Unispace+50: Evolution of Long-Term Sustainability (LTS) Guidelines into Customary Legal Norms

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Abstract

In 2010, the Scientific and Technical Subcommittee of the UNCOPUOS formed the Working Group on Long Term Sustainability (LTS) of Outer Space Activities, assigning it the task of formulating voluntary non-binding guidelines focusing on sustainable space utilization, space debris and space operations, space weather, and regulatory regimes. At its June 2016 meeting, the UNCOPUOS approved 12 of the proposed guidelines, while several remained on the UNCOPUOS agenda. Although the LTS Guidelines are voluntary, their adoption by the UNCOPUOS and consideration by the UNGA's 4th Committee, are evidence of a growing awareness of their potential contribution to the evolution of space law applicable to all states. This paper explores whether the LTS Guidelines could evolve into customary legal norms as part of customary international law (CIL) and steps that could promote that evolution.

1. Introduction

In the spirit of the June 2018 commemoration of the five decades since entry into force of the Outer Space Treaty, this paper poses a very large question into the future, "how is the outer space legal regime likely to evolve over the coming decade with regard to binding or non-binding law?" While a comprehensive analysis is beyond the scope of this paper, we propose that a focus on the Long Term Sustainability (LTS) Guidelines adopted in 2016 and under consideration by UNCOPUOS in 2017-18 will provide particularly prescient clues about the direction regime evolution will take.

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All forms of governance operate upon and react to factors exogenous and endogenous to the regime. National governments must contend with foreign threats and opportunities as they simultaneously attempt to achieve internal goals amidst competing supports and demands posed by domestic political groups and processes. International regimes likewise are required to manage external and internal pressures necessitating a range of responses. Thus, the June 2018 61st session of UNCOPUOS was augmented by a Unispace+50 commemoration and a High Level Forum that focused on the space regime's contribution to achieving the UN's Sustainable Development Goals (SDGs) for earth-bound populations, an exogenous demand on the space regime. In contrast, the endogenous issue of the sustainability of outer space itself has become the key driving force behind outer space regime evolution towards either a greater reliance on binding or non-binding instruments.

In this way, the LTS Guidelines function as the proverbial "canary in the coal mine" signaling a most remarkable twist in legal evolution. Do the LTS Guidelines indicate an awareness of the part of sovereign states of the sustainability challenges facing outer space exploration, bringing about a nascent but growing willingness to adopt voluntary international guidelines as nationally binding policies and regulations? Will these, in turn, form the basis for what could eventually become customary norms of international law addressing practices that compromise sustainable access and use of the outer space environment? In short, will the LTS "soft law" Guidelines find a way to become "hard law" instruments applicable to all entities conducing space activities?

1.1 Hard and Soft Law

One of the most fascinating, if also not its most challenging aspects a legal scholar or practitioner encounters in an analysis of international law is the aspect concerning its central contradiction where a sovereign state voluntarily limits its own sovereignty. Thousands of "hard law" treaties, agreements, and their implementation into inter-governmental organizations would seem to answer to the affirmative. Especially when one considers the global commons such as Antarctica, the high seas and deep seabed, ionosphere, electromagnetic spectrum, and earth's climate, states have assembled legal regimes in which members commit to comply with "hard law" regime rules they consider binding on the permissible range of their own sovereign prerogatives. At the same time, an accelerating process of globalization has inter-meshed states, societies, and economies into globe spanning networks of markets, transport and finance whose pace of change overwhelm traditional "hard law" processes. Out of necessity, states, governmental and non-governmental entities increasingly seek international "soft law" regulatory accommodations usually promulgated as non-binding "rules of the road" that in many cases receive widespread compliance due to the "self-enforcing" characteristics of the commons itself, such as the electromagnetic spectrum.

Radio frequency "jamming" negatively affects all users including the jammer. Does the outer space environment similarly self-enforce non-binding rules of the road? Customary international law (CIL) may operate as a source of international law creating a binding obligation to comply with soft law guidelines even for entities seeking to avoid sovereignty-limiting "hard" or "soft" law agreements. But while these "soft law" regimes focus mainly on earthbound commons regions, outer space presents a unique set of off-planet challenges that highlight this sovereignty contradiction, the underlying theme of this paper.

Outer space as a region for human use is accessible only through technology. Thus, more than for any other commons region, governance of outer space must develop rules that are technological in nature and focus, and whose legitimacy must constantly adapt to dynamically evolving technological capabilities exercised by a growing range of governmental, civilian, and commercial entities in their space activities. For example, rules designed to prevent biological contamination of planets and other space objects were examined as commercial entity SpaceX in February 2018 launched a Tesla automobile into a heliocentric orbit that crossed through the Martian orbital region.[1] The launch license issued by the United States government did not require the extensive de-contamination required by rules applying to space vehicles operating in the vicinity of biologically sensitive space objects, such as Mars. Space debris in the form of dead satellites drifting in the geostationary orbital region and posting a collision threat with operating satellites there, prompted promulgation of Radio Regulations in the International Telecommunication Union (ITU) requiring the boosting of a soon-to-die satellite into a higher "graveyard" orbit. By one estimate, only 30% of GSO satellite operators by 2005 were complying with the ITU Radio Regulations, while more recently decommissioned satellites were increasingly likely to be boosted into the graveyard orbit.[2] Clearly, the sustainability of the outer space region is directly affected by compliance with both "hard" and "soft" law.

1.2 International Law

According to the ICJ Statute, there are four sources of international law the court may use in their decision-making process: (1) Treaties, (2) customary law, (3) general principles, and (4) the writings of international legal scholars and other court decisions.[3] To varying degrees determined by the ICJ judges,

1 Source: https://www.space.com/39619-spacex-falcon-heavy-roadster-to-asteroid-belt.html (accessed June 21, 2018.

2 Wikipedia, "Graveyard Orbit," Source: https://en.wikipedia.org/wiki/Graveyard_orbit (accessed June 21, 2018).

3 Statute of the International Court of Justice, Article 38. Insert full cite here. Source: http://www.icj-cij.org/en/statute (Accessed June 19, 2018).

the four sources constitute binding, i.e., "hard" international law. But a reliance on hard law to settle disputes in an increasingly inter-connected world economy that emerged in the post-World War II Cold War era and now accelerating into the 21st Century has been found lacking. The need for a more nimble and flexible set of international "rules of the road" has spawned a wide assortment of so-called "soft" non-binding regimes that are increasingly prevalent as state and non-state entities adopt "soft law" guidelines that coalesce around major functional areas such as the Internet, WMD proliferation, or, outer space exploration.

To reiterate our core question, in ten years, what will the outer space regime look like? We propose that sustainability concerns will drive discussions at Unispace+60 in 2028, where outer space policymakers will be contending with an intensification of many of today's sustainability challenges: ever-growing ranges of large and small satellites operated by a more diverse population of civilian, governmental, military, and commercial operators. As a consequence, UNCOPUOS's efforts since 2010 to develop "rules of the road" LTS Guidelines are prescient. We argue that the LTS Guidelines are the turn signals indicating that the Outer Space Treaty's stipulations that exploration and use of the outer space must ensure its "benefit for all mankind" must now be re-calibrated for sustainable use of outer space itself.[4]

1.3 IGOs and Formation of International Law

This paper focuses on whether *non-binding* guidelines approved by the UNCOPUOS and by the UNGA could become *binding* customary international law applicable to all states. According Professor Stephan Hobe, Director of the University of Cologne's Institute of Air and Space Law, IGOs facilitate the formation of binding law by requiring member states to

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Article 38

1. *The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply:*
   - A. *international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;*
   - B. *international custom, as evidence of a general practice accepted as law;*
   - C. *the general principles of law recognized by civilized nations;*
   - D. *subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.*

4 Peter Martinez, "Development of an international compendium of guidelines for the long-term sustainability of outer space activities," 43 Space Policy, 2018, p. 2. To reach to all of the documents regarding LTS Guidelines, http://www.unoosa.org/oosa/en/ourwork/topics/long-term-sustainability-of-outer-space-activities.html (accessed 25.07.2018); see also, UNCOPUOS, "Working Group on the Long-term Sustainability of Outer Space Activities: Preambular Text and Nine Guidelines: Conference room paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities," A/AC.105/C.1/2018/CRP.18/Rev.1, February 8, 2018. (Accessed June 22, 2018).

implement IGO policy through national legislation. In this scenario, the non-binding LTS Guidelines could be approved by the UNGA in a resolution that instructs states to implement the LTS Guidelines with national legislation.[5]

A comprehensive article by the LTS Working Group Chair (and recently appointed Executive Director of the Secure World Foundation) Professor Peter Martinez, appearing in the February 2018 edition of *Space Policy*, lays out the process by which the UNCOPUOS approved 12 guidelines in 2016 and attempted to approve the remaining guidelines in 2018.[6] At its June 2018 meeting, the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) completed its consideration of the proposed non-binding guidelines formulated by the Working Group on Long Term Sustainability of Outer Space Activities (WG-LTS) with no further guidelines being approved by the committee's consensus decision-making process, although an informal consensus could be discerned about the emerging challenges to existing rules of the road for space activities.

The Long-Term Sustainability (LTS) Guidelines adopted by the UNCOPUOS at its 2016 meeting, and considered by the United Nations General Assembly 4th Committee, represent the growing acknowledgement by the international community of nations that the long-term usability of outer space is endangered. In April 2011, Ambassador Gregory L. Schulte, deputy assistant secretary of defense for space policy for the U.S. Department of Defense, called space "congested, contested, and competitive."[7] Space debris, electromagnetic interference, and proposed large constellations of Internet-linked satellites threaten to make large swaths of orbital regions increasingly risky to human and robotic space missions. At the same time, a growing number of new entrants to the space community - states and commercial entities alike - were rapidly advancing their own space programs in the first decades of the 21st Century. That space exploration should be congested, contested, and competitive was not the goal of the Outer Space Treaty. In this way, the LTS Guidelines reflect the concern that the existing treaties and UNGA resolutions pertaining to outer space were not sufficient and that additional "rules of the road" were needed to preserve the OST vision of outer space being the "province of mankind."

This paper suggests how the voluntary LTS Guidelines may evolve to CIL over the coming decade in a three step analysis: (1) The role played by CIL in

5 Notes taken at ESPI-ESA Symposium held on June 21, 2018 at the European Space Policy Institute, author's notes.

6 Peter Martinez, "Development of an international compendium of guidelines for the long-term sustainability of outer space activities," *Space Policy, February 2018, Vol.43, pp.13-17.*

The authors wish to acknowledge their gratitude to Professor Peter Martinez for making available a pre-publication copy of this article.

7 *Space Watch*: June 2011 (Volume: 10, Issue: 6) Source: https://www.spacefoundation.org/news/schulte-space-congested-contested-competitive (accessed May 16, 2018).

the outer space legal regime; (2) Categorization of the approved LTS Guidelines as to their applicability in constituting a "general and consistent practice of states that they follow from a sense of legal obligation,"[8] and, (3) How CIL will complement the existing outer space legal regime as currently anchored by the OST and subsequent treaties.

2. Three-Step Analysis

2.1 The First Step: The Role Played by CIL in Formation of an Outer Space Legal Regime

The formation of CIL for outer space is generally traced to state actions regarding Sputnik. The launch of the first artificial earth satellite, Sputnik 1, on October 4, 1957, transformed the legal landscape of national airspace sovereignty jurisdictions. Until Sputnik, a country's sovereign airspace had no legally defined upper limit, which posed the question whether the Soviet Union's satellite was traversing without prior permission over territorial jurisdictions of many countries, including that of the Soviet Union's Cold War Superpower rival, the United States. In short, the fact that the United States did not take actions to hinder or oppose Sputnik 1's over-flight of U.S. or its allies' territory began to establish customary practice. Of course, the United States was planning to launch its own artificial earth satellite and it had its own self-interest in creating a legal precedent for orbital over-flights of sovereign territorial jurisdictions. Nonetheless, more than six decades since Sputnik 1, no definitive "hard treaty law" legal definition exists of where the outer space begins or where airspace ends.

2.1.1 Space Law Customary Practice: Some Considerations

When one considers that application of customary international law to the issues of interplanetary and interstellar space regulation two primary considerations come to mind before any further analyzes are possible: jurisdiction and applicability.

Jurisdiction in the law involves the concept of power, i.e., the power of the law to address a regime of legal precepts that will regulate and govern some aspect of human conduct or behavior, firstly, in an adjective (law) sense or manner which provides for recognition both, by a body politic to the political sovereignty of a nation-state within a national boundary and without by the international community of its exclusive authority and control and this involves the creation of adjudicative bodies, e.g., courts, commissions, legislative authorities, arbitration and mediation institutions, etc., that either exist or would be created to legislate, adjudicate, mediate, arbitrate and

8 Malcolm N. Shaw, *International Law* 80 (5th ed., Cambridge, 2003). Source: https://www.law.cornell.edu/wex/customary_international_law (accessed May 16, 2018).

otherwise apply substantive rules regulations or judicial concepts to resolve conflicts and regulate activity.
Applicability of the law provides for administration of the developed substantive scheme of rules which considers legal problems germane to the jurisdiction subject area, secondly and substantively, here including as contemplated, the use of, appropriations within and transit through extraterrestrial space, and the necessary interactions therein of states, corporate or other entities, including individuals and a balancing of recognized right, when in conflict with other like entities, within and beyond, the realm of extraterrestrial space , such bodies to develop, organize and codify the substantive rules in such manner that would establish the rational and overarching conceptual legal precepts, create the rules with the necessary specificity which when applied ssin the adjudicative bodies would yield decisions in a developing and as yet heretofore unknown realm of human behavioral. Such substantive rulings would address, including but indeed not limited to, concepts of property ownership, appropriation and use, criminal responsibility, tortious liability, contractual relations and voluntary limitations of national sovereignty.

2.1.2 The (half) Full Glass …

Jurisdiction and applicability considerations orbit a more fundamental core question: is legal space automatically and completely filled by customary practice of states? Or is the extent of legal space (i.e., jurisdiction and applicability) limited and defined by customary practice of states? Perhaps examining how the establishment of international law in early modern history allowed a development of *extraterritorial regulation* provides an answer. The basic scheme of international law is defined in order of precedence by customary practice, treaty, treatises and most recently legislation by recognized international bodies, principally the UNGA and its associated entities.
As the principal means of determining if there is either adjective or substantive law applying to a specific situation is the customary practice of Nations, it can easily be established that the extraterrestrial realms are beyond the political jurisdiction of any particular national control and fit well within the established realm where international law applies, i.e., the physical ***space*** beyond national jurisdiction. Where there is human activity, either collective or individual, such activities could be considered to be governed automatically by customary law except where exceptions or exclusions to customary practice have been provided for in hard law treaties binding participating parties to a more particular activity or limited them to a more specified behavior, such as the outer space treaties. Do the non-binding LTS Guidelines have the capability to apply to all states through CIL?

2.2 The Second Step: Categorization of Approved LTS Guidelines Ranked by CIL Applicability

An important factor influencing the actions of states or the willingness of states to adopt LTS Guidelines may lie in the nature of the guidelines themselves. As Peter Martinez points out in his article, the adopted 12 guidelines represented the "low-hanging fruit" among a range of proposed measures that touched on topics of security and military significance which greatly hindered their approval at the 2017 and 2018 meetings.[9]

To review, the following 12 LTS guidelines were approved at the June 2016 UNCOPUOS meeting:

> 6. *The Working Group agreed that the conference room paper referred to in paragraph 3 (e) above reflected progress made by the Working Group at the present session of the Subcommittee, and confirmed that consensus had been reached on the preamble and on the text of the following guidelines:*
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> *(a) Guideline 6: Enhance the practice of registering space objects;*
> *(b) Guideline 11: Provide updated contact information and share information on space objects and orbital events;*
> *(c) Guideline 14: Perform conjunction assessment during all orbital phases of controlled flight; (d) Guideline 15: Develop practical approaches for pre-launch conjunction assessment;*
> *(e) Guideline 23: Promote and facilitate international cooperation in support of the long-term sustainability of outer space activities;*
> *(f) Guideline 24: Share experience related to the long-term sustainability of outer space activities and develop new procedures, as appropriate, for information exchange;*
> *(g) Guideline 30: Design and operation of space objects regardless of their physical and operational characteristics;*
> *(h) Guideline 31: Take measures to address risks associated with the uncontrolled re-entry of space objects;*
> *(i) Guideline 32: Observe measures of precaution when using sources of laser beams passing through outer space.*

2.2.1 General Criteria for Categorization of LTS Guidelines

According to Meyer and Guzman, soft law instruments are created in response to a range of state motivations, and the lack of necessary

9 Peter Martinez, p. 4.

coordination or political support to enact a binding international treaty.[10] To generalize, while the chief reason states choose to enact soft law is its non-binding effect, this does not mean that states are completely free to act inconsistently with the stipulations articulated by soft law instruments. The soft law can be defined as a quasi-legal rule which reflects existing law, create anticipation among states for their future activities and help the creation of a customary rule. However, this does not mean that states are free to act inconsistently with the soft law instruments. The soft law can be defined as a quasi-legal rule which reflects existing law, create anticipation among states for their future activities and help the creation of a customary rule.[11] As a result, it is always possible that any soft law instrument may reflect an existing customary rule or general principles of law, and constitute an element for the creation of a customary law.[12]

According to this feature of the soft law, to discuss the customary status of LTS Guidelines is a significant topic. In order to examine the CIL status and its binding effect, we classify the LTS Guidelines in two categories: (1) The guidelines which reflect existing binding rules or can be described as evidence for an emerging consensus about what a "hard law" CIL might contain, and, (2) the guidelines which are likely to remain as "soft law" instruments in the future.

The classification is based on the documents and reports of Subcommittee and the UNCOPOUS include drafting, amending and voting process in detail, because these documents demonstrate opinion, suggestions, and national practice of states on the subject matter of the guidelines drafted by the working group.[13]

Why the voting, amending period and the documents including state practice on the topics covered by the guidelines are important for this paper? As we all know, the creation of customary international law depends on the state practice and *opinio juris*, therefore any determination of CIL rule need to meet these criteria. This is why the documentation provided by the UNCOPOUS could help us to understand which guidelines are more likely to attain customary status and which are not.

To examine the state practice element in the guidelines, we consider the documents which include the responses of the state to the question of the Subcommittee regarding the state practices of relevant topics in the draft guidelines. On the other side, the discussion on the draft guidelines provides a

10 There are different approaches explaining the reasons for enactment of soft law instruments. See. Guzman, T. Andrew, "International Soft Law," 2 *J.Legal Analysis* 171 (2010), p. 187 – 222.

11 Guzman, p. 172.

12 Guzman, p. 203, 216.

13 To reach to all of the documents regarding LTS Guidelines see. http://www.unoosa.org/oosa/en/ourwork/topics/long-term-sustainability-of-outer-space-activities.html (25.07.2018).

source to designate *opinio juris* of states regarding the subject matter of the guidelines. Hence, to examine the draft guidelines amended considerably or embraced easily by the states during the discussions, to examine the ones adopted unanimously or the ones still under discussion could be beneficial to distill states' *opinio juris* regarding the guidelines.

2.2.2 A Closer Examination of the Guidelines

First of all, as LTS Working Group Chair Peter Martinez underlines, some of the guidelines have more "maturity" than the others.[14] This phrase refers to the first set of guidelines which were adopted by the Committee's *consensus* decision-making process. The maturity of the consensually-adopted guidelines reveals that they are perhaps a significant step closer to gaining what one could designate as "customary" status. At the adoption of the first set of guidelines, first of all, we underlined that the wording and the paraphrases of the guidelines have been developed in different stages. Some of them were the subject of several amendments, on the contrary, the development and adoption of some of the guidelines were relatively easy. Supporting or any hesitation to the draft guidelines has also reflected the voting of the guidelines at the UNCOPOUS. This is why the guidelines are divided into two sets and the first set was accepted with the unanimous procedure of the Committee.[15]

The second set of the guidelines and the preamble are adopted by the Subcommittee in 2018 as scheduled, but no consensus has been reach at the sixty-first session of the UNCOPOUS and it is not certain when and how states would reach to the consensus to adopt them at the Committee.[16] Obviously, states have had and still have different approaches and applications on the subject matters of the second set of guidelines, so to make an inference on a common state practice and *opinio juris* on these guidelines seems difficult. So far, the international community has to wait and see for the further the improvement since the adoption of the first set of LTS Guidelines. For the purposes of our analysis, we proceed with the first set of approved guidelines for our examination.

The first set of adopted guidelines consists of four different categories: policy and regulatory framework for space activities, the safety of space operations, international cooperation, capacity-building and awareness and scientific and technical research and development.[17]

14 Martinez, p. 2.

15 Report of the Committee on the Peaceful USes of Outer Space, Fifty-ninth session, 8 – 17 2016, UN. Doc. A/71/20, 16.

16 Report of the Scientific and Technical Subcommittee on its fifty-fifth session, held in Vienna from 29 January to 9 February 2018, UN Doc. A/AC.105/1167, 14 February 2018; Draft report of the Committee on the Peaceful Uses of Outer Space, Sixty-first session, Vienna 20 – 29 June 2018, UN Doc. A/AC.105/L.314/add.7.

17 Guidelines for the long-term sustainability of outer space activities, UN Doc.

2.2.2.1 ***Policy and Regulatory Framework Guidelines***

The category of "Policy and Regulatory Framework for Space Activities," lists Guidelines 1, 2, 3, and 4 that detail regulatory steps to be adopted by states:

Guideline 1: Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities.

Guideline 2: Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities

Guideline 3: Supervise national space activities

Guideline 4: Ensure, the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites.

2.2.2.2 ***Safety of Space Operations Guidelines***

Safety of space operations category consists of Guidelines 12, 13, 16 and 17:

Guideline 12: Improve the accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects.

Guideline 13: Promote the collection, sharing, and dissemination of space debris monitoring information.

Guideline 16: share operational space weather data and forecasts.

Guideline 17: develop space weather model and tools and collect established practices on the mitigation of space weather effects.

2.2.2.3 ***International Cooperation Guidelines***

Guidelines included in the international cooperation category are 25 and 26, which articulate a state duty to promote and support capacity-building and to raise awareness of space activities respectively.

2.2.2.4 ***Scientific, Technical Research and Development Guidelines***

The last category, "Scientific and Technical Research and Development" contains Guidelines 27 and 28:

Guideline 27: promote and support research on the development of ways to support sustainable exploration and use of outer space.

Guideline 28: Investigate and consider new measures to manage the space debris population in long-term.[18]

A/AC.105/2016/CRP.17, 16 June 2016.

18 "Towards Long-Term Sustainability of Space Activities: Overcoming the Challenges

2.2.3 'Low Hanging Fruit' and Harder to Reach Consensus Guidelines

The adoption of 12 guidelines out of 31 draft guidelines reveals that it is hard to conclude that even the approved LTS Guidelines would achieve customary status. Nonetheless, the LTS Guidelines, serve as evidence of a growing consensus about acceptable conduct in carrying out space activities most evident in the regulatory category.

First, the category of policy and regulatory framework guidelines represents perhaps the "lowest" hanging fruit. The first three guidelines under this category are analogous with the article VI of the Outer Space Treaty which regulates that states are responsible to authorize and supervise national space activities. At the same time, most of space-faring states and developing states which has begun to take a role in space sector inform the Committee regarding their national laws on space activities and their space institutes responsible for the supervision and the organization of national space activities conduct by any actor in their territories.[19] Therefore, these three guidelines, seem to reflect the existing rules and principles on the performing of space activities.

Secondly, he Outer Space Treaty, International Telecommunication Union Constitution, and ITU Convention, buttress Guideline 4 with provisions on the equitable use of outer space and celestial bodies, equitable access to, and efficient use of orbit/spectrum resources. In this way, the adoption of Guideline 4 was perhaps facilitated by the fact that it already reflects the approval by state members of the ITU for existing rules and principles regarding orbit/spectrum allocation.[20]

Finally, and perhaps most pressing, are the guidelines addressing the problem of space debris. The growing density and volume of space debris threatens the sustainability of outer space to the extent that its regulation, mitigation and remediation has become a top issue on international community agenda. Consequently, UNCOPOUS, the European Union and Inter-Agency Space Debris Coordination Committee, have taken actions towards adoption of code of conduct guidelines.[21] These developments reveal that states are

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of Space Debris, A Report of the International Interdisciplinary Congress on Space Debris," A/AC.105/C.1/2011/CRP.14, 3 February 2011, p. 30 – 34.

19 Please refer to the compendium of national space legislation compiled by the UNOOSA, "National Space Law Collection," http://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/index.html (accessed 25.08.2018).

20 See, United Nations, Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty), entry into force October 10, 1967. 18 UST2 2410; TIAS3 6347; 610 UNTS4 205, Article I. ITU Constitution, Article 44, and ITU Convention, Article 33, as amended. (Source: https://www.itu.int/en/history/Pages/ConstitutionAndConvention.aspx. (Accessed September 4, 2018).

21 See, "IADC Space Debris Mitigation Guidelines," "Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space," and the "EU Draft for an

concerned about this growing threat to space activities and demonstrate a degree of cooperation and a common understanding to mitigate the creation of new debris.

In addition to the efforts of the international community to conduct measures to prevent the creation of new debris and seeking for the opportunities to the active cleaning of space debris, states have also begun to implement existing guidelines through their national legislative actions. For instance, the important space-faring nations including states having the highest amount of debris already have already enacted necessary domestic legislation by the international guidelines on space debris mitigation. This development shows that states have taken the necessary steps to implement space debris mitigation guidelines and also monitor its application by the space actors.[22]

The governmental acts of states at the domestic level and their relevance to the guidelines might be a sign of an emerging customary rule on space debris. The domestic legislation of states on the mitigation of space debris, already reveal their regulatory practice and *opinio juris* impulse to implement space debris mitigation guidelines.[23] Consequently, the Guidelines 13 and 28 would be a candidate for nomination as a customary rule of international law.

Apart from the mentioned guidelines, the other adopted guidelines have different characteristics. Some of them have broad wording and can be described as a request of the international community from states rather than laying an obligation on states. And some of the guidelines are designed on the topic which states lack to implement the existing rules on the similar topic. And some of the guidelines are designed to provide an application of an existing space activity for a certain issue in detail.

As a result, adopted guidelines are these soft law instruments regarding long-term space sustainability. However, LTS guidelines have different levels such as being close to being deemed as a binding rule and simply being a soft law rule.

International Code of Conduct for Outer Space Activities." Please refer to "IADC Space Debris Mitigation Guidelines: Issued by Steering Group and Working Group 4," (Source: http://www.unoosa.org/documents/pdf/spacelaw/sd/IADC-2002-01-IADC-Space_Debris-Guidelines-Revision1.pdf) European Union, "EU proposal for an international Space Code of Conduct, Draft," Source: https://eeas.europa.eu/headquarters/headquarters-homepage/14715/eu-proposal-international-space-code-conduct-draft_en).

22 Towards Long-Term Sustainability of Space Activities: Overcoming the Challenges of Space Debris, A Report of the International Interdisciplinary Congress on Space Debris, A/AC.105/C.1/2011/CRP.14, 3 February 2011, p. 30 – 34.

23 See, Lawrence Li, "Space debris mitigation as an international law obligation," 17 *International Common Law Review*, 297 (2015), p. 318 – 321.

2.3 The Third Step: How CIL May Complement the Existing Outer Space Regime for Promoting Sustainable Use

Does CIL do more than "just fill the gaps" in the web of legal and regulatory rules established by treaties, resolutions, and international organizations along with measures undertaken by national legislative and regulatory oversight? Professor Martii Koskenniemi, in his article, "Hierarchy in International Law: A Sketch," maps the international legal "hard law" landscape where 'hierarchies' represent analogously the visible islands of an international legal archipelago.[24] Treaties and other legal instruments are the most visible features of the legal topography as they rise above the surrounding waters of "soft law" agreements and perhaps CIL. To courageously follow this analogy further, CIL's depth and currents may be determined by yet another less visible legal topographic feature below the CIL surface: general principles of international law derived primarily not from the inter-national practices of states, but rather from their nation-level practices in promulgating policy and regulatory legislation.

2.3.1 General Principles of CIL?

An intriguing interpretation of general principles operating as one of the sources of international law is argued by legal scholar Diane Howard who argues that CIL can be derived from general principles arising from national legislation and regulations promulgated by states. Howard suggests that by comparing and assembling the common elements of those national laws and regulations pertaining to space activities one "may distill a general principle of international law."[25]

Although such national laws and regulations may be directed solely at national entities under the territorial and/or sovereign jurisdiction of the country's governmental entities, they could at the same time be considered a general principle of international law guiding judges' decisions as a source of law under the ICJ Statute. In other words, a compendium of national laws addressing the regulation of space activities by entities under a state's jurisdiction might reveal amongst the diversity certain common themes, such as space debris mitigation and remediation. In this way, CIL would not be limited by the actions of states on the international level, but would also encompass legislative and regulatory actions of states on a predominately national level of action.

Indeed, the LTS Guidelines specifically recommend states take nation-level legislative and regulatory actions to supervise entities under their jurisdiction to ensure compliance with sustainability objectives. Capacity building,

24 Martii Koskenniemi, "Hierarchy in International Law: A Sketch," (8) *European Journal of International Law* (1997), 566.

25 Attorney Diane Howard, from notes taken by L. Martinez at UNCOPUOS, June 19, 2018, Vienna. See, D. Howard, "Distilling General Principles of International Space Law," IAC-13, E7.5.

sharing of information, and recommendations to "investigate and consider new measures" to manage space debris are among the agreed-upon "rules of the road." It is now incumbent on states to implement through adoption of national legislation.

3. Conclusion

Space for humans is a risky place. Predicting the future of humankind's exploration, exploitation and emigration into outer space is not only risky as well for the legal author, but also an endeavor that generally proves the veracity of the oft-quoted admonition by a Hollywood movie mogul about assuming a film's box office success – "no one knows nothing." While Stanley Kubrick's 2001: A Space Odyssey uncannily depicted computer displays decades before their real-world appearance, the title's prediction of where humans would be exploring by 2001 was unfortunately too optimistic. So, it is with a humility and trepidation that we offer this glimpse into what we "see" as the fuzzy outlines of a legal regime for outer space ten years on from this year's 2018 commemoration of the Outer Space Treaty's first 50 years.

Our analysis suggests how the LTS Guidelines, both approved and pending, are, in their non-binding status, nonetheless a significant achievement for identifying and guiding the national efforts of states to develop legislative and regulatory capacities addressing sustainability challenges in outer space. We find that the endogenous challenges of space sustainability itself will require far-reaching responses. Using Hobe and Howard's approaches, it is increasingly likely that the binding-non-binding conundrum will be bridged by national legislation and regulation modeled after the LTS Guidelines and other efforts to promulgate 'rules of the road' such as the Group of Governmental Experts' Transparency and Confidence Building Measures, the EU Code of Conduct, and the IADC Guidelines.[26]

26 Peter Martinez, et. al., "Criteria for developing and testing Transparency and Confidence-Building Measures (TCBMs) for outer space activities," *Space Policy*, 30 (2014) 91-97