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NEBULOUS LAW: USING SOFT LAW TO GIVE STRUCTURE TO THE AMORPHOUS RPO INDUSTRY

KYLIE MCLAUGHLIN[†]

INTRODUCTION

Imagine looking down at your smartphone and realizing that you cannot make phone calls or access the internet. A communications satellite enabling these functions on your cellphone has just been struck by a piece of uncontrolled space debris. Now, imagine being in the aftermath of a natural disaster, and search and rescue teams do not know you and your family are missing or in distress. A satellite within the International Satellite System for Search and Rescue has just run out of fuel. Finally, imagine trains, planes, and ships remaining in their stations, gates, and ports because each has lost navigation data about their intended routes. A GPS satellite was just disabled by an antagonistic state's anti-satellite technology.

While each of these scenarios is drastic to say the least, they are not entirely unprecedented. Satellites control nearly every facet of our technology-dependent society. Any given satellite struck by space debris or low on fuel would create rippling consequences throughout civilization. To combat such scenarios, governments and companies may turn to rendezvous and proximity operations ("RPOs"). RPOs have many capabilities, but primarily, actors in space hope to use RPOs to remove space debris and refuel satellites. These operations can alter and enhance the landscape of technological advancements here on Earth. Unfortunately, the same technology that is used in RPOs to clean

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up outer space or replenish a satellite's fuel could also be used to disable a satellite through anti-satellite operations. Such a security risk is threatening the growth of the RPO industry, which in turn threatens the growth of technology on Earth. To exacerbate the situation, only vague and outdated treaties govern outer space activities, none of which specifically address RPO rules and regulations.

This Note argues that the nascent RPO industry should turn to soft law measures to regulate RPO use because soft law is more beneficial to the industry as compared to hard law. Part I of this Note describes what exactly RPOs are and details why it is important to regulate the industry in one form or another. This Part also delves into which treaties currently control outer space activities and discusses how these treaties are too broad to address issues that may arise with RPO use. Lastly, this Part introduces the major players of the RPO industry that are collaborating to create a workable system of rules for the industry as a whole. Part II of this Note details the differences between soft law and hard law and addresses the advantages and disadvantages of using soft law. It also analyzes the Kimberley Process, which is a soft law method of addressing a major security issue resulting from the Blood Diamond Regime in Southern Africa. Part III considers the advantages and disadvantages of the RPO industry using soft law to address its regulatory concerns and argues that soft law is more beneficial to the RPO industry than hard law.

I. FACTUAL BACKGROUND

A. *What are RPOs?*

RPOs are “orbital maneuvers in which two [space objects] arrive at the same orbit and approach at a close distance,” which can be followed by a docking procedure connecting the two space objects.¹ RPOs are not new to outer space activities. For example, RPOs have been used to help the Apollo astronauts land on the moon and transfer astronauts to and from space stations and space

¹ REBECCA REESMAN & ANDREW ROGERS, THE AEROSPACE CORPORATION, GETTING IN YOUR SPACE: LEARNING FROM PAST RENDEZVOUS AND PROXIMITY OPERATIONS 2 (2018), <https://aerospace.org/sites/default/files/2018-05/GettingInYourSpace.pdf>.

labs.² New types of RPOs, such as on-orbit servicing and active debris removal, have the potential to transform the commercial and military landscape of outer space activities.

First, on-orbit servicing can include refueling and repairing satellites.³ Traditionally, companies that design and launch satellites had to deal with the fact that “their investments could never be repaired or upgraded.”⁴ When a satellite runs out of fuel or breaks down, the satellite is either sent to the graveyard orbit 22,400 miles above Earth or sent back to Earth.⁵ When it is sent back to Earth, it either burns in Earth’s atmosphere or it drops into the “Spacecraft Cemetery” of the Pacific Ocean.⁶ In the very near future, however, satellite owners can use RPOs to inspect, assist, and modify their on-orbit assets.⁷ This extends the life of existing assets and adds more value to their initial investment.⁸

Refueling capabilities also give satellite owners the flexibility to launch smaller or half-empty satellites.⁹ Launching with the goal of refueling in the future grants cheaper access to space because it is less expensive to launch a smaller or half-empty satellite.¹⁰ RPOs ultimately will be used to drastically lower the cost of constructing and deploying satellites, while also elongating the lifespan of a satellite.¹¹

Second, RPOs can be used to help remove debris cluttering various orbits.¹² “Active Debris Removal (ADR) is defined as the ‘means to remove objects from orbit above and beyond the

² See Theresa Hitchens, Opening Remarks on Debris Removal/Rendezvous and Proximity Operations: Looking at Policy Implications 1 (available on the Secure World Foundation’s website, https://swfound.org/media/167942/openingremarks_hitchens.pdf).

³ See REESMAN & ROGERS, *supra* note 1 at 2–3.

⁴ Todd Master, *Consortium for Execution of Rendezvous and Servicing Operations (CONFERS)*, DEF. ADVANCED RES. PROJECTS AGENCY, <https://www.darpa.mil/program/consortium-for-execution-of-rendezvous-and-servicing-operations> (last visited Feb. 20, 2020).

⁵ See *Where Do Old Satellites Go When They Die?*, NASA SPACE PLACE, <https://spaceplace.nasa.gov/spacecraft-graveyard/en/> (last updated June 28, 2019).

⁶ See *id.*

⁷ See Master, *supra* note 4.

⁸ See Benjamin B. Reed, *On-orbit Servicing and Refueling Concepts*, NASA SATELLITE SERVICING CAPABILITIES OFFICE 7 (2015), https://asd.gsfc.nasa.gov/luvoir/events/seminars/2015/Reed_ATLAST_17Jun2015.pdf.

⁹ See *id.*

¹⁰ See *id.*

¹¹ See Master, *supra* note 4.

¹² See REESMAN & ROGERS, *supra* note 1, at 3.

currently-adopted mitigation measures.’¹³ Active debris removal can include removing defunct satellites or loose spacecraft components before their orbits decay on their own.¹⁴ Also, on-orbit servicing is considered a form of debris removal, since what “was once technically non-functioning debris could be serviced back to functionality, thus actively removing it from classification as debris.”¹⁵

Debris removal is integral to continuing operations in space and maintaining the safety and functionality of satellites.¹⁶ Numerous satellites have stopped functioning in Earth’s orbit and experts often assume that collisions with space debris are to blame.¹⁷ Private companies and governments alike rely on active debris removal procedures to ensure their assets will function properly on-orbit.¹⁸ Without active debris removal, the debris orbiting Earth may become subject to the Kessler Syndrome, also known as the Cascade Effect.¹⁹

The Kessler Syndrome hypothesizes that while debris initially orbits as larger objects, collisions leading to more fragmentation of debris will occur.²⁰ Some experts take the dramatic view that this

¹³ Major Marc G. Carns, *Consent Not Required: Making the Case that Consent is Not Required Under Customary International Law for Removal of Outer Space Debris Smaller Than 10cm²*, 77 A.F. L. REV. 173, 202 (2017) (quoting J.-C. Liou, *An Active Debris Removal Parametric Study for LEO Environment Remediation*, 47 ADVANCES IN SPACE RES. 1865, 1865 (2011)).

¹⁴ See REESMAN & ROGERS, *supra* note 1, at 3.

¹⁵ Carns, *supra* note 13, at 202; see also Martin J. Losekamm et al., *Legal and Political Implications of Future On-Orbit Servicing Missions*, INT’L ASTRONAUTICAL FED’N 1, 3 (2015) (“A servicing spacecraft . . . may . . . refuel satellites that ran out of fuel but are otherwise functional, so that they regain their station-keeping and collision-avoidance capabilities.”).

¹⁶ See FRANCIS LYALL & PAUL B. LARSEN, *SPACE LAW: A TREATISE* 306 (Routledge, 1st ed. 2016).

¹⁷ See *id.* at 306 n.131; see also Losekamm et al., *supra* note 15, at 3 (“A servicing spacecraft could be used to deorbit larger pieces of debris, thereby reducing the probability of major future collisions.”).

¹⁸ See Justin Moor, Note, “*You’re Not Actually Going Into an Asteroid Field?*” – *The Threat of Man-Made Space Debris, and a Proposal to Extend Existing Law to Prevent It*, 23 MINN. J. INT’L L. 245, 255–57 (2014). “Satellite telecommunications companies comprise a \$180 billion-dollar-per-year global industry, and therefore damage to satellites could have major economic consequences. Apart from the loss of corporate revenues, losing telecom satellites harms the people who rely on them both in their career and in their lives.” *Id.* at 255. “Satellites are vital to modern military intelligence-gathering and navigation. Satellite-powered GPS guidance is vital to ensuring that guided missiles and bombs hit their targets.” *Id.* at 256.

¹⁹ See *id.* at 257.

²⁰ See Donald J. Kessler & Burton G. Cour-Palais, *Collision Frequency of Artificial Satellites: The Creation of a Debris Belt*, 83 J. OF GEOPHYSICAL RES. 2637, 2637 (1978);

will eventually lead to “an impenetrable cloud of fragmentation debris that will encase Earth.”²¹ If this comes to fruition, such a cloud of debris could make space travel nearly impossible.²² However, the Kessler Syndrome is more likely to result in less severe, but still dire, consequences.²³ Such consequences include heightened costs to satellite owners to undertake “collision avoidance maneuvers” to save their assets.²⁴ The United States National Aeronautics and Space Administration (“NASA”) reported that the International Space Station needed to take avoidance measures twenty-five times by 2015.²⁵ Further, the European Space Association reported that “one of its ten [low Earth orbit] satellites receive[s] a ‘high-risk collision alert every week on average’” and must maneuver away from the hazards at least once or twice each year.²⁶ These collision avoidance measures require satellites to expend fuel that they cannot replenish under existing technology.²⁷ RPOs, of course, could be used to refuel satellites after these maneuvers.²⁸ RPOs could also preempt the need to refuel satellites in such situations by clearing enough debris, thereby limiting the need to perform avoidance maneuvers.²⁹

Despite the benefits of using RPOs to repair and refuel satellites and clear debris, there are many issues that can arise with the use of RPOs. Primarily, actors in space are concerned with security risks. “Widespread use of rendezvous and proximity operations is a concern for the national security community because the technologies and operational techniques

see also Mark J. Sundahl, Note, *Unidentified Orbital Debris: The Case for a Market-Share Liability Regime*, 24 HASTINGS INT’L & COMP. L. REV. 125, 132 (2000).

²¹ Sundahl, *supra* note 20; *see also* Losekamm et al., *supra* note 15, at 3 (“[The Kessler syndrome] would render large portions of the currently populated orbital bands unusable once the rate of debris creation exceeds that of natural atmospheric cleansing.”).

²² *See* Moor, *supra* note 18, at 257.

²³ *See* Humaid Alshamsi et al., *As the Grapefruit Turns Sixty, It’s Time to Get Serious About Clean Up in Outer Space*, 83 J. AIR L. & COM. 45, 51–52 (2018).

²⁴ *Id.* at 51 (quoting *Two More Collision Avoidance Maneuvers for the International Space Station*, ORBITAL DEBRIS QUARTERLY NEWS, Oct. 2015, at 1).

²⁵ *See id.* (citing *Two More Collision Avoidance Maneuvers for the International Space Station*, *supra* note 24).

²⁶ *Id.* (quoting *Space Debris Problem Getting Worse, Say Scientists*, PHYS.ORG (Apr. 18, 2017), <https://phys.org/news/2017-04-space-debris-problem-worse-scientists.html>).

²⁷ *Id.* at 62.

²⁸ *Id.* at 52–53.

²⁹ *See id.* at 51, 53.

are essentially the same as those needed for anti-satellite (ASAT) operations.”³⁰ An ASAT “weapon destroys or interferes with satellites, impeding a nation’s ability to collect intelligence or direct attacks.”³¹ Many states rely on satellites for military and civilian purposes, creating a vulnerability for rivals to prey upon.³² “Potential adversaries, aware of the technology patterns of the United States (and other [states]), have come to appreciate the suggestion that satellites may now be the Achilles heel of the American civilian economy and its mighty military apparatus.”³³ An attack on such satellites could cripple a state’s military prowess and civilian economy, quickly granting the attacker a “crippling advantage.”³⁴

RPOs are essential in ensuring satellites can be repaired and refueled and are integral in removing hazardous space debris.³⁵ The future of space travel will be altered greatly with the use of RPOs.³⁶ But the security risks associated with RPO use could potentially hinder the growth of this industry.³⁷ Thus, it is imperative that the international community create rules and regulations governing the use of RPOs in outer space.³⁸

B. *Lack of International Regulations for the RPO Industry*

Currently, there are various international treaties regulating space activities generally, but none of the treaties specifically address RPOs.³⁹ There are five treaties concerning outer space regulation: the Outer Space Treaty of 1967, the Rescue Agreement of 1968, the Liability Convention of 1972, the Registration Convention of 1976, and the Moon Treaty of 1979. Only two of

³⁰ JAMES A. VEDDA & PETER L. HAYS, THE MITCHELL INST. FOR AEROSPACE STUDIES & THE AEROSPACE CORPORATION, MAJOR POLICY ISSUES IN EVOLVING GLOBAL SPACE OPERATIONS 44 (2018), https://aerospace.org/sites/default/files/2018-05/Space_Policy_FINAL_interactive_0.pdf.

³¹ See Carin Zissis, *China’s Anti-Satellite Test*, COUNCIL ON FOREIGN RELATIONS (Feb 22, 2007), <https://www.cfr.org/backgroundunder/chinas-anti-satellite-test>.

³² See David A. Koplow, *The Fault Is Not in Our Stars: Avoiding an Arms Race in Outer Space*, 59 HARV. INT’L L. J. 331, 337 (2018) (“Over time, therefore, the modern ‘use’ of satellites has evolved into a ‘reliance’ upon them, which has graduated into a ‘dependence,’ and eventually generated a ‘vulnerability.’”).

³³ *Id.*

³⁴ *Id.*

³⁵ See REESMAN & ROGERS, *supra* note 1, at 2–3.

³⁶ *See id.* at 10.

³⁷ *See id.*

³⁸ *See id.*

³⁹ See Losekamm et al., *supra* note 15, at 5.

these five have the potential to regulate RPO use in a general sense: the Outer Space Treaty of 1967 and the Liability Convention of 1972.⁴⁰

The Outer Space Treaty of 1967 contains various articles that can potentially be applied to RPO use.⁴¹ First, Article VI orders that “States Parties to the Treaty shall bear international responsibility for national activities in outer space, . . . whether such activities are carried on by governmental agencies or by non-governmental entities.”⁴² Further, Article VI dictates that “[t]he activities of non-governmental entities in outer space . . . shall require authorization and continuing supervision by the appropriate State Party to the Treaty.”⁴³ Under this article, it is likely that a certain state would be required to take international responsibility for any mishaps during an operation and that RPO usage would have to be approved and supervised by such state.⁴⁴

Second, Article VIII maintains that “[a] State Party to the Treaty on whose registry an object is launched into outer space is carried shall retain jurisdiction and control over such object”⁴⁵ This provision “grants perpetual ownership of space objects to their launching state, even after the objects are deactivated and become uncontrolled junk.”⁴⁶ In order to remove debris from Earth’s orbit, RPO industry members will likely have to get permission from the launching state of every piece of debris in outer space before removing it.⁴⁷ “This would make removal efforts even more costly and time-consuming, and possibly transform such efforts into another arena for international politics.”⁴⁸

⁴⁰ See REESMAN & ROGERS, *supra* note 1, at 4; see also Losekamm et al., *supra* note 15, at 5.

⁴¹ See REESMAN & ROGERS, *supra* note 1, at 4; see also Losekamm et al., *supra* note 15, at 5.

⁴² Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. VI, *opened for signature* Jan. 27, 1967, 18 U.S.T. 695, 1023 U.N.T.S. 205 [hereinafter Outer Space Treaty].

⁴³ Outer Space Treaty, *supra* note 42, at art. VI.

⁴⁴ See REESMAN & ROGERS, *supra* note 1, at 4.

⁴⁵ Outer Space Treaty, *supra* note 42, at art. VIII.

⁴⁶ VEDDA & HAYS, *supra* note 30, at 22.

⁴⁷ See Moor, *supra* note 18, at 264–65.

⁴⁸ Moor, *supra* note 18, at 265–66 (“A country could, for instance, only allow other states to remove its space debris if they made certain political concessions.”).

Third, Article IX of the Outer Space Treaty dictates:

A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space . . . would cause potentially harmful interference with activities in the peaceful exploration and use of outer space . . . may request consultation concerning the activity or experiment.⁴⁹

The treaty does not define the term “harmful interference,” and there is no generally accepted definition of this term.⁵⁰ However, Article IX could apply to RPOs because the technologies for RPO use are the same as those needed for ASAT operations.⁵¹ States would likely consider ASAT operations to constitute “harmful interference” for the purposes of interpreting the Outer Space Treaty.⁵² Thus, if any state thought that another state’s RPO was being used for an anti-satellite purpose, it would likely act pursuant to this article and request consultation. “Without [such] diplomacy, it is not always easy to differentiate normal operations . . . from precursors to war.”⁵³ However, this clause “does not provide a veto over any state’s activities; rather, it simply requires ‘consultations.’”⁵⁴ Not all hope is lost though; if a state anticipated a potentially harmful interference by another state, it could invoke Article 2(4) of the United Nations Charter, which requires Member States to refrain from the threat or use of force against another state.⁵⁵

Fourth, Article VII of the Outer Space Treaty declares that a state that launches or procures the launching of an object into outer space (the “launching State”)⁵⁶ is liable for the object or its

⁴⁹ Outer Space Treaty, *supra* note 42, at art. IX.

⁵⁰ See Christopher D. Williams, Comment, *Space: The Cluttered Frontier*, 60 J. AIR L. & COM. 1139, 1156 (1995).

⁵¹ VEDDA & HAYS, *supra* note 30, at 44.

⁵² See Williams, *supra* note 50, at 1157.

⁵³ SAMUEL BLACK, THE HENRY L. STIMSON CTR., NO HARMFUL INTERFERENCE WITH SPACE OBJECTS: THE KEY TO CONFIDENCE-BUILDING 2 (2008).

⁵⁴ Williams, *supra* note 50, at 1157.

⁵⁵ See U.N. Charter art. 2, ¶ 4 (“All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.”).

⁵⁶ Convention on International Liability for Damage Caused by Space Objects art. I, *opened for signature* Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter Liability Convention]; (defining a “launching State” as “[a] State which launches or procures the launching of a space object” or “[a] State from whose territory or facility a space object is launched”).

component parts in air or in outer space.⁵⁷ Additionally, the Liability Convention of 1972 “expand[ed] upon the principles of liability for damage caused by space objects introduced in Article VII.”⁵⁸ For example, Articles II, III, and V of the Liability Convention expand the potential liability of “launching States” by establishing that they are strictly liable for all accidents on the surface of the Earth.⁵⁹ Also, Article IV of the Liability Convention uses fault-based liability for accidents not occurring on the surface of the Earth.⁶⁰ Mishaps involving RPOs would likely be covered by Article VII of the Outer Space Treaty and the Liability Convention, but again, neither treaty specifically addresses these operations.⁶¹

These two treaties, along with the three other international treaties regulating space activities, were “originally created with state civilian or military actors in mind and therefore lack[] the specificity and legal certainty that is necessary for mature commercial activities.”⁶² Private actors and private space activities were not anticipated when these treaties were introduced and adopted.⁶³ Specifically, the Outer Space Treaty is

⁵⁷ See Outer Space Treaty, *supra* note 42, at art. VII (“Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the Moon and other celestial bodies.”); see also REESMAN & ROGERS, *supra* note 1, at 4.

⁵⁸ REESMAN & ROGERS, *supra* note 1, at 4.

⁵⁹ See Liability Convention, *supra* note 56, at arts. II, III & V; Adrian Taghdiri, Note, *Flags of Convenience and the Commercial Space Flight Industry: The Inadequacy of Current International Law to Address the Opportune Registration of Space Vehicles in Flag States*, 19 B.U. J. SCI. & TECH. L. 405, 412–13 (2013); see also Losekamm et al., *supra* note 15, at 5 (“Articles II, III, and V of the Liability Convention state that the state actors launching an object into outer space shall jointly retain absolute liability for any damage caused on Earth, to aircraft, or to a space object of another launching state.”).

⁶⁰ See Liability Convention, *supra* note 56, at art. IV; see also Taghdiri, *supra* note 59, at 412–13; Losekamm et al., *supra* note 15, at 5 (“According to Article IV, in the event of ‘damage being caused [...] to a space object of one launching state [...] by a space object of another launching State, and of damage thereby being caused to a third State [...], the first two States shall be jointly and severally liable’ only if the damage was caused culpably.” (alterations in original)).

⁶¹ See REESMAN & ROGERS, *supra* note 1, at 4.

⁶² Losekamm et al., *supra* note 15, at 5.

⁶³ See *id.*; David Tan, *Towards a New Regime for the Protection of Outer Space as the “Province of All Mankind,”* 25 YALE J. INT’L. L. 145, 157 (2000) (“The five space treaties were not formulated to address, and did not foresee, the complex problems of space pollution we face in the twenty-first century.”).

“a product of the Cold War and primarily addresses concerns of that era, including nuclear war.”⁶⁴ The treaty’s entire existence “has prevented belligerent nations from putting weapons of mass destruction into space.”⁶⁵

Because all the relevant international law regulating space activities was not created with private actors in mind, it is questionable if these treaties can effectively regulate private space activities such as RPOs.⁶⁶ Ideally, modern international treaties could be enacted to regulate the private sector. However, multilateral treaties require a long, arduous process of decision-making among a growing number of space-faring states.⁶⁷ This lowers the likelihood of a new treaty being created or of new provisions being added to existing treaties.⁶⁸ Further, technological advancements by the private sector consistently outpace the rate at which international agreements can be enacted.⁶⁹ “[T]he lack of clear, widely accepted technical and safety standards for responsible performance of on-orbit activities involving commercial satellites” presents a major roadblock to this industry.⁷⁰ Absent such regulation, the future of outer space operations is in jeopardy.⁷¹

⁶⁴ Jason Krause, *The Outer Space Treaty Turns 50. Can It Survive the New Space Race?*, A.B.A. J. (Apr. 1, 2017, 5:00 AM), http://www.abajournal.com/magazine/article/outer_space_treaty.

⁶⁵ *Id.*; see also Losekamm et al., *supra* note 15, at 6 (“Possible interpretations of existing treaties and agreements constitute legal barriers that present a hindrance to the evolution of the global space community in general, and the private sector in particular.”)

⁶⁶ See Losekamm et al., *supra* note 15, at 5; see also Brian Weeden et al., *International Perspectives on On-orbit Servicing and Active Debris Removal and Recommendations for a Sustainable Path Forward*, SECURE WORLD FOUNDATION 6–8 (Sept. 2013), <https://swfound.org/media/119604/iac-13-e3.4.7-presentation.pdf>.

⁶⁷ See Losekamm et al., *supra* note 15, at 8.

⁶⁸ See *id.* (“The discrepancies of political perspectives, and the required consensus in the decision-making process of COPOUS, make it almost impossible for its member states to agree on new provisions [for treaties]. The growing number of participating states exacerbates this situation even more.”)

⁶⁹ See *id.* at 9; Jeff Foust, *Trump Administration Continues Support of Outer Space Norms of Behavior*, SPACENEWS (Feb. 2, 2018), <https://spacenews.com/trump-administration-continues-support-of-outer-space-norms-of-behavior/>; see also Debra Werner, *DARPA To Establish Satellite-Servicing Consortium to Discuss On-Orbit Repair Standards*, SPACENEWS (Aug. 22, 2016), <https://spacenews.com/darpa-to-establish-satellite-servicing-consortium-to-discuss-on-orbit-repair-standards/>.

⁷⁰ Master, *supra* note 4.

⁷¹ See *id.*

C. *Major Players Working to Resolve Issues with RPO Use*

To compensate for a lack of relevant international law and to overcome these property and security concerns, private and public actors are collaborating to create a more uniform system of normative behavior regarding private space activity and RPOs specifically.⁷² One such actor is the Defense Advanced Research Projects Agency (“DARPA”), which is “an advanced-technology branch of the U.S. Department of Defense.”⁷³ “The purpose of the agency is to try out new technologies and make them operationally ready, if possible, and to reach beyond current military technology to do something new.”⁷⁴

DARPA has organized the Consortium for Execution of Rendezvous and Servicing operations, called CONFERS.⁷⁵ The goal of this organization is to “bring[] together companies involved in satellite servicing to define best practices and develop voluntary consensus-driven standards” for RPO missions.⁷⁶ Using the best practices from both government and industry leaders, CONFERS will research, develop, and publish nonbinding technical and safety standards for the RPO industry.⁷⁷ These standards will likely be adopted by servicing providers and clients for on-orbit servicing operations.⁷⁸ “[This] program would provide a clear technical basis for definitions and expectations of responsible behavior in outer space.”⁷⁹

However, such goals require transparency about “engineering and design criteria, operational issues and information sharing practices for proximity operations and satellite servicing.”⁸⁰ “Data exchange, while essential for these activities, will pose challenges due to national export controls and corporate concerns about protecting proprietary information”⁸¹ DARPA hopes to protect commercial participants’ financial and strategic interests by making the standards broad enough to allow companies to

⁷² See Debra Werner, *DARPA Working Group Begins Addressing Concerns Related to Proximity Operations and Satellite Servicing*, SPACENEWS (May 23, 2018), <https://spacenews.com/darpa-group-addresses-security-concerns/>.

⁷³ See Elizabeth Howell, *What Is DARPA?*, SPACE.COM (Apr. 30, 2015), www.space.com/29273-what-is-darpa.html.

⁷⁴ *Id.*

⁷⁵ See Werner, *supra* note 72.

⁷⁶ *Id.*; see also Master, *supra* note 4.

⁷⁷ See Master, *supra* note 4.

⁷⁸ See *id.*

⁷⁹ *Id.*

⁸⁰ See Werner, *supra* note 72.

⁸¹ *Id.*

implement them “to suit their individual businesses.”⁸² By creating consensus-driven standards, CONFERS can reduce the financial, regulatory, and diplomatic risks associated with RPO use.⁸³

In conjunction with DARPA, industry leaders are collaborating through CONFERS to ensure that there is a more uniform set of norms for RPO missions: Advanced Technology International is the CONFERS prime contractor working to coordinate and execute the most innovative research initiatives surrounding RPO technology;⁸⁴ “Secure World Foundation directs outreach and engagement”;⁸⁵ “USC’s Engineering Research Center is investigating existing standards and practices”;⁸⁶ and “[t]he Space Infrastructure Foundation leads efforts to create new standards.”⁸⁷ These efforts by DARPA and other industry leaders, again, are only creating best practices standards upon which the industry can rely. These standards are not legally binding and offer no recourse for any actors that stray from such norms—the standards are voluntary.⁸⁸ CONFERS realizing its end goal hinges on the space-faring community accepting soft law measures as opposed to implementing treaties—or other hard law measures.

II. THE SOFT LAW APPROACH

A. *What is Soft Law?*

When interpreting and applying international law, there are two different types of law to consider: hard law and soft law.⁸⁹ The Outer Space Treaty is an example of hard law—a law negotiated and created between space-faring states to prevent Cold War antics from reaching outer space.⁹⁰ Soft law, on the other hand, is

⁸² See CONFERS to Establish “Rules of the Road” for On-Orbit Servicing of Satellites, DEF. ADVANCED RES. PROJECTS AGENCY (Oct. 4, 2017), <https://www.darpa.mil/news-events/2017-10-04>.

⁸³ See DARPA Creating Industry/Government Group for Safe Operation of Space Robotics, DEF. ADVANCED RES. PROJECTS AGENCY (Nov. 29, 2016), <https://www.darpa.mil/news-events/2016-11-29>.

⁸⁴ See Werner, *supra* note 72.

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *See id.*

⁸⁹ See Jennifer Ann Urban, *Soft Law: The Key to Security in a Globalized Outer Space*, 43 *TRANSP. L. J.* 33, 35 (2016); see also Gregory C. Shaffer & Mark A. Pollack, *Hard Versus Soft Law in International Security*, 52 *B.C. L. REV.* 1147, 1147–48 (2009).

⁹⁰ See Krause, *supra* note 64.

a means of further explaining vague concepts in a treaty and “giving more direction on interpreting and renovating the hard law.”⁹¹ Essentially, it is a set of principles and policies established by various actors to deal with specific issues that hard law has not settled.⁹²

Unlike hard law, soft law does not limit the power to enter into international agreements to state actors alone.⁹³ Nonstate actors, such as businesses and industry leaders, may be involved with creating soft law. Also, soft law differs from hard law in that actors opting for soft law alternatives do not intend to be bound by international law.⁹⁴ Rather, soft law “create[s] imprecise obligations under which a wide range of activity might be considered compliant.”⁹⁵ Scholars also consider soft law as an instrument used to “represent promises that . . . create expectations about future conduct.”⁹⁶

Sometimes, soft law serves as a placeholder in the development of international law, which can later turn into treaties.⁹⁷ Because treaty-making is a difficult and lengthy endeavor, soft law is often a suitable alternative under which industry actors and states can operate for the time being.⁹⁸ Further, “[a]lthough soft law is nonbinding, it may lead to compliance with its standards . . . [which] gives rise to new customary international law rules.”⁹⁹ Customary international law is comprised of two elements: general and consistent practice by states—state practice, and practice followed out of a belief of legal obligation—*opinio juris*.¹⁰⁰ “[C]ustom is generally binding

⁹¹ Urban, *supra* note 89, at 46.

⁹² *See id.*

⁹³ *See* Duncan B. Hollis, *Why State Consent Still Matters—Non-State Actors, Treaties, and the Changing Sources of International Law*, 23 BERKELEY J. INT’L L. 137, 172 (2005).

⁹⁴ *See* BARRY E. CARTER ET AL., INTERNATIONAL LAW 157 (Wolters Kluwer, 7th ed. 2018) (“Soft law is not an independent source of law, but rather an expression of commitments that are not themselves legally binding.”).

⁹⁵ Andrew T. Guzman & Timothy L. Meyer, *International Soft Law*, 2 J. LEGAL ANALYSIS 171, 174 (2010).

⁹⁶ *Id.*

⁹⁷ *See* CARTER ET AL., *supra* note 94, at 157; *see also* Shaffer & Pollack, *supra* note 89, at 1157.

⁹⁸ *See* Shaffer & Pollack, *supra* note 89, at 1157.

⁹⁹ CARTER ET AL., *supra* note 94, at 157.

¹⁰⁰ *See* Anthea Elizabeth Roberts, *Traditional and Modern Approaches to Customary International Law: A Reconciliation*, 95 AM. J. INT’L L. 757, 757 (2001).

except for the limited and contentious persistent objector rule.¹⁰¹ In the form of customary international law, soft law can become binding on the international community.¹⁰² Thus, soft law has the potential to be as obligatory as hard law.¹⁰³

B. *Advantages of Soft Law*

Because soft law is such a flexible system, there are many benefits to having soft law influence international law. First and foremost, creating hard law is becoming a less attractive goal.¹⁰⁴ “[M]any countries do not support the creation of new treaties on [outer space regulation].”¹⁰⁵ The United Nations’s Legal Subcommittee is not likely to start making new treaties governing outer space because it wants to avoid debates on already-decided issues and the long process of treaty-making.¹⁰⁶ Also, “it may be easier for some states to adhere to nonbinding instruments because they can avoid the domestic treaty ratification process, and perhaps escape democratic accountability . . . for the policy to which they have agreed.”¹⁰⁷ Thus, when there is a lack of political will to create treaties, soft law can be used to create principles and policies in a given subject area.

Second, many non-space-faring nations have not signed on to existing treaties governing outer space, despite the importance of international harmony with respect to the law.¹⁰⁸ Those treaties were drafted to “focus on traditional space security concerns, which are different from the critical security concerns today.”¹⁰⁹ Thus, the nonsigning states do not see the upside of being legally bound to such outdated treaties.¹¹⁰ On the contrary, using “soft law instruments enables states to agree to more detailed and

¹⁰¹ *Id.* at 765 & n.90 (“According to the persistent objector rule, states that have persistently objected during the emergence of a custom are not bound by it.”).

¹⁰² See CARTER ET AL., *supra* note 94, at 157.

¹⁰³ See *id.*

¹⁰⁴ See Urban, *supra* note 89, at 47.

¹⁰⁵ See *id.*

¹⁰⁶ See *id.*; see also Losekamm et al., *supra* note 15, at 8 (“The discrepancies of political perspectives, and the required consensus in the decision-making process of COPOUS, make it almost impossible for its member states to agree on new provisions [for treaties]. The growing number of participating states exacerbates this situation even more.”).

¹⁰⁷ Alan E. Boyle, *Some Reflections on the Relationship of Treaties and Soft Law*, 48 INT’L & COMP. L. Q. 901, 903 (1999).

¹⁰⁸ See Urban, *supra* note 89, at 45.

¹⁰⁹ See *id.*

¹¹⁰ See *id.*

precise provisions because their legal commitment, and the consequences of any non-compliance, are more limited.”¹¹¹ Thus, nonbinding soft law may be the only way to create a uniform set of rules for every nation to follow—even non-space-faring nations, if and when they enter outer space.¹¹²

Third, “soft law is a better way to handle the always-changing technology that will undoubtedly be used in outer space.”¹¹³ Under a soft law regime, technological advancements will not be deterred or slowed due to the need to comply with a binding treaty.¹¹⁴ State and nonstate actors can be more ambitious with technology and engage in deeper cooperation with other actors than they would if they had to worry about enforcement.¹¹⁵ “Soft law instruments provide greater flexibility for states to cope with uncertainty [with technology] and learn over time.”¹¹⁶ Soft law ultimately helps spur creativity within industries involved in outer space technology.¹¹⁷

Fourth, both state and nonstate actors are able to participate in creating soft law principles. Any effective regulatory strategy must respond to the affected community’s concerns by “reacting quickly and appropriately whe[n] new information comes to light.”¹¹⁸ In order to react quickly and appropriately to new information, the private enterprises of the community need to be involved in the regulatory scheme.¹¹⁹ State-centered regulations often can be ineffective because private enterprises hold much of the information about and expertise in new technology rather than

¹¹¹ Boyle, *supra* note 107, at 903.

¹¹² See Urban, *supra* note 89, at 45.

¹¹³ *Id.* at 47–48.

¹¹⁴ See *id.* at 49 (“[T]he unceasing progress in technology, the increasing globalization of human activities, the changing geopolitical situation together with the internal funding constraints of space-faring nations and other nations eager to participate, have shaped the environment for space activities where international cooperation has become essential.” (quoting Marco Ferrazzani, *Soft Law in Space Activities – An Updated View*, in *SOFT LAW IN OUTER SPACE: THE FUNCTION OF NON-BINDING NORMS IN INTERNATIONAL SPACE LAW* 104 (Irmgard Marboe ed., 2012))).

¹¹⁵ See Gregory C. Shaffer & Mark A. Pollack, *Hard vs. Soft Law: Alternatives, Complements, and Antagonists in International Governance*, 94 MINN. L. REV. 706, 719 (2010).

¹¹⁶ See *id.*; see also Kenneth W. Abbott & Duncan Snidal, *Hard and Soft Law in International Governance*, 54 INT’L ORG. 421, 423 (2000) (“[Soft law] offers more effective ways to deal with uncertainty, especially when it initiates processes that allow actors to learn about the impact of agreements over time.”).

¹¹⁷ See Shaffer & Pollack, *supra* note 115, at 719.

¹¹⁸ Carolyn Abbot, *Bridging the Gap – Non-state Actors and the Challenges of Regulating New Technology*, 39 J. L. & SOC’Y 329, 330 (2012).

¹¹⁹ See *id.*

the state.¹²⁰ For regulations to be effective, there needs to be information sharing between state and nonstate actors, which such actors can achieve more easily under a soft law regime—hard law only requires state actors to be involved.¹²¹

Ultimately, soft law is an adaptable way to manage both state and nonstate actors operating in outer space. Soft law limits the need for hard law, given the difficulties associated with treaty-making, the technological changes associated with outer space activities, and the necessity of having nonstate actors involved in policy-making. That is not to say, however, that soft law does not come with its own disadvantages.

C. *Disadvantages of Soft Law*

While beneficial in many instances, soft law lacks many aspects that make hard law more attractive to actors in outer space. First, soft law lacks credibility.¹²² Hard law requires codification of legally-binding obligations to which states subject themselves.¹²³ Treaties, in particular, show the international community that the signing states intend to commit themselves to the agreement.¹²⁴ “They make state commitments more credible because they increase the cost of reneging, whether on account of legal sanctions or on account of the costs to a state’s reputation where it is found to have violated its legal commitments.”¹²⁵ Further, treaties can either be self-executing, meaning that they have direct legal effects on national jurisdictions, or non-self-executing, meaning that they require domestic legal enactment.¹²⁶ “Where treaty obligations are implemented through domestic legislation, they create new tools that mobilize domestic actors, increasing the audience costs of a violation and thus making their commitments more credible.”¹²⁷ Thus, state and nonstate actors can be in breach of international obligations created by hard law, making it more credible than soft law.

¹²⁰ *See id.*

¹²¹ *See id.*

¹²² *See* Abbott & Snidal, *supra* note 116, at 426–27.

¹²³ *See* Shaffer & Pollack, *supra* note 115, at 717; *see also* Urban, *supra* note 89, at 44.

¹²⁴ *See* Urban, *supra* note 89, at 44.

¹²⁵ Shaffer & Pollack, *supra* note 115, at 717–18.

¹²⁶ *See id.* at 718.

¹²⁷ *Id.*

Second, soft law lacks enforcement and punishment mechanisms.¹²⁸ Under soft law, there usually are no means of enforcing the “law” and no means of punishing actors who violate the “law.”¹²⁹ While actors involved with soft law mechanisms can bring problems and conflicts before an independent third party, this conciliatory method is non-binding.¹³⁰ Oftentimes, hard law instruments allow states to bring disputes over their legal commitments to a dispute-settlement body such as a court, which is binding.¹³¹ Thus, hard law is much more enforceable than soft law.

D. Soft Law in Practice: The Kimberley Process

It is important to understand how soft law works when it is implemented in response to a major security issue. One such example of this situation is the Kimberley Process Certification Scheme for Rough Diamonds. Prior to the Kimberley Process, diamonds were “the currency and primary financing vehicle of rebel movements that brutalized innocent civilians.”¹³² By the 1990s, the unregulated trade of diamonds was financing rebel groups in Angola, the Democratic Republic of the Congo, and Sierra Leone.¹³³ In these countries, the rebel groups remained in control of the diamond mining regions.¹³⁴ These groups used the proceeds to pay for weapons to wage “decades-long campaigns against unarmed civilians, perpetrating killings, rapes, mutilations, and abductions into their armies or sexual slavery.”¹³⁵ Over ten million people were killed or displaced due to these diamond-financed conflicts.¹³⁶

In response to these atrocities, various state and nonstate actors came together to address the problem of so-called “blood diamonds,”¹³⁷ or “conflict diamonds.” This coalition was comprised of countries in Southern Africa, companies involved in the

¹²⁸ See Abbott & Snidal, *supra* note 116, at 427.

¹²⁹ See Shaffer & Pollack, *supra* note 115, at 718.

¹³⁰ See Boyle, *supra* note 107, at 909.

¹³¹ See Abbott & Snidal, *supra* note 116, at 427.

¹³² Ann C. Wallis, Note, *Data Mining: Lessons from the Kimberley Process for the United Nations' Development of Human Rights Norms for Transnational Corporations*, 4 NW. J. INT'L HUM. RTS. 388, 388 (2005).

¹³³ See *id.* at 390–91.

¹³⁴ See *id.* at 391.

¹³⁵ *Id.*

¹³⁶ See *id.*

¹³⁷ *Id.* at 391–92.

diamond trade, and human rights non-governmental organizations (“NGOs”).¹³⁸ The African nations sought to quell the violence and salvage the diamond trade, the companies sought to avoid the boycott and collapse of the diamond industry, and the NGOs sought to focus public attention on the matter.¹³⁹ “Rather than wholly ban the diamond trade, this group initiated the Kimberley Process, a global certification scheme designed to drive blood diamonds off the legal market.”¹⁴⁰

Generally, the Kimberley Process Certification Scheme is meant to bring together key stakeholders in the diamond trade, identify universal human rights goals for the trade, and devise a procedure by which these goals can be realized and by which the stakeholders can still profit from the industry.¹⁴¹ Specifically, the institution supports the national regulation of diamonds based on minimum standards that have been internationally agreed upon.¹⁴² “All state participants must ensure that every raw diamond shipment contains a Kimberley Process certificate and that no shipment is imported from or exported to a non-participant.”¹⁴³ Each participating state is expected to establish “a system of internal controls; utilize tamper-resistant containers; enact implementing and enforcement legislation; . . . share import and export data;” and “self-report on [its] relevant laws, regulations, and practices.”¹⁴⁴ Also, the process allows for nonstate actors—specifically companies and NGOs—to engage in voluntary self-regulation initiatives.¹⁴⁵ This includes industry efforts to provide a warranty system where members commit to not knowingly buying or selling or helping others to buy or sell conflict diamonds.¹⁴⁶ “The [Kimberley Process] does not constitute a binding international treaty; rather, it is more akin to an international political

¹³⁸ *See id.*

¹³⁹ *Id.* at 393.

¹⁴⁰ Lesley Wexler, *Regulating Resource Curses: Institutional Design and Evolution of the Blood Diamond Regime*, 31 CARDOZO L. REV. 1717, 1719 (2010).

¹⁴¹ *See* Wallis, *supra* note 132, at 389.

¹⁴² *See* Wexler, *supra* note 140, at 1719.

¹⁴³ *Id.*

¹⁴⁴ *Id.* (citing Kimberley Process Certification Scheme §§ IV–V, Nov. 2002, <https://www.kimberleyprocess.com/en/system/files/documents/KPCS%20Core%20Document.pdf>).

¹⁴⁵ *See id.*

¹⁴⁶ *See id.* at 1719–20.

agreement between nations, and thus, is largely self-enforced.”¹⁴⁷ As a soft law measure, the Kimberley Process provides a suitable platform on which the advantages and disadvantages of soft law can be examined more closely.

Overall, the Kimberley Process is often lauded as “an exemplar for international action on humanitarian and security problems.”¹⁴⁸ From the perspective of the diamond and jewelry industry, this process provides a sense of assurance that they are not selling conflict diamonds to their customers.¹⁴⁹ Such a sense of assurance arises from the legitimacy of the process itself.¹⁵⁰ The process was created by industry leaders, which implies that the process is practical and workable.¹⁵¹ “Unlike international arms embargoes or sanctions, which typically are created by states without the express involvement of the arms industry, the Kimberley Process’s legitimacy lies in large part with the fact that it is a product of the global diamond industry itself.”¹⁵²

Further, the Kimberley Process involves other measures that increase its legitimacy and efficacy. First, participant states are obligated to “enact domestic legislation allowing for the imposition of the terms of the Kimberley Process, which will combat conflict diamonds within the participant’s jurisdiction.”¹⁵³ Second, participant states can be delisted for violating the terms of the Kimberley Process.¹⁵⁴ Being delisted means that diamonds cannot be legally imported or exported through the state, which, in turn, hurts the violating state’s economy.¹⁵⁵

Further, the public punishment for violating the process incentivizes compliance by state and nonstate actors.¹⁵⁶ After a state has been delisted, it can be reinstated once the particular

¹⁴⁷ Karen E. Woody, *Diamonds on the Souls of Her Shoes: The Kimberley Process and the Morality Exception to WTO Restrictions*, 22 CONN. J. INT’L L. 335, 345 (2007).

¹⁴⁸ Wexler, *supra* note 140, at 1720.

¹⁴⁹ See Alexandra R. Harrington, *Faceting the Future: The Need for and Proposal of the Adoption of a Kimberley Process-Styled Legitimacy Certification System for the Global Gemstone Market*, 18 TRANSNAT’L L. & CONTEMP. PROBS. 353, 360 (2009).

¹⁵⁰ *See id.* at 360–61.

¹⁵¹ *See* Wallis, *supra* note 132, at 389–90.

¹⁵² Harrington, *supra* note 149, at 361.

¹⁵³ *Id.* at 359–60.

¹⁵⁴ *See id.* at 361.

¹⁵⁵ *See id.*

¹⁵⁶ *See id.*

delisting issue has been resolved.¹⁵⁷ This practice shows that the creators of the Kimberley Process are devoted to solving the inherent problem of conflict diamonds.¹⁵⁸

Despite the advantages of the soft law approach applied to the problem of conflict diamonds, the Kimberley process also presents some disadvantages. The main issue with the process is that it relies too much on the states' and companies' ability to police themselves.¹⁵⁹ Although the United Nations supports the creation and implementation of the Kimberley Process, there is no international monitoring body, meaning there are no legally binding compliance standards.¹⁶⁰ The only truly binding requirements of the Kimberley Process are the pieces of domestic legislation passed by participating states.¹⁶¹ But even that legislation can experience sporadic enforcement by the participating state, unless the state is committed to monitoring through its domestic police power.¹⁶² This results in "inadequate, 'toothless' monitoring and enforcement mechanisms that are fundamentally flawed and ultimately ineffectual."¹⁶³ Scholars have argued for more oversight from and participation by the United Nations.¹⁶⁴ The United Nations would have the power to sanction states that do not comply with the process, giving the Kimberley Process more teeth.¹⁶⁵

In connection with the lack of international oversight, the process "does not permit a private right of action whereby an individual can bring suit against another person or company violating the [Kimberley Process]."¹⁶⁶ Such a private right of action would allow members of the industry to "more actively participate in the prevention of the blood diamond trade."¹⁶⁷ It would also create another "check" on the system.¹⁶⁸ Lastly, the private right of action would deter people in the industry from

¹⁵⁷ *See id.*

¹⁵⁸ *See id.*

¹⁵⁹ *See* Wallis, *supra* note 132, at 390.

¹⁶⁰ *See* Woody, *supra* note 147, at 345.

¹⁶¹ *See id.*

¹⁶² *See id.* at 346.

¹⁶³ Wallis, *supra* note 132, at 390.

¹⁶⁴ *See* Julie L. Fishman, Note, *Is Diamond Smuggling Forever? The Kimberley Process Certification Scheme: The First Step Down the Long Road to Solving the Blood Diamond Trade Problem*, 13 U. MIAMI BUS. L. REV. 217, 235 (2005).

¹⁶⁵ *See id.*

¹⁶⁶ *Id.*

¹⁶⁷ *See id.*

¹⁶⁸ *See id.*

buying or selling conflict diamonds.¹⁶⁹ It would serve as an incentive for participating states to stay committed to the Kimberley Process.¹⁷⁰

Overall, the Kimberley Process has mitigated many human rights abuses in the diamond industry. As a soft law measure, the process has largely proved to be effective against such a major security issue, despite some disadvantages that may need to be addressed in the future. The Kimberley Process's advantages and disadvantages are applicable to the RPO industry because both situations involve security issues affecting both state and nonstate actors. Thus, the RPO industry can reap the benefits of the soft law approach and preemptively address its drawbacks.

III. ARGUMENT: SOFT LAW TO REGULATE THE RPO INDUSTRY

A. *Advantages of Using Soft Law to Regulate RPOs*

Soft law may be the best option to regulate RPO use because it is a more flexible system compared to hard law. First, creating hard law is becoming a less attainable goal because many countries do not support the creation of new treaties regulating outer space activities.¹⁷¹ Further, the United Nations wants to avoid treaty negotiations because they can be very time-consuming and because states may want to renegotiate terms of prior treaties regulating outer space.¹⁷² With CONFERS using soft law to regulate RPOs, there is no need to create or negotiate any new treaty. Actors involved with RPOs could still operate under existing treaties, while using soft law instruments created by CONFERS to interpret vague terms of the existing treaties.¹⁷³ Also, states will more readily agree to soft law measures because agreeing to non-binding measures has fewer political ramifications domestically than binding hard law.¹⁷⁴ Thus, the lack of political will to create a new treaty will not prevent CONFERS and other actors from regulating RPOs with soft law measures.

¹⁶⁹ *See id.*

¹⁷⁰ *See id.*

¹⁷¹ *See* Urban, *supra* note 89, at 47.

¹⁷² *See id.*; *see also* Losekamm et al., *supra* note 15, at 8.

¹⁷³ *See* Guzman & Meyer, *supra* note 95, at 174.

¹⁷⁴ *See* Boyle, *supra* note 107, at 903.

Second, various non-space-faring states are not signatories to existing treaties governing outer space.¹⁷⁵ The five treaties governing outer space were drafted in the Cold War era, when different security concerns existed than those that states are focused on today.¹⁷⁶ The nonsigning states are not inclined to be legally bound to such outdated laws.¹⁷⁷ Thus, soft law measures may be the only method of creating uniformity in RPO regulation. Space-faring and non-space-faring states can benefit from CONFERS creating soft law principles because such principles can be precise and detailed, compared to broad and vague treaties.¹⁷⁸

Third, soft law is a more effective way to handle the technological advancements associated with space activities.¹⁷⁹ With each new technological advancement, a state or nonstate actor might violate the terms of a binding treaty, unless new terms are drafted. Acknowledging how difficult it is to create a treaty or renegotiate the terms of an existing treaty, hard law may stifle the RPO industry's motivation to advance technology. Under soft law measures, however, rules and regulations can be more easily adapted in light of new technology, and there is no penalty for "violating" soft law policies.¹⁸⁰ This means that RPO industry members can defy soft law measures without fear of retribution when they develop new technology.¹⁸¹ CONFERS is currently led by DARPA, whose sole purpose is to create new technology for the United States military.¹⁸² CONFERS's prime contractor is Advanced Technology International ("ATI"), which is working to coordinate and execute the most innovative research initiative surrounding RPO technology.¹⁸³ These two actors are leading the charge for technological advancements regarding RPOs and CONFERS is enabling them to collaborate to push technological boundaries.¹⁸⁴ Further, CONFERS's policies can be altered as

¹⁷⁵ See Urban, *supra* note 89, at 45.

¹⁷⁶ See *id.*

¹⁷⁷ See *id.*

¹⁷⁸ See *id.*

¹⁷⁹ See *id.* at 47-48.

¹⁸⁰ See *id.* at 49 ("[T]he unceasing progress in technology, the increasing globalization of human activities, the changing geopolitical situation together with the internal funding constraints of space-faring nations and other nations eager to participate, have shaped the environment for space activities where international cooperation has become essential."); see also Shaffer & Pollack, *supra* note 115, at 719.

¹⁸¹ See Shaffer & Pollack, *supra* note 115, at 719.

¹⁸² See Howell, *supra* note 73.

¹⁸³ See Werner, *supra* note 72.

¹⁸⁴ See *id.*

technology changes because DARPA and ATI are two of the key policy-making actors within CONFERS.¹⁸⁵ Soft law allows actors like DARPA and ATI to learn and experiment with technology without fear of penalty for violating policies.¹⁸⁶

Fourth, soft law allows nonstate actors to play an integral role in policy-making alongside state actors.¹⁸⁷ For the most part, private enterprises have more information and expertise on new technology than state actors.¹⁸⁸ Open communication and collaboration between state and nonstate actors are essential to the creation of effective regulations.¹⁸⁹ CONFERS is the primary channel through which state actors, like DARPA, can collaborate with nonstate actors, like ATI, to create policies that facilitate technological growth.¹⁹⁰ CONFERS has also recruited the Secure World Foundation to direct outreach to other actors to engage them in policy-making, University of Southern California's Engineering Research Center to investigate current standards and practices surrounding RPO regulation, and the Space Infrastructure Foundation to lead efforts to create new standards.¹⁹¹ CONFERS, acting as a soft law platform, will likely produce effective policies and procedures that will be respected throughout the RPO industry because they will be created by the industry itself.¹⁹²

Overall, soft law is a malleable tool to give structure to the RPO industry. CONFERS allows state and nonstate actors to collaborate and create policies and procedures that reflect the best practices of the RPO industry while inspiring technological growth. Soft law is likely the preferred method of the industry given the lack of political will to create new treaties or for non-space-faring states to sign on to existing treaties. While soft law is the advantageous method of creating regulations, it does have disadvantages that need to be addressed.

¹⁸⁵ *See id.*

¹⁸⁶ *See Urban, supra note 89, at 49.*

¹⁸⁷ *See Abbot, supra note 118, at 330.*

¹⁸⁸ *See id.*

¹⁸⁹ *See id.*

¹⁹⁰ *See CONFERS to Establish "Rules of the Road" for On-Orbit Servicing of Satellites, supra note 82.*

¹⁹¹ *See Werner, supra note 72.*

¹⁹² *See CONFERS to Establish "Rules of the Road" for On-Orbit Servicing of Satellites, supra note 82.*

B. Disadvantages of Using Soft Law to Regulate RPOs

While it is likely the preferred method of regulation for the RPO industry, soft law lacks many features of hard law that may make a treaty more attractive to actors in outer space. First, one of the main features soft law lacks is credibility.¹⁹³ Hard law requires codifying legally-binding obligations to which states subject themselves, showing that they intend to be bound by the terms of the agreement.¹⁹⁴ Treaties make state commitments more credible because a breach would likely lead to sanctions or harm to the reneging state's reputation.¹⁹⁵ Further, nonstate actors can be in breach of a treaty if the treaty is self-executing, or if it's non-self-executing but domestic legislation has been passed pursuant to the treaty.¹⁹⁶

However, in some circumstances, soft law can become binding customary international law.¹⁹⁷ Customary international law is composed of state practice, which is a general and consistent practice by states, and *opinio juris*, which is a practice followed out of a belief of legal obligation.¹⁹⁸ Once a soft law practice has been deemed to be so consistent and widely-practiced that it is now considered customary international law, it is as legally-binding and obligatory on state actors as a treaty.¹⁹⁹ If CONFERS creates policies that enough space-faring states follow out of a sense of legal obligation, these policies can be obligatory customary international law on state actors. Thus, soft law, in the form of customary international law regulating RPO use, eclipses the need and desire for a treaty on RPOs.

However, customary international law is not binding on nonstate actors. CONFERS can counteract this issue by implementing the delisting procedure as seen in the Kimberley Process.²⁰⁰ Where a nonstate actor forgoes soft law rules and regulations of RPO use, it can be delisted as a participating entity with CONFERS. This would hurt the violator's finances because fewer satellite owners would want to do business with that violator if they are not following protocol. The economic incentive to

¹⁹³ See Shaffer & Pollack, *supra* note 115, at 718.

¹⁹⁴ See *id.* at 717.

¹⁹⁵ See *id.* at 717–18.

¹⁹⁶ See *id.* at 718.

¹⁹⁷ See CARTER ET AL., *supra* note 94, at 157.

¹⁹⁸ See Roberts, *supra* note 100, at 757.

¹⁹⁹ See CARTER ET AL., *supra* note 94, at 157.

²⁰⁰ See Harrington, *supra* note 149, at 361.

comply with soft law is comparable to the legal incentive to comply with hard law, making soft law as credible as a treaty. Thus, soft law is an effective way to regulate RPO use.

Second, soft law lacks enforcement and punishment mechanisms. Under soft law, there often are no means of enforcing the “law” and no means of punishing actors who violate the “law,” while hard law instruments allow states to bring disputes over their legal commitments to a dispute-settlement body.²⁰¹ Thus, hard law tends to be more enforceable than soft law. However, CONFERS can use other methods to enforce policies and punish actors that renege from agreed upon procedures.

To enforce procedures, CONFERS can encourage participants to bring their issues to an independent third party. Although this form of conciliation is nonbinding, actors involved in CONFERS might be willing to adhere to the third party’s findings and recommendations. After all, CONFERS was created to give structure to this industry, so its participants will likely want to maintain the structure by following agreed upon policies and procedures. However, if conciliation before an independent third party does not work, CONFERS can, again, borrow the Kimberley Process’s delisting procedure. The economic risk associated with being delisted is likely high enough to keep actors from defying CONFERS’s policies.

If both conciliation and delisting procedures are not enough to keep actors in line, the Liability Convention provides a means of bringing claims against states that cause damage in outer space and on the surface of the Earth.²⁰² Any damage that may result from a violation of a soft law rule or regulation would then be actionable under this treaty.²⁰³ Thus, through a combination of soft law and hard law, RPO regulation is enforceable and punishable against state and nonstate actors under a delisting procedure and is enforceable and punishable against state actors under the Liability Convention.²⁰⁴

²⁰¹ See Shaffer & Pollack, *supra* note 115, at 718.

²⁰² See Liability Convention, *supra* note 56, at arts. II, III & V; Taghdiri, *supra* note 59, at 412–13; *see also* Losekamm et al., *supra* note 15, at 5 (“Articles II, III and V of the Liability Convention state that the state actors launching an object into outer space shall jointly retain absolute liability for any damage caused on Earth, to aircraft, or to a space object of another launching state.”).

²⁰³ See Liability Convention, *supra* note 56, at arts. II, III & V; Taghdiri, *supra* note 59, at 412–13; *see also* Losekamm et al., *supra* note 15, at 5.

²⁰⁴ See Liability Convention, *supra* note 56, at arts. II, III & V; Taghdiri, *supra* note 59, at 412–13; *see also* Losekamm et al., *supra* note 15, at 5.

C. *What CONFERS Can Learn from the Kimberley Process*

The Kimberley Process has proved to be an effective soft law measure in regulating the blood diamond regime. CONFERS, or any other soft law mechanism, can learn from the benefits and detriments of the Kimberley Process because both the RPO industry and the blood diamond regime present major security issues that state and nonstate actors alike need to address.

First, the legitimacy of the Kimberley Process is the main reason that it is effective in regulating the issue of conflict diamonds in Southern Africa.²⁰⁵ Both state and nonstate actors involved in eradicating the blood diamond regime have a sense of assurance that they are not importing and exporting blood diamonds or selling blood diamonds to their customers.²⁰⁶ This sense of assurance comes from the fact that the process was created by industry leaders.²⁰⁷ A process created by industry leaders implies that the process is "practical and workable."²⁰⁸

RPO industry leaders, through CONFERS, are collaborating to create practical and workable standards under which state and nonstate actors can operate.²⁰⁹ As demonstrated by the Kimberley Process, such an endeavor will likely lead to a sense of legitimacy and assurance that a treaty may not necessarily provide. Treaties are created and implemented solely by states that might not ask nonstate actors that are more directly involved in the industry to engage in the treaty-making process.²¹⁰ Therefore, there is a chance that a new treaty regulating RPO use may not incorporate the best practices and standards of the industry.²¹¹ Thus, a new treaty may not have the sense of legitimacy that policies created by CONFERS may have, because that "legitimacy lies in large part with the fact that it is a product of the . . . industry itself."²¹²

²⁰⁵ See Harrington, *supra* note 149, at 361.

²⁰⁶ See *id.* at 360.

²⁰⁷ See Wallis, *supra* note 132, at 389–90.

²⁰⁸ See *id.*

²⁰⁹ See Master, *supra* note 4.

²¹⁰ States are the sole creators of international arms embargoes and sanctions. States create such embargoes and sanctions without the involvement of the arms industry. States are also the sole creators of treaties. Therefore, when creating treaties related to RPO regulation, States might not involve members of the RPO industry. See Harrington, *supra* note 149, at 361.

²¹¹ See *id.*

²¹² *Id.*

The Kimberley Process has other means that increase its legitimacy and efficacy. Primarily, participant states are obligated to “enact domestic legislation allowing for the imposition of the terms of the Kimberley Process, which will combat conflict diamonds within the participant’s jurisdiction.”²¹³ If CONFERS is successful in creating soft law policies, the industry leaders involved could require similar domestic legislation to ensure that the rules and regulations are being enforced. This method could further obviate the need for a new multilateral treaty governing RPO use: once state and nonstate actors are controlled by domestic law, they have a legal incentive to obey the international soft law measures.²¹⁴

Further, participant states of the Kimberley Process can be delisted for violating the terms of the process.²¹⁵ Delisting can damage a violating state’s economy, because diamonds cannot be legally imported or exported through a delisted state—this increases the process’s validity.²¹⁶ Such a public punishment for violation is a good incentive for state and nonstate actors to obey the soft law.²¹⁷ Once a state has been delisted, it can be re-enlisted if the state remedies the issue that caused it to be delisted.²¹⁸

If the RPO industry turns to soft law measures for regulation, it too could use this delisting and re-enlisting process. This method would likely prove to be an effective incentive for state and nonstate actors to obey the rules and regulations. States would not want to be delisted because it would hurt their economy and it would publicly shame them. Nonviolating states would likely distrust the violating state and would hesitate before conducting any joint space activity. Further, nonstate actors would not want to be delisted because customers would likely hesitate before turning to them for satellite refueling and repairing missions.

²¹³ *Id.* at 359–60 (citing Kimberley Process Certification Scheme, *supra* note 144, § IV).

²¹⁴ *See id.* at 361.

²¹⁵ *See id.* (citing AD HOC WORKING GROUP ON THE REVIEW OF THE KPSC, THE KIMBERLEY PROCESS CERTIFICATION SCHEME THIRD YEAR REVIEW 67 (2006), <https://2001-2009.state.gov/documents/organization/77156.pdf> [hereinafter THIRD YEAR REVIEW]).

²¹⁶ *See id.* (citing THIRD YEAR REVIEW, *supra* note 215, at 67).

²¹⁷ *See id.*

²¹⁸ *See id.*

This practice of delisting and re-enlisting would show that the creators of the soft law measure are devoted to solving the security issues associated with RPO use.²¹⁹

Ultimately, the Kimberley Process shows us that soft law is an adaptable way to manage both state and nonstate actors operating in outer space. Soft law eradicates the need for hard law, especially in light of the difficulties associated with treaty-making, the technological advancements associated with RPOs, and the need to have nonstate actors involved in policy-making to make such policies effective. The Kimberley Process, however, also demonstrates the disadvantages of soft law from which CONFERS can learn from the Process's mistakes.

The main issue with the Kimberley Process is that it relies heavily upon self-policing by both the states and the companies involved.²²⁰ Despite the support and approval of the United Nations, the Kimberley Process has no international monitoring body.²²¹ Domestic legislation passed by participating states of the Kimberley Process is the only legally binding requirement of the process.²²² But domestic legislation requires domestic enforcement with the state's police power—this monitoring method can be irregular depending on the state.²²³ This results in inadequate and “toothless” monitoring, making the Kimberley Process somewhat ineffective.²²⁴

To combat such a problem with RPO soft law regulation, CONFERS could request impartial oversight from the United Nations.²²⁵ The United Nations Office of Outer Space Affairs (“UNOOSA”) has the Committee on the Peaceful Uses of Outer Space (“COPUOS”).²²⁶ This committee could further its monitoring reach to include monitoring soft law regulation of RPOs. COPUOS, acting under the UNOOSA, would have power

²¹⁹ *See id.*

²²⁰ *See Wallis, supra note 132, at 390.*

²²¹ *See Woody, supra note 147, at 346.*

²²² *See id.*

²²³ *See id.*

²²⁴ *See Wallis, supra note 132, at 390.*

²²⁵ *See Fishman, supra note 164, at 235.*

²²⁶ *See Committee on the Peaceful Uses of Outer Space, UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS*, <http://www.unoosa.org/oosa/en/ourwork/copuos/index.html> (last visited Feb. 20, 2020).

to sanction states that do not comply with the soft law rules and regulations of RPO use, thereby giving RPO regulation more teeth.²²⁷

In connection with the lack of international oversight, the Kimberley Process “does not permit a private right of action whereby an individual can bring suit against another person or company violating the [process].”²²⁸ A private right of action would incentivize industry members to more actively participate in eliminating the blood diamond trade out of fear of litigation, creating another “check” on the system.²²⁹ It would serve as an incentive for participating states to stay committed to the Kimberley Process.²³⁰

RPO regulation through soft law cannot itself create a private right of action because soft law is inherently nonbinding.²³¹ However, the delisting process, again, would likely be incentive enough for state and nonstate actors to comply with RPO rules and regulations. The economic risk of disobeying industry-wide regulations created by CONFERS would likely instill enough fear in businesses to comply with such regulations.

If the threat of being delisted is not enough incentive, the Liability Convention could create a private right of action for state actors to seek relief.²³² If an actor violates the soft law rules and regulations of RPO use, resulting in damage to another state’s property on the Earth’s surface or in outer space, then that damage could be actionable under the Liability Convention.²³³ Although the Liability Convention only provides for claims between states, launching states are liable for outer space mishaps to nonstate actors.²³⁴ Thus, a state could get relief from another state for a nonstate actor’s damage.²³⁵ While the Kimberley

²²⁷ See Fishman, *supra* note 164, at 235.

²²⁸ *Id.*

²²⁹ See *id.*

²³⁰ See *id.*

²³¹ See Shaffer & Pollack, *supra* note 115, at 717–18.

²³² See Liability Convention, *supra* note 56, at arts. II, III & V; see also Taghdiri, *supra* note 59, at 412–13; Losekamm et al., *supra* note 15, at 5.

²³³ See Liability Convention, *supra* note 56, at arts. II, III & V; see also Taghdiri, *supra* note 59, at 412–13; Losekamm et al., *supra* note 15, at 5.

²³⁴ See Liability Convention, *supra* note 56, at arts. II, III & V; see also Taghdiri, *supra* note 59, at 412–13; Losekamm et al., *supra* note 15, at 5.

²³⁵ See Liability Convention, *supra* note 56, at arts. II, III & V; see also Taghdiri, *supra* note 59, at 412–13; Losekamm et al., *supra* note 15, at 5.

Process shows the downsides of using soft law, CONFERS can learn from the Process's mistakes to make its own policies and procedures more effective.

CONCLUSION

In conclusion, soft law has many advantages over hard law: soft law is easier to form compared to the treaty-making process required in hard law, non-space-faring nations are unwilling to join existing space treaties, soft law is a more malleable instrument for changing technologies as opposed to renegotiating treaties, and nonstate actors are more actively involved in creating soft law policies. However, soft law does have some disadvantages compared to hard law: soft law is less credible than hard law because hard law requires codification of legally binding obligations, and soft law lacks enforcement and punishment mechanisms.

The disadvantages of using soft law for RPO regulation can be mitigated. CONFERS's policies could become more credible if they are widespread and consistently used, which could convert the policies into binding customary international law. Since customary international law is not binding on nonstate actors, CONFERS could further heighten the credibility of their policies by including a delisting and re-enlisting procedure, similar to the Kimberley Process, that would promote compliance. To diminish the lack of enforcement and punishment mechanisms under soft law, CONFERS could encourage participants to use a conciliatory method and bring their issues to an independent third party. If conciliation does not work, CONFERS could, again, utilize a delisting procedure to punish violating entities. If delisting is not enough, the Liability Convention provides a right of action if a breach of RPO rules resulted in damage to a space object on Earth's surface or in outer space.

The Kimberley Process further demonstrates the benefits and detriments of a soft law system from which CONFERS and the RPO industry can learn. The Kimberley Process demonstrates that using soft law to manage a security issue has its advantages over hard law: soft law integrates industry leaders, as opposed to just state actors, to create rules and regulations, which increases legitimacy; soft law creators can mandate domestic legislation pursuant to the rules and regulations, which increases compliance; and delisting and re-enlisting procedures can be enacted, which also increases compliance.

However, the Kimberley Process shows that there are some drawbacks in using soft law to regulate a security issue: soft law requires no international monitoring body, which limits compliance; and soft law does not provide a private right of action for any breach of the rules and regulations, which limits punishment. CONFERS can learn from the Kimberley Process's downfalls and implement more oversight to mitigate the disadvantages of this soft law process. First, CONFERS could require domestic legislation to be passed in participating states pursuant to the soft law rules and regulation, making the rules and regulations binding on state and nonstate actors, which would increase compliance and punishment. Second, CONFERS could request impartial oversight from the UNOOSA under the COPUOS, which also would increase compliance and punishment.

Overall, soft law is the better method to manage RPO regulation. Any drawbacks with soft law can be counteracted with varying solutions, as demonstrated by the Kimberley Process. Satellite owners would likely prefer to protect their assets with uniformly agreed upon rules that they helped create than continue with the lawlessness that currently exists. Soft law is the most effective method to give such structure to the amorphous RPO industry.