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THE "HARDENING" OF SPACE LAW: THE NEED TO DEVELOP THE LEGAL MEANS TO PROTECT SPACE ASSETS

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JCSP 43 DL – PCEMI 43 AD
2017 – 2018

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Word Count: 3198

Compte de mots: 3198

THE "HARDENING" OF SPACE LAW: THE NEED TO DEVELOP THE LEGAL MEANS TO PROTECT SPACE ASSETS

The exploitation of space has created a wealth of opportunities for states and organizations around the world, including Canada. Humans depend daily upon the services provided by man-made objects that have been launched into Earth's orbit, and beyond, and as the costs associated with launching those vehicles decreases, the commensurate increase in space traffic will bring with it the possibility of conflict between states being extended into the space environment. The international laws currently in place are insufficient to regulate debris-causing space weapons as those laws only provide restrictions for nuclear weapons. While the laws in place governing the effect of space activities on Earth are clear and defensible, issues relating to the ongoing open access to space combined with the increasing numbers of space participants and activities necessitate a more robust set of laws governing space activities. The possibility of space debris damage to space vehicles caused by the use of weapons or other activities are a serious concern given the expense of such vehicles and the fragility of life in space. As such, a clear body of regulation as to the use of outer space must be developed in order to foster further development of space in such a way that the use of outer space would not serve as an extension of the conflicts on Earth. Such a regulation regime is in the Canadian interest providing Canada with open access to the vast opportunities presented by space and the legal protections for its assets.

Why Regulate Space?

The careful balance between competition and conflict that so characterized the Cold War period between the United States and the Soviet Union extended to space as those two states took to the stars from the 1950s onward. While the intervening years from then to the present have witnessed other states and organizations likewise take their ambitions to space, the overall number of active participants is still relatively low and as such access to space is still very much limited to those with the economic and technological means to reach orbit and even fewer with the ability to leave orbit. Despite the difficulties in accessing space there is a wide awareness of the benefits and opportunities that such access can bring and likewise there is broad interest in maintaining space as a place that is open to all. This "openness" was described by the representative of the Philippines to the 4th Committee of the 66th General Assembly of the United Nations (UN) as the principle of equal and non-discriminatory access to outer space and equal conditions for all states, irrespective of their level of scientific, technical and economic development.[1] Indeed such a view is in the Canadian interest given that, despite an active and long history of space endeavours of its own, Canada has limited capability of launching its own space vehicles and therefore must depend upon other states and organizations to maintain its access to space.

In order to maintain access to space there must be the basis of mutual understanding between states and organizations who not only are currently taking part in accessing space, rather, there is the need to also look ahead to those parties who are not yet involved but may be at some time in the future. As early as 1958, the need to explore the ability to regulate and

[1] "Setting Spacefaring Nations against Non-Spacefaring Ones Rejected in Fourth Committee as Debate Centres on Cooperative, Not Competitive, Use of Space | Meetings Coverage and Press Releases," United Nations, October 13, 2011, accessed May 22, 2018, https://www.un.org/press/en/2011/gaspd485.doc.htm.

support activities in space was recognized by the UN as was the need to investigate the validity of legal questions that can arise owing to the exploration and use of outer space. This led to the creation of the Committee on the Peaceful Uses of Outer Space (COPUOS) in 1959 with a mandate, "…to govern the exploration and use of space for the benefit of all humanity: for peace, security and development."[2]

While the creation of this committee began the exploration of legal instruments for space, the issue of sovereignty over space has not been greatly argued. The UN delegate from Peru noted this by raising that since during the early satellite flights, no states complained about the flight of the satellites over their territories, which demonstrated that states did not recognize those flights as violations of their sovereignty.[3] Indeed this differentiates the roots of air law from space law as the former is derived from the principle of territoriality whereby a state holds exclusive sovereignty to the airspace above its territory.[4] While the point of sovereignty in space has been contested at times, the reasoning that sovereignty does not exist in space justified the premise that outer space was free for any state to use and, hence, that it was "global" in character.[5] Therefore, to support the global character of space the need to regulate is commonly understood and accepted.

In 1961, UN General Assembly Resolution 1721 called for states to adopt the principles that international law (including the UN charter) applied to space and that outer space should not be subject to claims of national sovereignty. It also called for the COPUOS to further study other

[2] Jason Beery, Unearthing global natures: Outer space and scalar politics. Political Geography 55, 2016, 95.
[3] Ibid.
[4] Steven Freeland, For better or for worse? The use of 'soft law' within the international legal regulation of outer space. Annals of Air and Space Law 36, 2011, 412.
[5] Beery.

legal issues that might arise in space.[6] These first steps were advisory only, as the resolution does not hold legal status, and there is a lack of any obvious means to enforce compliance. This, and other non-binding norms form the basis of what has been termed as "soft law" whereby there is interest amongst a broad range of parties in the principles of law however there is not an accompanying consensus and agreement in the particulars surrounding questions of jurisdiction and enforcement. While such a "soft law" approach has been prevalent for activities occurring in space, there are space related regulations that have a firmer basis and reach.

Evolution of the Regulation of Outer Space

The ability to regulate the use of space, in such a way so as to be applicable to all space-faring states and organizations while being robust enough to encourage compliance, is a practice that calls for consensus building. As such, the call for the regulation of outer space revolves around the need for transparency and measures that enhance confidence amongst all those of states having or desiring access to outer space. The implementation in 1967 of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (UNOOSA), is the foundation upon which international space law has grown.[7] The key principles of this treaty include that states shall not place nuclear weapons or other weapons of mass destruction in space, states shall be liable for damage caused by their space objects and outer space shall be free for exploration and use by all

[6] James Clay Moltz, Crowded orbits: Conflict and cooperation in space. New York: Columbia University Press, 2014, 39.

[7] "International Space Law: United Nations Instruments," United Nations Office for Outer Space Affairs, May 2017, accessed May 21, 2018, http://www.unoosa.org/res/oosadoc/data/documents/2017/stspace/stspace61rev_2_0_html/V1605998-ENGLISH.pdf, iii.

states.[8] This treaty aligns with Canadian interests and likewise Canada was one of the original ratifying states in 1967.

Subsequent treaties relating to space were moved forward from the COPUOS such as: the 1968 Agreement on the Rescue of Astronauts and the Return of Objects Launched into Outer Space; the 1972 Convention on International Liability for Damage Caused by Space Objects; the 1975 Convention on Registration of Objects Launched into Outer Space; and the 1979 Agreement Governing the Activities of States on the Moon and other Celestial Bodies.[9] These treaties together create the basis of the "hard law" that exists relating to human activities in space though they are limited by their applicability to states and state organizations and as such have jurisdiction gaps when considering private corporations.[10] An example of regulation relating to space that has been successful can be found in the UNs' Convention on International Liability for Damage Caused by Space Objects. Indeed this convention served as the basis from which Canada successfully made a claim of damage against the Soviet Union when a Soviet radar satellite, powered by an onboard nuclear reactor crashed in Canadian territory in 1978; the claim was settled with a $3 million payment by the Soviets toward a cleanup of the crash.[11] While this example supports the recognition that actions in space can have a consequence on Earth, the regulation of activities that take place solely in space and likewise whose direct effects lie in Earth orbit or beyond require a different legal approach than that contained in a convention relating to the determining of liability in a state's territory.

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[8] "Outer Space Treaty," United Nations Office for Outer Space Affairs, accessed May 23, 2018, http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html.

[9] Freeland, 426.

[10] Ibid., 419.

[11] Moltz, 47.

Laws relating to space have also been successful in regulating the use of nuclear weapons in space. The Limited Test Ban Treaty (LTBT) of 1963, amongst other Earthly provisions, included the provision for the banning nuclear weapons testing in space. This treaty came about following the space-based nuclear testing conducted by the United States and the Soviets from 1958-1962. The Starfish Prime experiment, which was conducted by the United States in 1962, consisted of detonating a nuclear warhead at an altitude of 400 km with the result being an electromagnetic pulse that damaged several satellites and disrupted communications.[12] Recognition of the danger to space objects that could result from the detonation of nuclear weapons was thus driven home and understood that the danger could have collateral damage amongst the sensitive space assets regardless of nationality. The LTBT is limited however in that it does not recognize or place restrictions on any other types of weapons and as such is lacking in terms of arms control.[13]

Modern Context and Challenges

During the Cold War there was a clear bipolarity when considering the participants in space as they were in either the sphere of influence of either the United States or the Soviet Union. This provided a sense of clarity when it came to issues that could possibly arise between those competing interests in space. This changed however as China greatly increased its capability in the space realm and thus has created a much more complex environment with multiple actors.[14] As of 2013, there were approximately one thousand active satellites owned by

[12] Karl D. Hebert, Regulation of space weapons: Ensuring stability and continued use of outer space. Astropolitics 12 (1), 2014, 4.

[13] Ibid., 5.

[14] Moltz, 123.

60 states or consortiums that are in orbit and that number continues to climb.[15] The issue of jurisdiction is paramount in determining law in outer space and as earlier noted, state sovereignty does not apply to space itself. Where jurisdiction may be possible is by observing the nationality principle of international law that specifies that states exercise jurisdiction over all acts committed by one of their citizens, regardless of location.[16] While this may indeed support clarifying jurisdiction where it is in the interests of a state to extend their laws against their own citizens, this does not however create the grounds from which to regulate and determine jurisdiction between states. An example of a state using the nationality principle for purposes of extending jurisdiction to space for criminal law can be found in the Canadian Criminal Code ss. 7(2.3) and 7(2.31) which provides for jurisdiction over an accused under Canadian jurisdiction aboard the International Space Station (ISS).[17] With the prosecution of individuals committing criminal acts may be possible in space, determining jurisdiction in actions involving states and organizations is more problematic given the current forms of "hard law" relating to outer space.

Aside from jurisdiction, the issue of having the legal framework to offer protection to a state or organization's space assets is obvious when considering the use of space debris causing weapons. The United States tested their anti-satellite (ASAT) system in 1985 when the U.S. military hit the target satellite, destroying it and creating hundreds of pieces of hazardous orbital debris. That was the last such kinetic ASAT test until 2007, when China broke the informal moratorium on such testing and destroyed one of its own satellites. Radar systems identified more than 3,000 pieces of debris from this collision, most of which will remain in orbit for about

[15] Paul Meyer, "Failure to Launch?" Open Canada, February 28, 2013, accessed May 17, 2018, https://www.opencanada.org/features/failure-to-launch/.

[16] Lee Seshagiri, Spaceship sheriffs and cosmonaut cops: Criminal law in outer space. Dalhousie Law Journal, 28(2), 2005, 481.

[17] Ibid., 485.

fifty years.[18] This is an example of the weakness in the "soft law" approach whereby states, such as China, may agree to the principles of the peaceful and open use of space until they have developed the capability to take a more weaponized approach to space and thus engage in activities that can either be viewed as aggressive or possibly result in damaging the space assets belonging to other states or organizations.

The issue of space debris is important given the fact that it is indiscriminate as any object that is orbiting Earth, is at risk of becoming a victim of a space debris strike.[19] Given the high, and increasing, number of space objects there is an accompanying risk of collision between those objects and debris already in space. This is exacerbated by the possibility of the use of debris causing space weapons as the use of a conventional ASAT can add to that debris numbers in the thousands. Likewise those debris can last for decades in orbit thereby endangering not only those object currently in space but also those in the future.

Why the Regulation of Space is in the Canadian national interest

The launch of Canada's first satellite, Alouette 1, in 1962 saw Canada be an early adopter of access to space as it was the first nation after the U.S. and the Soviet Union to design and build its own satellite.[20] Canada has continued this space presence through a number of satellites as well as its partnerships with others states in advancing its space technology and interests. As mentioned earlier, Canada was also an early signatory to UNOOSA thereby recognizing the need

[18] Moltz, 29-30.
[19] Hebert, 12.
[20] CBC Radio, "This Piece of Canadian Space Junk Has Been Orbiting the Earth since 1962 | CBC Radio," CBCnews, November 27, 2017, accessed May 17, 2018, http://www.cbc.ca/radio/asithappens/as-it-happens-monday-edition-1.4421148/this-piece-of-canadian-space-junk-has-been-orbiting-the-earth-since-1962-1.4421155.

to support legal instruments that not only preserved access to space for itself but also sought to protect its assets.

Canada has not sought to develop weaponized space technology and as such is dependent upon a common international understanding for the openness of space and must therefore trust in the international community for the ongoing safety of its assets. That trust may be founded upon the principles laid out in UNOOSA however as has been discussed, the risk associated with space weapons utilized by other states represents a danger to Canada's space assets and as such it is in Canada's interest to take proactive measures to encourage, and perhaps lead efforts for, "hard law" in the form of treaties against the use of debris causing weapons in space.

Canada is also supporting the safety of space assets via its contribution to the monitoring of space through its Near-Earth Object Surveillance Satellite (NEOSSat) which was launched in 2013. This satellite is the world's first space telescope dedicated to detecting and tracking asteroids and satellites and is part of the High Earth Orbit Surveillance System project by Defence Research and Development Canada (DRDC) which aims to maintain the safety of Canadian and international space assets.[21] Such a proactive measure recognizes both the risk of collision in space and the need to address that risk via early detection in the hopes that action could be taken to avert damage or destruction of space objects and vehicles.

Conclusion

Despite the vastness of space, Earth orbit is an increasingly crowded area with an increasing number of states and organizations taking part in the exploitation of opportunities in

[21] Government of Canada, Canadian Space Agency, "NEOSSat: Canada's Sentinel in the Sky," Canadian Space Agency Website, March 25, 2015, accessed May 17, 2018, http://www.asc-csa.gc.ca/eng/satellites/neossat/default.asp.

space. Given the trajectories required to maintain desired orbits for space vehicles and objects, there is an increasing likelihood of conflict arising between those space fairing states and organizations owing to the possibility of damage or destruction to those assets whether through direct or indirect action such as would occur due to an ASAT strike. There is thus the need for more robust "hard law" with regards to the use of weapons in space as more states become capable of employing space weapon technology. The "soft law" that has come to represent much of the norms of the conduct of states and organizations in space is no longer sufficient given the wide capabilities of those numerous actors. Likewise, Canada would be well advised to continue its proactive measures in securing the safety of its space assets, such as with NEOSSat, and also to pursue the development of formal international legal instruments in order to provide for more robust protections for space objects from the interference and activities of others.

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