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THE OUTER SPACE TREATY: ASSESSING ITS RELEVANCE AT THE 50-YEAR MARK

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Foreword

This year marks the 50th anniversary of the Outer Space Treaty. Many have suggested updating the treaty to reflect changes in technologies and circumstances; however, the United States and other signatories have been reluctant to open the treaty for revision. Recent activity in the U.S. Congress suggests a possible change in attitude. This paper examines the treaty provisions that might be targeted for revision and discusses the challenges of addressing them through the treaty's amendment process.

Background

There are two schools of thought regarding legal and regulatory governance of space activities. One school takes a proactive approach, asserting that rules should be established before significant activity begins so that stakeholders can agree on what constitutes acceptable or unacceptable behavior. The other school is more evolutionary, believing that a sufficient amount of applicable experience must be gained before enacting anything beyond the most basic rules. According to this line of reasoning, behavioral guidelines for space should build slowly to avoid imposing restrictions that turn out to be awkward, counterproductive, or even dangerous. The real world consists of a mix of these two approaches.

In the 1960s, when the first space treaties were being formulated, experience in space was elementary. The proactive approach dominated because the two leading actors—the United States and the Soviet Union—were Cold War rivals, and conflict was a distinct possibility. Fortunately, a substantial amount of thought and analysis had been focused on creating an international space treaty regime for more than a decade.¹

After years of deliberations, the United Nations Committee on the Peaceful Uses of Outer Space reached consensus on a set of basic principles governing the behavior of nations in space. The race to put humans on the moon provided an incentive to establish precedents

through debate in a legal forum—rather than by the actions of a dominant spacefaring country—before a manned lunar landing was achieved. The Outer Space Treaty² was opened for signature in 1967, and since then has been ratified by 105 countries, including all major spacefaring nations, and signed by 25 more.³

The Outer Space Treaty is considered quasi-constitutional, having established the basic tenets that provide the cornerstone for the space-related treaties, principles, and declarations that followed. The treaty states that space is the “province of all mankind” and is “free for exploration and use by all” (Article I). In keeping with this concept, no state can claim sovereignty over celestial bodies or appropriate any part of space for its exclusive use (Article II).

Space is to be used for “peaceful purposes” only (Article IV), but the treaty does not define what constitutes peaceful or nonpeaceful purposes. The term “peaceful” is not synonymous with “nonmilitary,” as both superpowers were already engaged in substantial military space activity as the treaty was being negotiated (although the Soviet Union initially supported the “nonmilitary” definition while denying it engaged in military space activities). Many military space systems have peacekeeping roles, so the accepted definition of “peaceful” in this context is “nonaggressive.” Article IV permits the use of military personnel to perform peaceful space missions,

but prohibits weapons of mass destruction in space and “establishment of military bases, installations, and fortifications, the testing of any type of weapons, and the conduct of military maneuvers on celestial bodies.”

Inspection of facilities and spacecraft is permitted on celestial bodies, but this courtesy was not extended to objects in free space (Article XII). This was due to the desire of both the United States and the Soviet Union to keep the other side from examining or tampering with orbiting national security satellites, even those that were no longer active.

The treaty grants astronauts a status equivalent to ambassadors, referring to them as “envoys of mankind” (Article V). Recognizing the hazards

of space travel, it states that “all possible assistance” shall be given to astronauts in trouble—language that could cover a multitude of responses to a variety of situations.

The treaty reinforces the concept that governments are liable for the actions of their citizens (Article VI), and makes launching states liable for damage caused by their space systems (Article VII). That would include mishaps in space or those occurring on Earth as a result of launch accidents or reentering satellites that cause harm to life or property. Definitions and procedures in this area are elaborated more fully in the Liability Convention of 1972.⁴

Aging Provisions

In several areas, the Outer Space Treaty is showing its age and could benefit from some clarification. Two concerns stand out in current discussions: 1) the treaty does not directly address orbital debris mitigation and remediation or enable salvage in space, and 2) it has the potential to inhibit commercial space development due to concerns about property rights in space.

Orbital debris was not a significant issue in 1967. The treaty does not directly address debris, and only later was interpreted to be applicable through Article IX, which is primarily concerned with contamination from extraterrestrial matter. The link to orbital debris is made through language that directs “appropriate international

consultations” prior to engaging in activities that could cause “potentially harmful interference with activities of other States Parties.”

The assignment of permanent ownership of space objects to the launching state (Article VIII) has the unfortunate side-effect of preventing salvage in space in a manner similar to the way it is done in international waters on Earth. Retrieval of space junk does not convey ownership, so entrepreneurs have little incentive to

invest in novel ways to clean up, and possibly recycle, space debris. This seems to be at odds with the Article IX provision that calls for protecting the environment of both Earth and space.

Article VIII specifies that ownership stays

with the original owner, no matter where a space object is found or whether it is brought back to Earth. Any treaty member attempting to salvage space objects that it does not own or have jurisdiction over must do so with the permission of the owner. Since Article VI makes state parties responsible for the actions of their nongovernmental entities, private-sector salvage operators must play by the same rules when space objects of foreign ownership are involved.

Diplomats in the 1960s were not thinking about establishing a business-friendly environment for space salvage. The debris problem was not yet evident, practical techniques for removal were far in the future, and Cold War tensions likely would have stymied any salvage efforts. What has changed since then is that the required technologies, a plausible business case (e.g., in combination with satellite servicing efforts), and political feasibility are within sight—and the need for action has become more pressing. As space operations become more sophisticated and debris concerns increase, reconsideration of the space salvage restriction may become a priority.^{5,6} If this should lead to amendment, it could be accompanied by new language that incorporates existing, widely accepted debris mitigation norms (e.g., end-of-life depletion of onboard energy sources, transfer to graveyard orbit) into the Outer Space Treaty.⁷

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The other prominent issue is extraterrestrial property rights. If space development is to evolve in an economically productive way, the resources and ingenuity of private enterprise will need to play a role. Some critics of the current regime perceive an obstacle in the prohibition of claims of national sovereignty on celestial bodies. According to this argument, corporations will not be willing to participate in any extraterrestrial ventures where they cannot obtain clear title to property from a government entity with jurisdiction.

Given the embryonic stage of this type of development, such an argument may be premature. Mineral extraction and other commercial developments on Earth have been conducted in the absence of property rights (e.g., offshore oil drilling, mining on public land, right-of-way for cables and pipelines). The same can occur in space, especially if harm or interference to third parties and the environment can be mitigated.

Despite legal and political hurdles, corporations are eager to participate in ventures where they can make a significant profit, increase stockholder value, and expand their brand. Many companies are clearly willing to set up shop in foreign countries with cheap labor, abundant resources, or large domestic markets despite the risks posed by political constraints or instability. The global business community has managed to implement creative solutions—such as the multinational corporate structure and public-private partnerships—that have overcome jurisdictional and ownership obstacles to the satisfaction of government and corporate interests. An extension of this same inventiveness can pave the way for private-sector participation in extraterrestrial development. For example, informal discussions at space law conferences have revealed space resource development ideas based on models such as port authorities and condominium law.

The Outer Space Treaty has always permitted private-sector activities in space; however, this is not something that should be taken for granted. Treaties are applicable to nation-states, not individuals or subnational organizations. The Soviet Union originally wanted the treaty to specify that only nation-states could operate in space, but the United States resisted inclusion of the restrictive language and kept the door open for development of space commerce. Today, any revision to the treaty would face significant pressure to recognize the prominent role of the private sector in space, accommodating

the establishment of privately owned and operated extraterrestrial facilities and the extraction of resources even in the absence of national sovereignty.

In addition to the two key issues of orbital debris and property rights, other treaty provisions may demand attention at some point.

- ◆ Neither the Outer Space Treaty nor the follow-on Assistance Agreement of 1968⁸ give a clear definition of an astronaut. When these treaties were written, astronauts (and cosmonauts) were government employees, few in number and consisting entirely of test pilots, scientists, and engineers. In the near future, all manner of public and private personnel will be flying into space, including tourists. Should all of them be regarded as “envoys of mankind” and effectively granted diplomatic status in an emergency?
- ◆ There is no description of what qualifies as a weapon. It may be obvious whether something is a weapon of mass destruction (and therefore prohibited), but the treaty also bans “the testing of any type of weapons... on celestial bodies,” creating the possibility of confusion regarding technologies such as lasers for communications or explosives for mining.
- ◆ Article VII assigns liability for damages to each state party “that launches or procures the launching of an object into outer space” and to each state party “from whose territory or facility an object is launched.” This has become more complicated than originally envisioned. If a satellite owner in Country A procures a launch from a provider in Country B who launches from a facility in Country C, there are three launching states—and if the launch carries multiple payloads, there could be many more. One might argue that the liability provision does not belong in a treaty of general principles because it is addressed in more detail in the Liability Convention (and in practice finds resolution in the language of international launch contracts). Efforts to revise the treaty could include a discussion on whether the liability provision should be elaborated or dropped.
- ◆ The Outer Space Treaty makes no attempt to define where space begins, nor do any other space treaties. This is admittedly a difficult task, as the choice of any particular altitude would be arbitrary. So far, it has been sufficient to recognize that an object is in space if it is in orbit or on another celestial body. Given

the substantial gap between the highest operating altitude of today's aircraft and the lowest perigee for a satellite to maintain a stable orbit, there is a clear distinction between the realms of air law, where sovereignty applies, and space law, where it does not. This may change, however, if true aerospace vehicles are developed that can function in both regimes and everywhere in between.

Challenges and Risks of Changing Course

The 1960s and 1970s, which produced five multilateral space treaties, is seen by space lawyers and diplomats as an era of general principles, establishing the bedrock for global efforts to explore and develop space and apply the benefits on Earth. Since then, the U.S. government has never seriously considered withdrawing from the Outer Space Treaty, and along with other major spacefaring countries has opposed opening up the treaty for amendment, even though Article XV allows this course of action; however, recent activity in the U.S. Congress indicates that this may be changing.

In April 2017, at a Senate space subcommittee hearing to discuss regulatory reforms for promoting space commerce, the chairman suggested it may be time to update the treaty to reflect growing commercial space activities.⁹ Less than two weeks later in the House, three members released draft legislation aimed at streamlining commercial space licensing that also would require the president to study and report on the possibility of amending or withdrawing from the treaty.¹⁰ Although this requirement was dropped from the draft bill by the time it was formally introduced to the Congress on June 7, 2017, it is instructive to examine its aims to get a sense of the thinking behind it. In particular, the proposed study sought to:

- identify and explain how, if at all, existing international treaty obligations impede U.S. private-sector investment and development in the exploration and use of space, including the exploitation of celestial resources;

- assess the benefits and drawbacks of withdrawing from the treaty;
- assess whether the United States should propose amendments to the treaty, and describe the desired policy outcomes of such amendments; and
- identify and explain U.S. strategy for promoting interpretations of existing international obligations to facilitate U.S. leadership in private-sector space investment and development and provide recommendations for updating and improving U.S. strategy.

The proposed study was to have a 180-day deadline, but some important findings regarding withdrawal and revision are immediately evident.

Treaty Withdrawal. It is difficult to identify any significant, enduring benefits to the United States from unilateral withdrawal from the Outer Space Treaty. From the commercial development perspective, this action

increases risk by removing current protections without enabling commensurate benefits. If the United States tried to claim sovereignty over extraterrestrial real estate, other spacefaring nations—all of which are treaty signatories—could refuse to recog-

nize the claim. Alternatively, there could be a domino effect as other countries withdrew and started a free-for-all of sovereignty claims—precisely what the treaty was designed to prevent.

If the United States issued licenses to industry to conduct space salvage without regard for the treaty's ownership provisions, other spacefarers could object and try to stop the practice. In retaliation, they may declare U.S. space systems to be fair game for salvage, causing grave concerns for U.S. national interests. In general, withdrawal from the treaty is unlikely to improve the ability of the U.S. to deal with space debris unilaterally since the nature of the problem requires that it be addressed multilaterally.

If the aim is to remove obstacles to commercial space development, withdrawal from the treaty is unlikely

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to have much (if any) positive effect. It will do nothing to overcome the technical and economic challenges of cutting-edge space business ventures; however, the negative effects could be dramatic for all sectors of space activity.

The United States could be perceived—and portrayed—as a violator of established norms of behavior. Even if commercial development is the stated justification for withdrawal, many might suspect other motives. The global community might question whether the United States wanted to deploy weapons of mass destruction or other militarily aggressive systems in space, interfere with other nations' space systems, claim sovereignty over the moon or other celestial bodies, or abdicate its obligations under other treaties, especially those related to space. This could affect a broad array of collaborative international relationships across the civil, commercial, and national security space communities. It could also undermine U.S. influence in future discussions regarding acceptable behavior in space.

Treaty Amendment. If decisionmakers conclude that the Outer Space Treaty isn't broken but is just showing its age, targeted changes are an obvious solution—especially in the areas of orbital debris, space salvage, and resource rights, as noted earlier; however, the process of reaching consensus on changes would entail years of diplomatic effort, with no guarantee that the end result would be better than (or as good as) what exists today.

The amendment process may not remain limited to the one or two issues that prompted it. The U.N. Committee on the Peaceful Uses of Outer Space has 84 member countries,¹¹ any of which could bring up its own amendments, which could be objectionable to the major stakeholders. Several countries, including China and Russia, have proposed treaty language that would ban all weapons in space,¹² a position opposed by the United States. There is a strong possibility that similar language would be submitted as an amendment if the treaty were to be opened for revision. This could bog down the process and derail prospects for achievement in the specific areas originally targeted.

In May 2017, the Senate space subcommittee held a hearing on the Outer Space Treaty,¹³ specifically asking whether it needed amendment to remove roadblocks to space commerce. All seven witnesses—with backgrounds in law, business consulting, and space

entrepreneurship—testified that there is no need to amend the treaty, and attempting to do so could leave industry worse off. They described the treaty as minimally burdensome, and emphasized that priority should be given instead to making the U.S. licensing and regulation regime for space commerce more stable, predictable, and transparent.

This is not to suggest that amendments should never be attempted, but rather that the amendment process must be undertaken with eyes wide open. The Outer Space Treaty and other space agreements exist in a dynamic environment. Technology continues to advance, and the amount and type of space activity keeps changing—so treaties may need periodic updating. But at present, higher priority should be assigned to development of a well-reasoned and comprehensive national space strategy.

References

- ¹ For example, see Oscar Schachter, “Who Owns the Universe?” in C. Ryan (ed.), *Across the Space Frontier* (New York: Viking Press, 1952). Also, the United Nations Committee on the Peaceful Uses of Outer Space was established in 1958 and produced the “Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space” in 1963, considered to be the precursor to the Outer Space Treaty of 1967.
- ² Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, January 27, 1967 (<http://www.oosa.unvienna.org/oosa/en/SpaceLaw/outerspt.html>).
- ³ Status of international agreements relating to activities in outer space as of 1 January 2017, A/AC.105/C.2/2017/CRP.7 (http://www.unoosa.org/documents/pdf/spacelaw/treatystatus/AC105_C2_2017_CRP07E.pdf).
- ⁴ Convention on International Liability for Damage Caused by Space Objects, March 29, 1972 (<http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introliability-convention.html>).
- ⁵ For one possible approach, see James A. Vedda, “Orbital Debris Remediation Through International Engagement,” Aerospace Corporation, Center for Space Policy & Strategy, March 2017 (<http://www.aerospace.org/publications/white-papers/orbital-debris-remediation-through-international-engagement/>).
- ⁶ Currently, the U.S. government could authorize a U.S. entity to salvage U.S.-owned debris without the treaty

coming into play; however, this is only likely if implemented as direct government procurement of services or a heavily subsidized public-private partnership. The goal of current congressional discussions on the treaty is to enhance commercial ventures, which are unlikely to be viable (absent subsidy) if only U.S.-owned debris is available for salvage. A truly commercial salvage industry will need some mechanism to enable access to all, or nearly all, orbital debris.

⁷ IADC Space Debris Mitigation Guidelines (IADC-02-01), October 15, 2002, revised in September 2007 (<http://www.iadc-online.org/Documents/IADC-2002-01,%20IADC%20Space%20Debris%20Guidelines,%20Revision%201.pdf>); U.N. General Assembly Official Records, 62nd Session, “Report of the Committee on the Peaceful Uses of Outer Space,” Supplement No. 20 (A/62/20) Annex, 2007 (http://www.oosa.unvienna.org/pdf/gadocs/A_62_20E.pdf).

⁸ Agreement on the Rescue and Return of Astronauts, and the Return of Objects Launched into Outer Space, April 22, 1968 (<http://www.unoosa.org/oosa/en/our-work/spacelaw/treaties/introrescueagreement.html>). Also referred to as the Rescue and Return Agreement.

⁹ Jeff Foust, “Cruz interested in updating Outer Space Treaty to support commercial space activities,” *Space News*, April 26, 2017 (<http://spacenews.com/cruz-interested-in-updating-outer-space-treaty-to-support-commercial-space-activities/>).

¹⁰ Marcia Smith, “Draft Bill Would Give Commerce, Not FAA, ‘Mission Authorization’ Function,” *Space Policy Online*, May 8, 2017 (<http://www.spacepolicyonline.com/news/draft-bill-would-give-commerce-not-faa-mission-authorization-function>).

¹¹ United Nations Office for Outer Space Affairs (<http://www.unoosa.org/oosa/en/members/index.html>).

¹² Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects (PPWT), 2008 ([http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/C4CD83AD4A8B4797C1257CF3003AC425/\\$file/1319+Russian+Federation+Draft+Updated+PPWT+.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/C4CD83AD4A8B4797C1257CF3003AC425/$file/1319+Russian+Federation+Draft+Updated+PPWT+.pdf)).

¹³ U.S. Senate Committee on Commerce, Science, & Transportation, Subcommittee on Space, Science, & Competitiveness, hearing on “Reopening the American Frontier: Exploring How the Outer Space Treaty Will Impact American Commerce and Settlement in Space,” May 23, 2017 (<https://www.commerce.senate.gov/public/index.cfm/2017/5/reopening-the-american-frontier-exploring-how-the-outer-space-treaty-will-impact-american-commerce-and-settlement-in-space>).