the commencement of negotiations on the Prevention of an Arms Race in Outer Space (PAROS) (A/RES/61/58) received 171 votes in favor, with only one vote against (US) and one abstention (Israel).

multilateral forum for negotiating disarmament and nonproliferation treaties, is the preferred venue for such discussions.<sup>8</sup>

In their report, *Weapons of Terror*, the independent Weapons of Mass Destruction Commission noted that the current regime governing outer space security remains inadequate, lacking an overall framework that allows for “the development of a coherent approach to future challenges to space security”. In addition to recommending unilateral renunciations of the deployment of weapons in outer space, the Commission recommended convening a Review Conference of the OST. Such a review conference would serve to promote universal ratification of the OST, as well as a way by which to “expand its scope through a protocol to prohibit all weapons in space.”<sup>9</sup>

Despite the credible authority behind the recommendation, some states are wary of this approach. A Review Conference would necessarily open the entire OST up to revision, and the principles and prohibitions, as well as technical definitions, contained within could be negated.

Russia proposes a new treaty on the Prevention of Placement of Weapons in Outer Space (PPWT). While it has yet to be formally released, Russian representatives say that the PPWT will seek to prohibit both space-based weapons as well as intentional destruction of space assets. It will not include verification, nor will it prohibit Earth-based weapon systems that attack weapons traveling *through* outer space, such as anti-ballistic missile systems. As such, the PPWT seeks to prohibit *using* such ASAT technology, rather than the development and deployment of systems capable of such destruction.

### **Cooperative Competition For the Benefit of All Humanity**

Our current globalized world presents us with a paradox. Nations are more integrated economically, politically and even militarily with each other than ever before in history. Such integration necessitates cooperation and, as a result of such increased cooperation, collective security is strengthened. Despite this interdependent growth of collectivity, mistrust and threat perceptions persist, preventing further cooperation needed for a sustainable future.

This paradox is best illustrated by our current uses of outer space. While the benefits of cooperation in the economic development of outer space continue to grow, so does the risk of weaponizing this realm of opportunity. Humanity prospers through healthy economic competition and cooperation in protecting development of the entire

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<sup>8</sup> Under the current proposed agenda for the CD, a Committee would be convened for the “substantive discussions dealing with issues related to Prevention of an Arms Race in Outer Space.” While falling short of a mandate to negotiate a PAROS-related treaty, if adopted, this agenda provides for the first formal discussions on this issue since the CD committee dealing with this issue disbanded in 1994.

<sup>9</sup> “Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms,” Report of the Weapons of Mass Destruction Commission. See recommendations 45 and 46.

[www.wmdcommission.org](http://www.wmdcommission.org).

market. But this healthy economic competition cannot co-exist with weaponization and the pursuit of the use of space as a new overwhelming military high ground for some.

Both the nuclear Non-Proliferation Treaty (NPT) as well as the UN Charter are premised on advancing cooperative security through the rule of law. Should one or several countries advance in weaponizing space, the disarmament premises of the NPT will be compromised as well as the underlying foundation of cooperative threat reduction and security. A world with multiple levels of security of radically differing proportions, like a nuclear apartheid world, is unstable. Where some have military security and others feel threatened, what level of cooperation will occur in addressing biodiversity, alleviating poverty, protecting the oceans or the climate? Weaponization of space will stimulate asymmetrical military responses, arms racing, amplified distrust, and reduced cooperation.

If humanity is to continue to benefit from our growing use of outer space, the prevention of its weaponization is imperative.



### RECOMMENDED READING

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