



**A**s noted in my last column, the 1967 Outer Space Treaty (OST) is justifiably called the Magna Carta of Space Law. Since its signing 50 years ago, its vision—to promote the peaceful and collaborative uses of outer space for all humankind—has been and remains the guiding principle for the use of space in the present and future. It sets out important principles for space exploration and use, prohibits national appropriation of space territory and resources, and prevents national ownership of both. Three articles referring to nations’ responsibilities for space assets limit the options of private enterprises to profit from space activity. In this column, I discuss profiting from space resources and explore the more immediate concerns of removal of active space debris and on-orbit servicing. As we project what the next 50 years will look like, most believe the OST will continue to provide a strong legal foundation, and new international agreements will emerge to respond to technological and commercial developments.

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It is hard to believe the authors of the OST were able to differentiate between science fiction and achievable technological developments that needed to be formally addressed through legislation. The principles from the treaty laid the foundation that enabled exploration, commercial applications, and fomented collaborations. However, as Dr. David Kendall, Chair of UNCOPUOS in 2016-17 points out, “space is changing rapidly with new actors, especially with respect to the commercial sector, and new technologies that are disrupting the status quo.” Some of the technologies currently being discussed within the international law community are mining resources and Active Debris Removal and On-Orbit Servicing (ADR/OOS).

The plans to extract resources from celestial bodies vary in scope and use. At the extreme, there are some people interested in capturing asteroids rich in rare Earth metals, bringing them to a lunar orbit, and mining the resources to use on Earth. This is a high-risk-high-reward scenario that has the greatest potential to impact the mining industry; still, despite efforts from companies like Planetary Resources or Deep Space Industries, it is far from becoming a reality. A more probable manifestation of this technology is for In-Situ Resource Utilization (ISRU) for sustained habitation on another celestial body. An example would be the Moon Village concept from the European Space Agency where lunar regolith is used to protect habitats from radiation.

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In anticipation of missions that will utilize resources, and encouraged by economic investments from industry, the government of the US introduced the 2015 Commercial Space Launch Competitiveness Act. In short, this legislation encourages the use of space resources for commercial applications in accordance with international law, and, as expected, provoked mixed reactions from other nations. As the President Emerita of the International Institute of Space Law (IISL), Tanja Masson-Zwaan, suggested, “some states are quite vocal in condemning these laws as being contrary to the OST, while others recognize them as being necessary to provide legal certainty to industries who plan to invest.” And, the arguments go beyond issues of appropriation from Article

II. Some states are challenging whether “the free exploration and use of outer space and celestial bodies” as described in Article I accounts for taking non-renewable resources. To that extent, Christopher Johnson, Space Law Advisor at the Secure World Foundation, reminds readers that “the use of resources exists along a spectrum, and somewhere in the middle there is something that is politically justifiable.” This may involve new legislation agreeing on whether nations can take all or only a portion of the resources, different rules depending on the materials extracted, and potential differentiation based on whether those are used in space or brought back to Earth.

For many years, space has endured the tragedy of the commons problem, in which nations benefit from a large number of satellite missions, but no one spent the resources to clean up the mess from pieces of launch vehicles and decommissioned spacecraft left behind. Despite being in low-Earth-orbit, many of these objects will take decades before they re-enter and, hopefully, burn up in the atmosphere. These pieces of space debris increase the risk of collisions with human or spacecraft missions like the 2009 case between Iridium 33 and Kosmos 2251 spacecraft.

The “law of salvage” exists in maritime law to reward individuals who recover old shipwrecks by allowing them to keep the findings as a reward. This concept encourages many diving expeditions looking for treasures. Yet, actors would need permission from the owners of spacecraft relics because registering states retain jurisdiction even if objects are no longer operational. As Masson-Zwaan reminds us, this is for “reasons of not wishing to disclose sensitive technology and national security interests.” Furthermore, she added that non-profit organizations, like École polytechnique fédérale de Lausanne (EPFL), are investing in technologies to clean up their own state’s space junk because they “have an interest in keeping the use of space sustainable.” For an extrinsic motivator, Kendall speculates that as the technology matures, “states that own objects in space, especially those that have a high risk of potentially causing damage as defined under the OST, might want to consider the financial trade-off between remediating their objects and being sued for damages that the object might cause.” Similar statements can be made about OOS and the liability legal challenges ahead.

As Johnson says, “The Outer Space Treaty is a treaty of principles, and with each new development, limits are being tested and stretched.” Resource extraction and ADR/OOS took different paths in reaching the international community. With regards to debris, the draft guidelines from the Inter-Agency Space Debris Coordination Committee (IADC) were adopted with minor modifications by UNCOPUOS in 2007. Like the Principles Declaration from 1963, these guidelines are not binding, however COPUOS Member States were encouraged to implement these voluntary guidelines through national legislation. In contrast, the discussions on resource extraction took a different path by first defining federal laws in the US and Luxemburg. These laws instigated ongoing international discussions and are part of the agenda for the UNCOPUOS Legal Subcommittee. When asked whether any of these negotiations could lead to an amendment to the OST, Kendall, Masson-Zwaan, and Johnson uniformly said no. The main fear is that there would be no end to those discussions. Furthermore, Masson-Zwaan added that, “we risk losing the fragile balance it provides us, the principles are workable and have stood the test of time.” Rather than amendments, one can expect supplemental treaties or guidelines depending on the problem and consensus between Member States. To that end, Kendall warns us that “we all have to realize that unless some major changes were to occur, especially in relation to national leaders accepting that new treaties with respect to space activities are a priority—which, frankly, is not likely to happen—the development of new regulations to guide current and future space actors is going to be slow and demanding.”

As a final thought, the OST is a remarkable document that has set the principles that have and continue to guide humankind’s exploration of outer space. And, like Johnson said, “space law is complex; it is not meant to defeat intentions in space, but rather preserve our freedoms of actions per Article I of the OST.” ■

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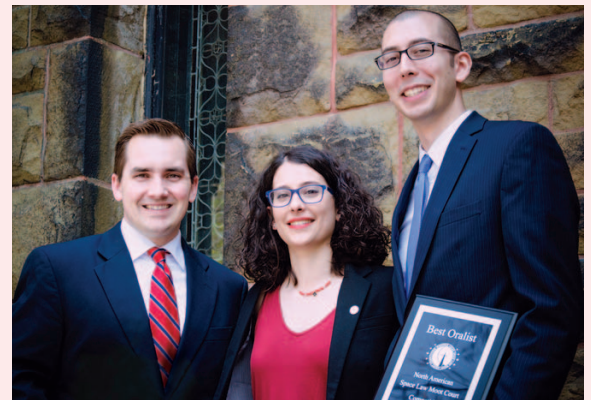
## Malfred Lachs Space Law Moot Court

In 2016 the following hypothetical scenario was argued

*In 2028, the Banché government hired Couleur, a private company, to deorbit its inoperative Lavotto-1 microsatellite. The company used its shuttle-like spacecraft to perform a rendezvous, failed to grapple the satellite, and instead created a cloud of debris that damaged the vehicle endangering the lives of the astronauts. During the emergency landing in the neighbouring country of Rastalia, pieces of the spacecraft broke off and landed in a nearby campsite resulting in two casualties.*

While it may seem convoluted and difficult to sort out, this is just a small portion of the problem presented to the participants of the 2016 Malfred Lachs Space Law Moot Court organized by the International Institute of Space Law (IISL). Since its inception in 1992, the competition has challenged university teams of 2-3 law students to argue both sides of the hypothetical case in front of a panel of judges. Regional rounds take place in Africa, Asia Pacific, Europe, and North America and assess both written submissions and debates to select the top teams that will meet at the World Finals taking place in conjunction with the annual International Astronautical Congress. The submissions are judged based on the teams’ ability to apply international treaties and customary international law to their arguments and rebuttal statements.

Aram Daniel Kerkonian, a Doctor of Civil Law Candidate with a focus on Space Law at McGill University, was one of the students arguing the Banché v Rastalia case. After months of preparation, his team prevailed over the competition at the regionals in Georgetown University to advance to the World Finals. From April to September 2016, Aram and his teammates revised their arguments in preparations for their trip to the main event in Guadalajara, Mexico. There, the team faced fierce competition reaching the semi-final stage. In the end, they were recognized for the best written submission with the Eilene M. Galloway Award for Best Memorial.



Space Law Moot Court 2016 Competition participants (left to right): Adam Newsome, Maria Manoli (coach) and Aram Kerkonian.

Aside from the educational value, Aram highlights the importance of discussing cases as a means of engaging the legal community in a dialogue on future technologies. The moot court encourages students to follow in the steps of other space law visionaries of the pre-Sputnik era who helped define, study, and understand new technologies and their associated risks. Furthermore, the event is frequented by many industry legal advisors seeking inside knowledge on the reasoning for the courts and legal systems to provide better advice on emerging technologies.

Mr. Kerkonian stressed that for many years we watched government agencies pave the way by launching the first rockets, satellites, and humans into space. These advancements helped define many of the standards and laws applicable to today’s industry. However, recent advancements are challenging the current legislation with technologies that have never been tested by space agencies, and thus pose new legal questions like those presented in the moot court. Thus, like Aram said, it is an exciting time for the space law community. ■