

# **United Nations Office for Outer Space Affairs (UNOOSA) Background Guide**

- I. Space Security & Planetary Defense
- II. International Sovereignty & the Privatization of Space

**Cleveland Council on  
WORLD AFFAIRS**



## United Nations Office for Outer Space Affairs (UNOOSA)

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The United Nations Office for Outer Space Affairs (UNOOSA) works to promote international cooperation for the peaceful use and exploration of space. They also assist member states in the utilization of space science and technology for sustainable economic and social development.<sup>1</sup> In an effort to make space exploration more equitable, UNOOSA assists any United Nations member state establish legal and regulatory frameworks to govern space activities and strengthens the capacity of developing countries to use space science technology and applications for development by helping to integrate space capabilities into national development programs.<sup>2</sup> Initially created as a small expert unit within the UN Secretariat, UNOOSA has been monitoring and advancing the UN's mission in space since 1958.<sup>3</sup> The UN remains the primary multilateral forum to discuss space security issues, divided into several areas of focus and cooperation.

### I. Space Security & Planetary Defense

#### **Statement of the Issue:**

Space security, in its traditional sense, was originally defined in military terms in regard to the strategic balance between the United States and the Soviet Union. After the end of the Cold War, a two-dimensional understanding of space security which included military and environmental dimensions arose, expanding the definition of security beyond just military capability. More recently, space security has expanded once again to a three-sector understanding which distinguishes between the uses of space for security and defense. Security is the protection of assets in space against natural and man-made threats while defense is security from threats originating in space.<sup>4</sup>

Planetary defense is the term used to encompass all the capabilities needed to detect the possibility and warn of potential asteroid or comet impacts with Earth, and then either prevent them or

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<sup>1</sup> "United Nations Office for Outer Space Affairs." About Us. Accessed July 19, 2023. <https://www.unoosa.org/oosa/en/aboutus/index.html>.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> Sheehan, Michael. "Defining Space Security." *Handbook of Space Security*, 2014, 7–21. [https://doi.org/10.1007/978-1-4614-2029-3\\_47](https://doi.org/10.1007/978-1-4614-2029-3_47).

mitigate their possible effects.<sup>5</sup> It involves several different aspects of space security including finding and tracking near-Earth objects (NEOs) that pose a hazard of impacting Earth, characterizing those objects, and planning and implementing measures to deflect or disrupt an object on an impact course with Earth, or to mitigate the effects of an impact that cannot be prevented.<sup>6</sup> Through characterizing the NEOS, scientists are able to determine their orbit trajectory, size, shape, mass, composition, rotational dynamics and other parameters.<sup>7</sup> As part of that process experts determine the severity of the potential impact event, warn of its timing and potential effects, and determine the means to mitigate the impact such as potential evacuation of the impact area and movement of critical infrastructure.<sup>8</sup>

When discussing international cooperation in space activities, the areas of science, technology, law, policy, and security are all inherently interlinked.<sup>9</sup> Space technologies often have overlapping civilian and military applications, and choices made about the uses of outer space directly impact international peace, safety and security. Furthermore, existing regulatory frameworks have been unable to adapt to evolving challenges or hold entities that jeopardize safety and security accountable. The potential for future conflicts in space, or for conflicts on Earth to spill into space, is intensifying as a range of actors develop counterspace weapons, such as laser beams, jamming, surveillance, and anti-satellite capabilities that could incapacitate systems on Earth, or worse.<sup>10</sup> Amid growing concerns of a space arms race, the United Nations Institute for Disarmament Research (UNIDIR) warns that “the destruction, damage, or incapacitation of one or more objects in space, even if temporary, could have serious reverberating effects for militaries and civilians alike.”<sup>11</sup>

Space is an increasingly congested and contested area as more state and non-state actors achieve space capacities which presents interesting security and sustainability challenges. Evolving space capabilities, declining costs, and relatively low barriers to entry have made the space domain and its associated weapons, tools, and technologies increasingly accessible and powerful. Counterspace capabilities, including destructive and non-destructive means, are those developed by one country to counter or neutralize another country’s space capabilities. Countries have utilized space for military

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<sup>5</sup> “Planetary Defense Frequently Asked Questions.” NASA. Accessed July 19, 2023.  
<https://www.nasa.gov/planetarydefense/faq>.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> “Benefits of Space: International Peace and Security.” UN Office for Outer Space Affairs. Accessed July 17, 2023.  
<https://www.unoosa.org/oosa/en/benefits-of-space/international-peace-and-security.html>.

<sup>10</sup> “The Final Frontier.” Foreign Policy, May 19, 2022. <https://foreignpolicy.com/2022/05/19/outer-space-security-international-governance/>.

<sup>11</sup> Ibid.

applications since the Cold War, but as more actors enter space, there are growing concerns about the placement of space-based devices that could have destructive capacities, such as anti-satellite weapons (ASATs) which can damage or destroy satellites. To date, China, Russia, India, and the U.S. have conducted ASAT tests, and there are signs that there may be additional countries that are exploring or already have ASAT capabilities.<sup>12</sup>

### **History:**

Beginning in 1959, just two years after the launch of the world's first satellite, Sputnik, the General Assembly decided to establish an ad hoc Committee on the Peaceful Uses of Outer Space.<sup>13</sup> In consultation with diplomatic and scientific experts, the Committee shepherded five United Nations treaties on outer space negotiated between 1967 and 1979.<sup>14</sup> These treaties addressed challenges and risks associated with space exploration, the rescue of astronauts, the liability for and registration of space objects and agreement for activities on the Moon and other celestial bodies. The UN Outer Space Treaty, signed in 1967, forms the primary foundation for outer space law.<sup>15</sup> It addresses both arms control issues, the primary focus at the time of its creation, as well as issues about how states operate in outer space. However, after almost 60 years of human activity, outer space is still relatively lightly regulated.<sup>16</sup>

The Committee on the Peaceful Uses of Outer Space has grown since its founding. The Committee and its two Subcommittees have become unique platforms for States to come together to review the scope of international cooperation in peaceful uses of outer space, encourage continued research and the dissemination of information on outer space matters, and study legal question arising from the exploration of outer space. Another branch of UNOOSA is the “United Nations Platform for Space-based Information for Disaster Management and Emergency Response” or UN-SPIDER which was

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<sup>12</sup> Ibid.

<sup>13</sup> “Committee on the Peaceful Uses of Outer Space.” United Nations Office for Outer Space Affairs. Accessed July 19, 2023. <https://www.unoosa.org/oosa/en/ourwork/copuos/index.html>.

<sup>14</sup> “Our Common Agenda Policy Brief 7: For All Humanity - the Future of Outer Space Governance.” Our Common Agenda Policy Brief 7, May 2023. <https://www.un.org/sites/un2.un.org/files/our-common-agenda-policy-brief-outer-space-en.pdf>.

<sup>15</sup> Pellegrino, Massimo, and Gerald Stang. “INTERNATIONAL COOPERATION FOR SPACE SECURITY.” *Space Security for Europe*. European Union Institute for Security Studies (EUISS), 2016. <http://www.jstor.org/stable/resrep07091.8>.

<sup>16</sup> Ibid.

established by the UN General Assembly in 2006.<sup>17</sup> As part of this, space technologies have been used for humanitarian aid and emergency response initiatives in recent years.

One of the priorities of space cooperation for the past several decades, has been studying near-Earth Objects. As part of this mission, NASA established the Planetary Defense Coordination Office (PDCO) in 2016 to manage the agency's diverse and rapidly growing efforts in planetary defense. Furthermore, NASA successfully completed the Double Asteroid Redirection Test (DART) test in 2021-2022. DART was the first-ever mission dedicated to investigating and demonstrating one method of asteroid deflection by changing an asteroid's motion in space through kinetic impact and marks humanity's first time purposely changing the motion of a celestial object and the first full-scale demonstration of asteroid deflection technology.<sup>18</sup> NASA Administrator Bill Nelson said about the mission: "All of us have a responsibility to protect our home planet. After all, it's the only one we have. This mission shows that NASA is trying to be ready for whatever the universe throws at us. NASA has proven we are serious as a defender of the planet. This is a watershed moment for planetary defense and all of humanity, demonstrating commitment from NASA's exceptional team and partners from around the world."<sup>19</sup>

### **Analysis:**

In an effort to ensure the peaceful, safe and secure continuity of space activities, the Office of Outer Space Affairs works to foster international cooperation and discussion about space initiatives. Its work is divided into multiple sections and committees of space affairs ranging from the legal and policy aspects to scientific discovery and planetary defense. UNOOSA is a key part of the planetary defense process, working with other international organizations to explore the topic including through the biennial International Academy of Astronautics (IAA) Planetary Defense Conference. Furthermore, UN-SPIDER, operated under the umbrella of UNOOSA, works to "ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of space-based information

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<sup>17</sup> "About Us." UN Office for Outer Space Affairs UN-SPIDER Knowledge Portal. Accessed July 17, 2023. <https://www.un-spider.org/about>.

<sup>18</sup> "In Depth: Double Asteroid Redirection Test (DART)." NASA, September 27, 2022, <https://solarsystem.nasa.gov/missions/dart/in-depth/>.

<sup>19</sup> Bardan, Roxana. "NASA Confirms Dart Mission Impact Changed Asteroid's Motion in Space." NASA, October 11, 2022. <https://www.nasa.gov/press-release/nasa-confirms-dart-mission-impact-changed-asteroid-s-motion-in-space>.

to support the full disaster management cycle.”<sup>20</sup> The UN-SPIDER program coordinates space information for disaster management support, connecting the disaster management, risk management and space communities and facilitating capacity-building and institutional strengthening, in particular for developing countries.<sup>21</sup>

NASA operates the Planetary Defense Coordination Office (PDCO) to coordinate planetary defense efforts with space agencies of other nations through the International Asteroid Warning Network and the Space Mission Planning Advisory Group, both of which are endorsed by the United Nations Committee on the Peaceful Uses of Outer Space.<sup>22</sup> According to the Action Team on Near-Earth Objects established by the Committee on the Peaceful Uses of Outer Space, a near-Earth object (NEO) is an asteroid or comet whose trajectory brings it within a certain distance from Earth’s orbit. Furthermore, there are specific parameters for designating near-Earth asteroid as potentially hazardous asteroid when its orbit comes, established by the International Asteroid Warning Network (IAWN).<sup>23</sup>

International cooperation in regard to space has grown tremendously as more nations achieve space exploratory capabilities and the UN fosters greater collaboration between member states. One of the most prominent international areas of cooperation in space affairs is the International Space Station (ISS) Program. Operated by international space agencies most principally the United States, Russia, Europe, Japan, and Canada, the ISS is the most politically complex space exploration program ever undertaken.<sup>24</sup> Furthermore, the United Nations Institute for Disarmament Research’s Space Security Programme is building knowledge and awareness on the international security implications and risks that surround the space domain and the use of space technology, as well as contributing to the efforts of policymakers to keep outer space peaceful and secure for all humankind.<sup>25</sup>

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<sup>20</sup> “About Us.” UN Office for Outer Space Affairs UN-SPIDER Knowledge Portal. Accessed July 17, 2023. <https://www.un-spider.org/about>.

<sup>21</sup> “About Us.” UN Office for Outer Space Affairs UN-SPIDER Knowledge Portal. Accessed July 17, 2023. <https://www.un-spider.org/about>.

<sup>22</sup> “Planetary Defense Coordination Office.” NASA. Accessed July 17, 2023. <https://www.nasa.gov/planetarydefense/overview%20coverage%2C>.

<sup>23</sup> “Near-Earth Objects.” Office for Outer Space Affairs UN-SPIDER Knowledge Portal. Accessed July 19, 2023. <https://www.un-spider.org/category/disaster-type/near-earth-objects>.

<sup>24</sup> “International Cooperation.” NASA. Accessed July 17, 2023.

[https://www.nasa.gov/mission\\_pages/station/cooperation/index.html](https://www.nasa.gov/mission_pages/station/cooperation/index.html).

<sup>25</sup> “Space Security.” UNIDIR. Accessed July 19, 2023. <https://unidir.org/programmes/space-security>.

Challenges to security in space are widespread. One of these issues is the lack of widespread access to and technology to explore space. More than 70 space agencies exist around the world, particularly in countries that are technologically advanced or have high military spending, with many other countries currently developing programs.<sup>26</sup> However, space agencies vary greatly in terms of their capability. As of mid-2022, only 16 possessed the ability to conduct a space launch and seven had the capability to send a probe to extraterrestrial locations such as the moon, Mars, or deep space. Of those, three are known to be able to conduct human spaceflights.<sup>27</sup>

One of the key issues in the discussion of space security is the distinction between space's militarization and weaponization. The militarization of space pertains to when a military organization uses, operates, or purchases space assets and services. On the other hand, the weaponization of space often refers to the deployment of conventional and nuclear weapons, including ground-to-space, space-to-space, and space-to-ground.<sup>28</sup> This issue becomes even more complicated when determining the intent of the technology as many times the technology that can be used to destroy a space system can also be used for nondestructive, peaceful purposes. Furthermore, despite the broad legality of counter space weapons, space is still not overtly weaponized. There have been several infrequent anti-satellite (ASAT) tests over the years, but they have always targeted satellites owned and operated by the nation performing the test. These tests are meant to demonstrate capability while not attacking another nation's space assets.<sup>29</sup>

While some progress has been made on international cooperation regarding space security, cooperation is still riddled with issues. For example, each state has their own perception of the international security environment and subsequent divergent national security goals and priorities, meaning space is a foremost priority for some but not for many. Furthermore, historic geopolitical differences create divergent interests in regard to security and the issue of space, such as between developing and developed states or between the West and the former Soviet states.<sup>30</sup>

## **Conclusion:**

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<sup>26</sup> "Countries with Space Programs 2023." World Population Review, 2023.

<https://worldpopulationreview.com/country-rankings/countries-with-space-programs>.

<sup>27</sup> Ibid.

<sup>28</sup> Johnson, Kaitlyn. "What Is Space Security and Why Does It Matter?" *Georgetown Journal of International Affairs* 20, no. 1 (2019): 81–85. <https://doi.org/10.1353/gia.2019.0015>.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid.

Since the beginning of humankind's exploration of space, the UN has been at the forefront of ensuring that it be used for peaceful purposes and that the benefits from space activities be shared by all nations.<sup>31</sup> A number of fundamental principles guide the conduct of space activities, including that space is a shared resource of all humankind, the freedom of exploration and use of outer space by all states without discrimination, and the principle of non-appropriation of outer space.<sup>32</sup>

Space is increasingly critical to modern life on Earth: the health, wealth, and welfare of billions of people depend on space technologies. However, as space becomes more economically and strategically important, there is growing concern that tensions between different space actors could lead to conflict which would have catastrophic consequences for humankind.<sup>33</sup>

### Questions:

1. How can security be defined in space? Is the non-proliferation of space enough or are there more intangible aspects of space security that need to be addressed?
2. What should the primary purpose of international cooperation on space be? Technology? Defense? Etc.?
3. How can the international community better diversify and share space?

### References

“About Us.” UN Office for Outer Space Affairs UN-SPIDER Knowledge Portal. Accessed July 17, 2023. <https://www.un-spider.org/about>.

“Benefits of Space: International Peace and Security.” UN Office for Outer Space Affairs.

Accessed July 17, 2023.

<https://www.unoosa.org/oosa/en/benefits-of-space/international-peace-and-security.html>.

“Committee on the Peaceful Uses of Outer Space.” United Nations Office for Outer Space

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<sup>31</sup> “Committee on the Peaceful Uses of Outer Space.” United Nations Office for Outer Space Affairs. Accessed July 19, 2023. <https://www.unoosa.org/oosa/en/ourwork/copuos/index.html>.

<sup>32</sup> “Space Law.” United Nations Office for Outer Space Affairs. Accessed July 19, 2023. <https://www.unoosa.org/oosa/en/ourwork/spacelaw/index.html#:~:text=A%20number%20of%20fundamental%20principles,non%2Dappropriation%20of%20outer%20space>.

<sup>33</sup> “Space Security.” UNIDIR. Accessed July 19, 2023. <https://unidir.org/programmes/space-security>.



Affairs. Accessed July 19, 2023.

<https://www.unoosa.org/oosa/en/ourwork/copuos/index.html>.

“Countries with Space Programs 2032.” World Population Review, 2023.

<https://worldpopulationreview.com/country-rankings/countries-with-space-programs>.

“The Final Frontier.” Foreign Policy, May 19, 2022. <https://foreignpolicy.com/2022/05/19/outer-space-security-international-governance/>.

“International Cooperation.” NASA. Accessed July 17, 2023.

[https://www.nasa.gov/mission\\_pages/station/cooperation/index.html](https://www.nasa.gov/mission_pages/station/cooperation/index.html).

Johnson, Kaitlyn. “What Is Space Security and Why Does It Matter?” *Georgetown Journal of*

*International Affairs* 20, no. 1 (2019): 81–85. <https://doi.org/10.1353/gia.2019.0015>.

“Near-Earth Objects.” Office for Outer Space Affairs UN-SPIDER Knowledge Portal. Accessed July 19, 2023. <https://www.un-spider.org/category/disaster-type/near-earth-objects>.

“Our Common Agenda Policy Brief 7: For All Humanity - the Future of Outer Space Governance.” Our Common Agenda Policy Brief 7, May 2023.

<https://www.un.org/sites/un2.un.org/files/our-common-agenda-policy-brief-outer-space-en.pdf>.

Pellegrino, Massimo, and Gerald Stang. “INTERNATIONAL COOPERATION FOR SPACE

SECURITY.” *Space Security for Europe*. European Union Institute for Security Studies

(EUISS), 2016. <http://www.jstor.org/stable/resrep07091.8>.

“Planetary Defense Coordination Office.” NASA. Accessed July 17, 2023.

<https://www.nasa.gov/planetarydefense/overview%20coverage%2C>.

“Space Law.” United Nations Office for Outer Space Affairs. Accessed July 19, 2023.

<https://www.unoosa.org/oosa/en/ourwork/spacelaw/index.html#:~:text=A%20number%20of%20fundamental%20principles,non%2Dappropriation%20of%20outer%20space>.

“Space Security.” UNIDIR. Accessed July 19, 2023. <https://unidir.org/programmes/space-security>.

“United Nations Office for Outer Space Affairs.” About us. Accessed July 19, 2023.

<https://www.unoosa.org/oosa/en/aboutus/index.html>.

## II. International Sovereignty in Space & the Privatization of Space

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### Statement of the Issue:

In the last decade, there has been a significant rise in private sector space activity, especially in the United States. While private companies have worked as subcontractors on government space projects for years, decreases in costs and increases in launch options have led private companies to start developing their own rocket systems and launching missions separate from government space agencies.<sup>34</sup> In 2022, the global space market grew by 8% to 424 billion US dollars. One of the most prominent sectors of the space industry is space tourism and deep-space travel. SpaceX, an American company owned by Elon Musk, plans to launch a crew of artists into deep space on its own reusable rocket system and has laid out a broad timeline for missions to Mars.

Private companies have many other purposes in space besides continuing exploration. Satellites have become a critical part of human society, serving as the basis of communication networks, and providing critical data for UN and government work towards the sustainable development goals (SDGs).<sup>35</sup> As of January 2022, there were over 1,000 Earth observation satellites, operated by government or private entities, that helped to monitor weather patterns, deforestation, soil changes, and more. Satellites are also being used for communication networks due to their resilience against natural disasters in comparison to land-based infrastructure. SpaceX, for example, has about 2,500 Starlink satellites in orbit which provide internet services.<sup>36</sup> Satellites also contribute to navigation, supporting global logistics chains, economic development, and the GPS in our cars and phones.<sup>37</sup>

Other areas of involvement in space for private companies include space tourism and resource extraction. Companies such as SpaceX, Blue Origin, Virgin Galactic, and others are developing rocket systems and human-rated vehicles to bring people into space for tourist visits. To support long-term space habitation, it will be necessary to extract resources from celestial bodies, such as the Moon or asteroids.<sup>38</sup> These celestial bodies contain minerals that are rare on Earth, such as helium-3, or valuable for their use

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<sup>34</sup> UNOOSA, Our Common Agenda Policy Brief 7 For All Humanity – the Future of Outer Space Governance, A/77/CRP.1/Add.6, p. 6 (2023), <https://www.un.org/sites/un2.un.org/files/our-common-agenda-policy-brief-outer-space-en.pdf>

<sup>35</sup> *Ibid*, 11.

<sup>36</sup> Sarah Kreps, Avishai Melamed, Ray Jayawardhana, “The promise and perils of the new space boom,” *Brookings*, November 2, 2022, <https://www.brookings.edu/articles/the-promise-and-peril-of-the-new-space-boom-us-china-competition-spacex-international-law/>.

<sup>37</sup> UNOOSA, Our Common Agenda Policy Brief 7 For All Humanity – the Future of Outer Space Governance, A/77/CRP.1/Add.6, p. 11 (2023), <https://www.un.org/sites/un2.un.org/files/our-common-agenda-policy-brief-outer-space-en.pdf>

<sup>38</sup> *Ibid*, 7.

in technologies, such as cobalt, platinum, and nickel. As such, there is a strong economic incentive for their extraction, not only to sustain long-term missions in space, but also for use in products for Earth. However, there is currently no international framework on space resource exploration, exploitation, or utilization.

The increase in launches by private corporations will have numerous impacts on outer space that must be addressed in international space law. Firstly, at the international level, there is a complete lack of coordination around space traffic control.<sup>39</sup> Many countries have different sets of standards, best practices, definitions, languages, and modes of interoperability. As space use increases from new government space agencies and private corporations, it will be vitally important to develop and consistent, international framework for space traffic control. If no space traffic control framework is developed, there will be an increased risk of accidents and collisions, leading to space debris and potentially passenger death.

Another challenge currently facing space flight that will worsen is space debris. Currently, there are more than 24,000 objects that are 10 centimeters or larger, 1 million objects that are smaller than 10 centimeters, and possibly more than 130 million objects smaller than 1 centimeter in orbit.<sup>40</sup> While these objects sound incredibly small, they are travelling at speeds of more than 28,000 kilometers per hour (approximately 17,400 miles per hour) and therefore can cause damage to spacecraft. There is currently no international mechanism or body to monitor space debris or manage its removal. High amounts of space debris could lead to a phenomenon known as the Kessler syndrome, which is a scenario in which space debris collides with other space debris or other objects in orbit, creating even more space debris. The technology that is needed to remove space debris is currently in development, but there are numerous legal issues such as jurisdiction, control, liability, and responsibility for environmental pollution that must be addressed before this technology can be deployed.

### **History:**

After the Soviet Union launched the first satellite and animal into space in 1957, it became clear that the United Nations needed to discuss how space should be used by states. As a result, the General

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<sup>39</sup> Ibid, 11.

<sup>40</sup> Ibid, 15.

Assembly passed the first UN resolution related to outer space in 1958, resolution 1348 (XIII).<sup>41</sup> In 1961, the Committee on the Peaceful Uses of Outer Space met for the first time as a permanent body. The General Assembly adopted the first of five sets of principles in 1963, when it passed resolution 1962 (XVIII), the Declaration of Legal Principles. This marked the beginning of international space law, which continues to govern the exploration and use of space by states and non-governmental entities alike.

Today, international space law is governed by five international treaties and five sets of principles. All of these pieces build off of the first treaty, the 1967 Outer Space Treaty, which forms the base of international space law.<sup>42</sup> At the core of the Outer Space Treaty is the principle that the exploration and use of space shall be for the benefit of and in the best interest of all of mankind.<sup>43</sup> Therefore, space is open for exploration and use by all states and cannot be claimed or annexed as the exclusive territory of any state. This includes the Moon and other celestial bodies, which can only be used for peaceful purposes. The Outer Space Treaty also prohibits the presence of nuclear weapons or weapons of mass destruction in Earth's orbit or elsewhere in space. Furthermore, it designated astronauts as envoys of mankind, rather than their home nation. Additionally, the Outer Space Treaty stipulates that states are responsible for all national space activities, whether carried out by the government or by private entities. States are also liable for any damage caused by their objects in space and must avoid harmful contamination of space and celestial bodies.

The other parts of international space law, which include 1968 Rescue Agreement, the 1972 Liability Convention, the 1976 Registration Convention, and the 1984 Moon Agreement, build off of specific aspects of the original 1967 Outer Space Treaty.<sup>44</sup> While these treaties are binding, they only apply to states, meaning that they are powerless to regulate the private space sector. The five principles were passed by the General Assembly and are the Declaration of Legal Principles (resolution 1962 (XVIII), 1963), the Broadcasting Principles (resolution 37/92, 1982), the Remote Sensing Principles (resolution 41/65, 1986), the Nuclear Power Sources Principles (resolution 47/68, 1992), and the Benefits Declaration (resolution 51/122, 1996). These principles are adopted by GA resolution, meaning that they are not binding. As a result, they are largely unenforced and fail to regulate the growing space industry.

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<sup>41</sup> "A Timeline of the Exploration and the Peaceful Use of Outer Space," UNOOSA, <https://www.unoosa.org/oosa/en/timeline/index.html>.

<sup>42</sup> "Space Law Treaties and Principles," UNOOSA, <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html>.

<sup>43</sup> "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," UNOOSA, <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>.

<sup>44</sup> "Space Law Treaties and Principles," UNOOSA, <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html>.

During the 2010s, the role of private companies in spaceflight grew significantly. With the end of NASA's Space Shuttle program in 2011, it turned to private companies to provide spacecraft for resupply missions to the International Space Station (ISS).<sup>45</sup> SpaceX and Northrop Grumman are the two primary companies who operate cargo resupply missions to the ISS. One of the major factors that has driven the increase in private spaceflight has been the dropping costs to access space. This has occurred due to new technology that allows both rocket boosters and space capsules and vehicles to be reusable. Most notable, SpaceX has its first booster touchdown in December of 2015. Its Dragon capsule is also reusable, which will be key to the company's long-term vision: Elon Musk founded SpaceX in 2002 with the goal of colonizing Mars. Other companies using reusable boosters and capsules include Blue Origin (founded by Jeff Bezos), Virgin Galactic (founded by Richard Branson), Rocket Lab, and Beijing-based OneSpace. Aircraft companies, such as Boeing and Airbus, are also becoming involved in space exploration.

Private companies are doing more than just building rockets to travel to space. In fact, companies are starting to manufacture goods in space. The US-based company Made In Space has developed a 3D printer that can operate in space. It has also been working on a technology called Archinaut which will help repair, upgrade, and refuel satellites in space. It will eventually be able to help build new structures as well.

### **Analysis:**

Current international space law has numerous shortcomings in jurisdiction and content. Firstly, these laws are not applicable to private companies. As more and more non-state actors get involved in the space industry, it is vital that key provisions of international space law apply to them.<sup>46</sup> Additionally, current treaties stipulate that governments are responsible for all space activity in their countries, whether state-sponsored or private.<sup>47</sup> This could have drastic consequences as private companies start providing more services. For example, if SpaceX were to launch a tourist trip into space and there was a technical issue, the US government could be responsible for carrying out an extremely expensive rescue mission.

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<sup>45</sup> Mike Wall, "The Private Spaceflight Decade: How Commercial Space Truly Soared in the 2010s," Space.com, last updated December 20, 2019, <https://www.space.com/private-spaceflight-decade-2010s-retrospective.html>.

<sup>46</sup> Sophie Goguichvili, et al., "The Global Legal Landscape of Space: Who Writes the Rules on the Final Frontier?" *Wilson Center*, October 1, 2021, <https://www.wilsoncenter.org/article/global-legal-landscape-space-who-writes-rules-final-frontier>.

<sup>47</sup> "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," UNOOSA, <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>.

Furthermore, if an American, privately-owned satellite crashed and caused damage in another country, the US government would be held liable.

International space law as it stands today is outdated. It was largely written by the US and the USSR during the Cold War, as the two countries with serious space capabilities.<sup>48</sup> As a result, low-to-middle income countries were not involved in crafting this framework. Additionally, other nations who now have space capabilities, such as China, Japan, India, and Israel, did not contribute to current frameworks. As such, the space industry is tilted in favor of the Global North. Not only were all the rules written by countries of the Global North, but many Global South nations lack the technological capabilities to access the opportunities that can be provided by space.

The private space sector is largely dominated by American companies, but investments in other parts of the world are challenging that dominance. American companies currently account for about 50% of all global commercial space activity.<sup>49</sup> China has been investing in commercial space options and private companies and Russia has been expanding public-private partnerships in the space industry. These two nations in particular have always favored government-run space programs, so this shift is significant. India, Singapore, Japan, and Israel are all also working with private industry to provide funding for commercialization of space and support new companies in competing with American corporations.

International space law is also significantly lacking in scope. Firstly, no new treaties related to space have been created since the 1970s.<sup>50</sup> As a result, important areas of space operations such as satellite servicing, traffic management, space tourism, and space debris are not covered under any international framework. Resource extraction is also not addressed under any current treaties and could become a source of conflict as nations race to extract precious minerals for their own economies. New treaties must be developed that address the significant challenges in all of these areas. Additionally, private companies are not bound by international space agreements. As these corporations increase their space operations, it will be vital for these regulations to apply to them as well. There is a critical question of whether or not, because international agreements do not apply, corporations could establish quasi-

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<sup>48</sup> Sophie Goguichvili, et al., “The Global Legal Landscape of Space: Who Writes the Rules on the Final Frontier?” *Wilson Center*, October 1, 2021, <https://www.wilsoncenter.org/article/global-legal-landscape-space-who-writes-rules-final-frontier>.

<sup>49</sup> Sarah Kreps, Avishai Melamed, Ray Jayawardhana, “The promise and perils of the new space boom,” *Brookings*, November 2, 2022, <https://www.brookings.edu/articles/the-promise-and-peril-of-the-new-space-boom-us-china-competition-spacex-international-law/>.

<sup>50</sup> Sophie Goguichvili, et al., “The Global Legal Landscape of Space: Who Writes the Rules on the Final Frontier?” *Wilson Center*, October 1, 2021, <https://www.wilsoncenter.org/article/global-legal-landscape-space-who-writes-rules-final-frontier>.

territorial claims over celestial bodies.<sup>51</sup> This would create even more problems and significantly undermine the spirit of using space for the benefit of all. Enforcement will be difficult for a few reasons. Firstly, international law applies to states and does not regulate private corporations. Additionally, even if states were to adopt international law as their own national law, corporations are often able to use their resources and connections to evade oversight and circumvent laws. Due to a lack of international cohesion on these issues, many states are creating their own rules. As a result, all of these countries are operating under different systems, which will make international integration a much larger challenge.

### **Conclusion:**

As private companies begin increasing their operations in space, numerous challenges face the global community. The private sector works in various areas of the space industry, including resource extraction, tourism, satellites, communications, and more. Therefore, any regulation that the UN implements must address all of these areas. Additionally, with increases in spacecraft, there will be more challenges in currently unregulated areas, such as space traffic and space debris. Current international frameworks are significantly lacking. Many areas of the space industry are not addressed and the jurisdiction of the agreements over private companies is unclear. As a result, corporations could essentially do whatever they want in space and undermine the idea of space for the benefit of humankind. Additionally, the current space law framework is heavily biased towards its writers, the US and Russia, and must be updated as more nations and corporations come into play.

### **Questions:**

1. Should private companies be responsible and liable for their own space activities? If so, how can this be enforced by the UN and/or member governments?
2. How should ignored issues such as satellite servicing, space traffic management, space tourism, space debris, and resource extraction be addressed and regulated?
3. How can new international space law frameworks govern both public and private space operations?

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<sup>51</sup> Sarah Kreps, Avishai Melamed, Ray Jayawardhana, "The promise and perils of the new space boom," *Brookings*, November 2, 2022, <https://www.brookings.edu/articles/the-promise-and-peril-of-the-new-space-boom-us-china-competition-spacex-international-law/>.

**References:**

- Goguichvili, Sophie, et al. “The Global Legal Landscape of Space: Who Writes the Rules on the Final Frontier?” *Wilson Center*, October 1, 2021. <https://www.wilsoncenter.org/article/global-legal-landscape-space-who-writes-rules-final-frontier>.
- Kreps, Sarah, Avishai Melamed, Ray Jayawardhana. “The promise and perils of the new space boom.” *Brookings*, November 2, 2022. <https://www.brookings.edu/articles/the-promise-and-peril-of-the-new-space-boom-us-china-competition-spacex-international-law/>.
- UNOOSA. “A Timeline of the Exploration and the Peaceful Use of Outer Space.” <https://www.unoosa.org/oosa/en/timeline/index.html>.
- UNOOSA. Our Common Agenda Policy Brief 7 For All Humanity – the Future of Outer Space Governance. A/77/CRP.1/Add.6 (2023). <https://www.un.org/sites/un2.un.org/files/our-common-agenda-policy-brief-outer-space-en.pdf>.
- UNOOSA. “Space Law Treaties and Principles.” <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html>.
- UNOOSA. “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.” <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>.
- Wall, Mike. “The Private Spaceflight Decade: How Commercial Space Truly Soared in the 2010s.” *Space.com*. Last updated December 20, 2019. <https://www.space.com/private-spaceflight-decade-2010s-retrospective.html>.