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Ryan Hedrick
Ryan.Hedrick@chicagounbound.edu

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Fishing for Asteroid Mining Jurisdiction: A Real White Whale

Working Paper

International Immersion Program: France, Luxembourg, and Belgium

Ryan Hedrick

June 3, 2019

Introduction – Mapping the Course

Technology and industry are moving ever-closer to the realistic and economically viable use of extraterrestrial resources.¹ We are not only rocketing towards infinite possibilities and beyond but also into a what many fear is a dangerous legal vacuum.²

Especially over the past several years, and ever-increasingly, the focus of legal literature with regards to asteroid mining has revolved on two issues. The first, whether the current Outer Space Treaty System allows this “use” of space³ and whether it should. The second, whether there are Earthly models for an asteroid mining legal regime and which to use. The first answer appears to be yes. The second is a misguided attempt to impose a new legal regime where legal institutions already exist and as will be shown in this paper.

The dawning of the Space Age with the launch of Sputnik (I) led the United States to go to the young United Nations (UN) to develop a set of rules around this new frontier.⁴ The UN has ever-since been the leader in space law jurisdiction, the “normative element of jurisdiction . . . to adopt valid and binding legal norms and to concretise them with binding effect through its appropriate organs . . .”⁵ The international community has consistently used the UN and the Outer Space Treaty System framework throughout the use of space.

¹ The world’s first graduate program in Space Resources is available at the Colorado School of Mines. Milton “Skip” Smith, *A Space Law Primer for Colorado Lawyers Part 2: U.S. Space Law*, Colo. Law., May 2018, at 43, 49; *Space Resources Program*, Colorado School of Mines, retrieved April 29, 2019, <https://space.mines.edu/>; See also JAXA and NASA’s missions to Ryugu and Bennu, respectively. Michael Roston, and Kenneth Chang, *Japan’s Hayabusa2 Spacecraft Lands on Ryugu Asteroid*, New York Times, February 21, 2019. Retrieved March 14, 2019. <https://www.nytimes.com/2019/02/21/science/ryugu-asteroid-hayabusa2.html>; Kenneth Chang, *NASA’s Osiris-Rex Arrives at Asteroid Bennu After a Two-Year Journey*, New York Times, December 3, 2018, retrieved March 14, 2019. <https://www.nytimes.com/2018/12/03/science/osiris-rex-bennu-asteroid-arrival.html>.

² See generally Jack M. Beard, *Soft Law’s Failure on the Horizon: The International Code of Conduct for Outer Space Activities*, 38 U. Pa. J. Int’l L. 335 (2017) (primarily discussing the military use of space but with ideas that may impact asteroid mining and space law more generally).

³ See Outer Space Treaty, Art. I, Preamble.

⁴ *Politics of Sputnik*, New York Times, October 10, 1957.

⁵ Bin Cheng, *The Extraterrestrial Application of International Law*, 18 Current Leg. Probl. 132, 134 (1965).

The question of the use of extraterrestrial resources has been increasingly brought to the forefront over the past few years. Arguably following obligations in the Outer Space Treaty System, the United States established the first national framework on this subject.⁶ Luxembourg followed closely behind with a similar national framework.⁷ It is likely that other States will follow.

Both of the national frameworks assume that heavenly bodies cannot be owned themselves. Both assume that current international and space law allow for the ownership of resources taken from heavenly bodies.⁸ The jurifactory home of space law appears not to have questioned by these actions – in fact, both regimes positively acknowledge the international regime as binding and congruent with these claims.⁹

Brief Background on Space Law – Setting Sail

The Outer Space Treaty is generally seen as the “Magna Carta” of space law.¹⁰ This document was written by the UN after the launch of Sputnik (I) and the growing worries of the United States about the Soviet use of space.¹¹

⁶ Commercial Space Launch Competitiveness Act - PL 114-90, November 25, 2015, 129 Stat 704.

⁷ See *Projet de loi sur l'exploration et l'utilisation des ressources de l'espace*, Ministère de l'Economie Le Gouvernement de Grand-Duché de Luxembourg, retrieved May 5, 2019, <http://luxembourg.public.lu/fr/actualites/2016/11/11-space-resources/projet-de-loi-espace.pdf> (including the official text of the law and its history and background); *Draft Law on the Exploration and Use of Space Resources*, Space Resources Luxembourg, retrieved May 5, 2019, <https://spaceresources.public.lu/content/dam/spaceresources/news/Translation%20Of%20The%20Draft%20Law.pdf> (English translation of the draft law).

⁸ *Luxembourg's Framework*, Space Resources Luxembourg, retrieved April 29, 2019, <https://spaceresources.public.lu/en/faq.html>.

⁹ These actions comply with and strengthen the case that the US and Luxembourg frameworks are workable and correct with regards to the Vienna Convention on the Law of Treaties. Vienna Convention on the Law of Treaties, Sec. 3, Art. 31. 3.(b). <https://treaties.un.org/doc/publication/unts/volume%201155/volume-1155-i-18232-english.pdf>.

¹⁰ Edwin W. Paxson, III, *Sharing the Benefits of Outer Space Exploration: Space Law and Economic Development*, 14 Mich. J. Int'l L. 487, 489 (1993).

¹¹ *Politics of Sputnik*, New York Times, October 10, 1957.

Importantly, the three major factions of the UN each pushed for different ideals that came together to form our current space law regime.¹² At the behest of the Non-Aligned movement this regime seemed to imply that there could never be *any* ownership of heavenly bodies. These relatively poor States wanted to ensure their people and their governments would realize these gains. However, the liberal movement led by the United States and the communist movement led by the Soviet Union were able to keep this door open.

The vastly different ideals of these international groups led to several important developments that are clear in the asteroid mining context. First, to gain consensus the Outer Space Treaty was very broad and often vague. This helps explain why the early additions to the Outer Space Treaty System were completed so quickly and with relatively broad support. Second, the changing technology and science and the known need for additions to the Outer Space Treaty made it clear that these topics would need further discussion and updates. This also helps explain why the early additions to the Outer Space Treaty System were completed so quickly and with relatively broad support. Third, these divisions developed the structure and players of space law.

This broad structure is found in other international regimes but has remained absolute in space law since its inception. States are the sole actors in space law, this was a compromise position between the liberal and communist blocs. The communist bloc initially pushed for States as the sole actors in space generally. This compromise left the door open to private entities to utilize space, through regulation and supervision of at least one State. Moreover, private

¹² See Karen A. Mingst and Margaret P. Karns, *The United Nations in the 21st Century*, Fourth Ed., Westview Press, 2012, p. 80-83. (for a general overview of the three factions); Julian Hermida, *Legal Basis for a National Space Legislation*, Kluwer Academic Publishers, 2004, p. xv-xvii.

entities are meant to utilize their position within a State to further its own interests on the international stage.

Another broad feature was pushed most heavily by the Non-Aligned Movement was that space should be open, free, and benefit *all*.¹³ In the end, this idea is entrenched and underlies the Outer Space Treaty and the agreements that followed. However, its applicability and depth is in question with regards to asteroid mining.

By keeping many issues open enough, the waiting game began. The next several years led to a few more agreements clarifying what was then essential. These include the Rescue Agreement, the Liability Convention, and the Registration Convention.¹⁴ The Moon Agreement was a later, failed attempt at virtually blocking all mining, similar to the current state of the Antarctic Treaty System.¹⁵

Recently, the United States and Luxembourg have both passed similar frameworks for extraterrestrial mining. Notably, this largely matches the United States and Luxembourg both leading the commercial licensing of radio transmissions and later satellites.¹⁶ There is some

¹³ Outer Space Treaty, Art. I, Preamble.

¹⁴ Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, the “Rescue Agreement,” Adopted by the General Assembly in its resolution 2345 (XXII), opened for signature on 22 April 1968, entered into force on 3 December 1968, retrieved April 28, 2019, <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/rescueagreement.html>; Convention on International Liability for Damage Caused by Space Objects, the “Liability Convention,” Adopted by the General Assembly in its resolution 2777 (XXVI), opened for signature on 29 March 1972, entered into force on 1 September 1972, retrieved April 28, 2019, www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/liability-convention.html; Convention on Registration of Objects Launched into Outer Space, the “Registration Convention,” Adopted by the General Assembly in its resolution 3235 (XXIX), opened for signature on 14 January 1975, entered into force on 15 September 1976, retrieved April 28, 2019, <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/registration-convention.html>.

¹⁵ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, the “Moon Agreement,” Adopted by the General Assembly in its resolution 34/68, opened for signature on 18 December 1979, entered into force on 11 July 1984, retrieved April 28, 2019, <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html>; See also United Nations Treaty Collection for a full list of participating States, https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXIV-2&chapter=24&clang=en (22 participating States as of June 3, 2019; no major space power or likely space mining power has ratified the treaty).

¹⁶ Atossa Araxia Abrahamian, *How a tax haven is leading the race to privatise space*, The Guardian, September 15, 2017, retrieved November 8, 2018, <https://www.theguardian.com/news/2017/sep/15/luxembourg-tax-haven-privatise-space>.

concern that these frameworks do not comply with the Outer Space Treaty System. However, both the United States' and Luxembourg's frameworks and their literature claim that they are will not breach international law (the US position) or do not breach international law (Luxembourg's position). Moreover, this issue does not appear to be a serious threat at this point in time.

Jurisdiction in Outer Space – Fishing License Enforcement

The UN clearly holds jurisdiction in space, as mentioned above. The otherside of jurisdiction is jurisdiction which refers to the part of jurisdiction in which an entity can actually enforce its rules.¹⁷ The UN deputizes members in this realm and allows for broad discretion on how to follow the obligations set out in the Outer Space Treaty System – both in jurisdictional and jurisdictional terms.¹⁸

This discretion applies most directly to authorization and supervision. The question raised by the United States and Luxembourg today is whether the Outer Space Treaty System allows for the expropriation of extraterrestrial resources.¹⁹ Does the Outer Space Treaty System allow for the use of space resources? If yes, then there is no need to search for other models in a vacuum. However, questions of degree and reform would remain. If the answer is unclear, the position assumed in this paper, or if the answer is no, then models can guide us as there are no legal guidetrails.

¹⁷ Bin Cheng, *The Extraterrestrial Application of International Law*, 18 *Current Leg. Probl.* 132, 134 (1965).

¹⁸ See generally Paul Stephen Dempsey, *National Laws Governing Commercial Space Activities: Legislation, Regulation, & Enforcement*, 36 *NW. J. INT'L L. & BUS.* 1 (2016).

¹⁹ This paper will only entertain the use of asteroid resources. The use of the Moon and Mars (but other heavenly bodies as well) may prove to be a different story. Human history, culture, and action may preclude the mining of these bodies on legal, political, or other grounds.

This discretion does not shift international law solely into more local jurisdictions but merely deputizes these other entities. As States have increasingly regulated space activities the jurisdiction of space law has not changed. An American county sheriff does not lose authority by hiring and dispatching deputies.

Importantly, the Liability Convention, and the Outer Space Treaty System generally, relies heavily on international cooperation and Space Diplomacy.²⁰

Earthly Models and No Bites

Much of the literature, particularly recently, discussing space law focuses on potential analogies and models that already exist. Most often this includes the law of the sea, but polar and air law are also often offered as models as well. The physical proximity of the sea, polar areas, and airspace, proves to be the distinguishing factor that pushes space law into an entirely different domain.

Early in the space age, airspace was still an expanding legal regime. In fact, there is still no agreed upon distinction between airspace and outer space. Even without that distinction set in stone, it is not likely that airspace will ever be utilized in space. Importantly here, there is no “air mining,” so there is no real model anyway.

The law of the sea – generally the high seas – is another model often proposed. Importantly, a main push for the United Nations Convention on the Law of the Sea (UNCLOS) was lack of clarity – and the longtime threat of naval conflict coupled with increasing technology leading to overfishing and general environmental degradation. The environmental concern is

²⁰ Space Diplomacy is briefly discussed below.

virtually nonexistent in space. Moreover, the threat of space conflict has never been seen and may never develop.²¹

There is another piece of the law of the sea that appears, at first, to fit much better than the general law of sea: the Sea Bed Authority. However, the brief and troubled history of this legal regime and its ineffectiveness of actual use doom this model (similarly to the Antarctic model briefly discussed below).

Unlike the high seas but similar to the sea bed, our polar regions do not have the same historical conflict backgrounds and likely possess natural resources. However, the proximity, global consciousness of protecting those scientific and natural playgrounds has won the day. Moreover, the general environmental trend and tradition in Antarctica has led to more extreme levels of protection of the continent than space ever has.

The failure of the Moon Agreement to garner any real support shows that the international community rejected its extreme protectionist ideas. Those ideas are now part of the Antarctic Treaty System. The Sea Bed Authority is not as extreme but has largely hampered sea bed mining. The lack of environmental concerns in space and the much higher degree of difficulty to reach space, as opposed to reaching the sea, render that model defunct for space as well.

Real Models – Past Catches

Unlike the false models above, two models appear to match the realities of this situation much better. The first is the medieval European problems with *jus naufragii*. Lords and lesser

²¹ Space Diplomacy is briefly discussed below.

leaders would simply keep shipwrecked goods that washed up on their shores and river banks.²² However, the kings and clergy of the area would officially, in their view, have the correct claim on the goods.²³ Without any real ability to enforce this claim, the kings and clergy lost these resources to the local lords.²⁴ Eventually the kings and clergy ended in this “problem” with greater jurisdiction.

The second is whaling in the modern day. Japan is the greatest example of this and will act as a focus but it is not the only State to skirt or outright flout the international community.²⁵ Recently, Japan has decided to leave the International Whaling Commission (IWC) to restart its earlier commercial whaling industry officially.²⁶

Even before this recent move, Japan for all intents and purposes continued whaling despite various bans and quotas set out by the IWC and even subsidized the industry.²⁷ While not in official open defiance, Japan has claimed various exceptions while continuing its whaling industry. These have included a “science” exception, a “culture” exception, and more.²⁸

Even so, the UN has no real enforcement power. Importantly, the United States and Luxembourg provide dramatically difficult problems for the small amount of enforcement the UN can take. Stripping either of General Assembly voting power may just result in lack of dues

²² Robert Sabatino Lopez, Irving W. Raymond, and American Council of Learned Societies. *Medieval Trade in the Mediterranean World: Illustrative Documents*. New York: W.W. Norton, 1967, p. 304 (n. 3).

²³ Judith Everard. *Brittany and the Angevins: Province and Empire, 1158-1203*. Cambridge, UK; New York, NY, USA: Cambridge University Press, 2000, p. 213-14.

²⁴ *Id.*

²⁵ *Catches taken: under objection or under reservation*, International Whaling Commission, retrieved April 29, 2019, https://iwc.int/table_objection.

²⁶ Daniel Victor, *Japan to Resume Commercial Whaling, Defying International Ban*, December 26, 2018, retrieved April 29, 2019, <https://www.nytimes.com/2018/12/26/world/asia/japan-whaling-withdrawal.html>.

²⁷ Hiroko Tabuchi, *Japan Subsidy for Whaling Is Challenged*, February 6, 2013, retrieved April 29, 2019, <https://www.nytimes.com/2013/02/07/world/asia/japan-spends-heavily-to-keep-whaling-industry-afloat-report-says.html?module=inline> (citing a study by the International Fund for Animal Welfare (IFAW) <https://www.ifaw.org/united-states/news/new-research-reveals-true-cost-japanese-whaling>).

²⁸ Dennis Normille, *Why Japan's exit from the international whaling treaty may actually benefit whales*, Science, January 10, 2019, retrieved June 3, 2019, <https://www.sciencemag.org/news/2019/01/why-japan-s-exit-international-whaling-treaty-may-actually-benefit-whales>.

by these two members. The United States is supposed to pay roughly 22% of the UN budget – however, the United States is notoriously bad at paying its dues.

Importantly, China and India have both shown their ability with anti-satellite missile technology.²⁹ While this does show that some States possess the ability to destroy space-based assets, it does not show a sustainable jurisdictional regime.

While the space law regime does appear to lack any bite or any jurisdiction, that is not the entire story. *Jus naufragii* appears to have taken traditional force to become the true law of the land but the current state of whaling did not. The IWC does not arrest those who whale, and there are several states who have continued whaling through the moratorium. But the IWC and the international community and consensus built around it have virtually stopped widespread whaling. As mentioned above, this legal regime is often seen as ineffective for its inability to punish but that is a very shortsighted view. If the IWC was created to promote a healthy environment for whales then it has succeeded.

Constructing Normative Models – Casting the Line

While this paper has focused on a more realist model of international anarchy, the facts on the ground are not as dire. There is commercial whaling in 2019, and States like Japan have abused the rules around whaling for decades. However, whaling is nowhere near as big of an industry as it once was, likely due to international efforts such as the IWC.³⁰ There are also

²⁹ Geoff Brumfiel, *India Claims Successful Test of Anti-Satellite Weapon*, NPR, March 27, 2019, retrieved April 7, 2019. <https://www.npr.org/2019/03/27/707177688/india-claims-successful-test-of-anti-satellite-weapon>; *Concern over China's missile test*, BBC News, January 19, 2007, retrieved April 20, 2019. <http://news.bbc.co.uk/2/hi/asia-pacific/6276543.stm>.

³⁰ Akane Okutsu, *Why Japan risked condemnation to restart commercial whaling*, Nikkei Asian Review, February 19, 2019, retrieved April 29, 2019, <https://asia.nikkei.com/Spotlight/Asia-Insight/Why-Japan-risked-condemnation-to-restart-commercial-whaling> (showing the steep decrease in whale consumption in Japan from the 1960's to the late 1980's to a miniscule level that has not increased dramatically).

reasons to believe that Japan's actions are largely out-of-sync with the world for purely local political reasons.³¹

Moreover, the international community does not behave like one would expect from pure power-driven anarchy.³² There are various international governmental organizations (IGOs) that act and have real impact. The World Trade Organization (WTO) is one of those IGOs whose actions have consequences on States. (Importantly, the WTO is also applicable to asteroid mining and asteroid mined resources lessening the possibility of international problems and conflict.)

Space Diplomacy has remained at the heart of space activities. Examples cross the globe and are found between close allies and archrivals are found in almost any combination imaginable. One of the most impressive pieces of space diplomacy followed the fall of the Soviet Union when the soon-to-be-defunct Russian space program was kept afloat by the United States government.³³ Another striking example, bringing in the Liability Convention is the Soviet-Canadian settlement after the crash of the nuclear-powered naval surveillance satellite.³⁴

Relying on this more constructivist model, we see that there is an international norm, and more importantly long-standing international actions, to come together on outer space issues.³⁵ Led by three different international factions, the UN and States, overwhelmingly support the

³¹ Yohei Matsuo, *Japan's IWC exit no magic bullet for foundering whalers*, Nikkei Asian Review, December 27, 2018, retrieved April 29, 2019, <https://asia.nikkei.com/Politics/International-relations/Japan-s-IWC-exit-no-magic-bullet-for-foundering-whalers> (discussing the fact Japan's Prime Minister and the secretary-general of Shinzo Abe's party both represent whaling communities).

³² See generally, Alexander Wendt, *Anarchy is what states make of it: the social construction of power politics*, International Organization, 2, Spring 1992 (describing the constructivist school of thought).

³³ *Nasa to continue using Soyuz rockets despite breakdown*, BBC News, October 12, 2018, retrieved April 20, 2019, <https://www.bbc.com/news/world-europe-45842731>.

³⁴ Alexander F. Cohen, *Cosmos 954 and the International Law of Satellite Accidents*, 10 Yale J. Int'l L. 78 (1984); Protocol between the Government of Canada and the Government of the Union of Soviet Socialist Republics, http://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/bi-multi-lateral-agreements/can_ussr_001.html.

³⁵ *Id.*

Outer Space Treaty. Until the Moon Agreement, with its aggressive ideas, major spacefaring nations came together to give meaning and more power to the Outer Space Treaty System many times.

However, these ideas can be realized in many different ways. Increasing with difficulty and changes to the current system, three different approaches will be briefly discussed below.

Merely Floating in this Legal Space

Combining the existing outer space jurisdiction with a constructivist point-of-view and the opportunity to utilize the heavens while benefiting Earth and humankind, it is not surprising that many believe that the American and Luxembourg models are legal.³⁶ Moreover, the background legal and political realities point to a lack of need for further action.

The Outer Space Treaty System, while far from all-encompassing, provides a clear baseline of action and inaction by States. Norms have developed around this set of law and clearly works in the satellite context.³⁷ On top of State and industry action, consumers do play an active role in determining these regimes usefulness.³⁸

Further, the WTO and other international agreements help smooth the movement of goods and services across the globe.³⁹ These regimes do not cease to exist with asteroid mining.

³⁶ See *Position Paper on Space Resource Mining*, International Institute of Space Law, December 20, 2015, retrieved June 2, 2019, <http://iislwebo.www.nlss1.a2hosted.com/wp-content/uploads/2015/12/SpaceResourceMining.pdf>.

³⁷ Importantly this includes geostationary satellites which theoretically could prove more difficult than asteroid mining due to a strict limit of physical space in the satellite context.

³⁸ Dennis Normille, *Why Japan's exit from the international whaling treaty may actually benefit whales*, Science, January 10, 2019, retrieved June 3, 2019, <https://www.sciencemag.org/news/2019/01/why-japan-s-exit-international-whaling-treaty-may-actually-benefit-whales> (discussing the steep decline in whale meat consumption and demand by consumers in both Japan and Norway – partially due to international pressure).

³⁹ These regimes largely have the same theoretical frameworks which helps utilize them together.

Instead, these regimes will continue to provide a clear and important binding backdrop for this new use of space and these new resources.

Paying the UN What is Due

While more resources on Earth would likely lower the cost of these resources for all, that may not seem to live up to the “benefit all humankind” language in the Outer Space Treaty System.⁴⁰ Moreover, it may not seem like enough given the ideals we have had for space.

A UN general dues increase could help bridge the gap between the benefit for all that was sought and continue to incentivize miners (through economic gain and scientific prestige). The UN General Assembly created the space law regime in the 1960’s, with its power to impose dues on all UN member states, the General Assembly could simply “tax” asteroid mining States.

Comprehensive Regime

While the IWC and Sea Bed Authority have not created a robust and binding international regime dealing with all whaling or deep sea mining issues, there is always the possibility to learn from the good and bad of the past to create a fully useful regime. A binding and meaningful mechanism to harm those who break the rules. There is at least some international, State-based want for such a regime.⁴¹ While the political nature of any effort

⁴⁰ Outer Space Treaty, Art. I, Preamble.

⁴¹ See *Joint Declaration*, January 23, 2019, The Grand Duchy of Luxembourg, Ministry of the Economy and the Kingdom of Belgium, Ministry for Foreign Affairs and Defense, retrieved April 29, 2019, <https://spaceresources.public.lu/dam-assets/press-release/2019/2019-01-23-ENG-joint-press-release-BE-LU.pdf>; *Draft Building Blocks for the Development of an International Framework on Space Resource Activities*, The Hague International Space Resources Governance Working Group, retrieved May 5, 2019, <https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/lucht--en-ruimterecht/space-resources/draft-building-blocks.pdf>.

renders this move difficult,⁴² we do find comprehensive regimes in Antarctica, whaling, and seabed mining. The Hague International Space Resources Governance Working Group is attempting to draft a plan for this type of regime.⁴³

Conclusion – Admiring the Catch

While fishing for ways to lift all boats we have seen the heavens as our opportunity. Through the young United Nations, three major international factions were able to compromise from vastly different positions to create the Magna Carta of space law, the Outer Space Treaty. While vague, it likely has created a workable set of ideas that form the foundation of all space activity today.⁴⁴

Instead of forcing the similar, yet distinct, models of air, sea, or polar law onto space, we should understand the distinctions and throw these models back where we caught them. The extreme negative environmental effects of Earthly mining may be curtailed with asteroid resources. This provides a hook that no other Earthly source can. Moreover, we are not as culturally tied to asteroids as we are to Earth.

International action, coordination, and regulation is always a difficult task. The varying levels of success of the many proposals discussed in this paper show that. However, this should not be used to paint an overly pessimistic picture, but instead a realistic one. States or others will

⁴² See Karen A. Mingst and Margaret P. Karns, *The United Nations in the 21st Century*, Fourth Ed., Westview Press, 2012, p. 150-52 (discussing challenges to UN actions in the present time).

⁴³ *Draft Building Blocks for the Development of an International Framework on Space Resource Activities*, The Hague International Space Resources Governance Working Group, retrieved May 5, 2019, <https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/lucht--en-ruimte-recht/space-resources/draft-building-blocks.pdf>.

⁴⁴ The unauthorized launch of Swarm Technologies' SpaceBEEs may provided the greatest counterexample to the idea that our background legal regimes can withstand ever greater and diverse use of space. *See generally* Koren, Marina, *Launching Rogue Satellites Into Space Was a 'Mistake,'* The Atlantic, September 7, 2018, retrieved April 20, 2019, <https://www.theatlantic.com/technology/archive/2018/09/spacebees-swarm-unauthorized-satellite-launch/569395/>.

likely not hold any real power to stop other States from mining asteroids. A different model for asteroid mining can be adopted, but even in its absence we are luckily in a much better position in this space than in others – like whaling. Even in those fields the international community does make progress – even if it is often slow and uneven.

The good should not become the enemy of the perfect in space law. The use of the heavens for diplomacy, science, and commerce is incredible. There is no need to create a white whale when we can catch other great fish much more easily. Asteroid mining may become commercially viable, and if so our existing institutions and international relations will maintain peace. The only real question is how much can this potential wealth be spread, and how.