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FROM GLOBAL TO PLANETARY: STANDARDS FOR THE CONDUCT OF SUSTAINABLE LUNAR ACTIVITIES

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Abstract

The UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS) has played a central role in the development of standards for the sustainable exploration of the Moon. The standards, in particular, are being shaped through consultations with the major space actors namely, states, international organizations, and commercial enterprises. The Moon Village Association, for instance, was created to foster the implementation of a vision of peaceful international cooperation of governmental and non-governmental actors in the exploration of the Moon. In 2021, the MVA, in its Report on the Global Expert Group on Sustainable Lunar Activities, proposed the creation of a neutral multi-stakeholder platform and framework to ensure the conduct of sustainable lunar missions in the future. According to the MVA, there is a need to consider approaches that promote future lunar sustainability or recommend practices for upcoming lunar activities. In light of the above-mentioned report and MVA's Report on Best Practices for Sustainable Lunar Activities (2020), this article sheds light on some of the major contributions toward the development of standards for sustainable exploration of the Moon, including the recognition of its legal personhood.

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1. Introduction

Planets are the subject matter of great curiosity and learning across disciplines. And the search for meaning and knowledge about their nature, resources, cycles, and composition is integral to guiding human endeavours. In the context of the Earth, interplanetary knowledge is understood to be the key to securing and sustaining life on Earth. In a recent paper, *Intelligence as a Planetary Scale Process*, the authors propose that the transition to planetary intelligence could contribute to understanding the efforts toward long-term sustainability sought by human efforts on Earth. The approach endorses that the scale to understand life and evolution is planetary, as opposed to being focused on individual species.¹

The European Space Agency's (ESA) program Envision², spells out the importance of Earth's planetary neighbour, Venus. According to the ESA, the exploration of Venus will assist in understanding the evolution of terrestrial planets and the habitability within our solar system. And comparing the evolution of Venus and Earth is essential to understanding the processes that have shaped the latter.³

With much attention on the planets, including the Moon, space activities no longer concern only spacefaring nations and space corporations. They are of deep interest to all societies. Speaking of the Moon, it is a celestial body of historic, ancestral, societal, spiritual, and cultural importance to all generations, present, and future generations. A closer look at the Moon brings into focus the wide range of lunar activities and missions which currently demand standards for regulation based on principles of universal validity and acceptance. Also, lunar activities have drawn

¹ Adam Frank, David Grinspoon, Sara Walker, "Intelligence as a Planetary Scale Process", (2022) 21 *International Journal of Astrobiology* 47 <<https://www.cambridge.org/core/journals/international-journal-of-astrobiology/article/intelligence-as-a-planetary-scale-process/5077C784D7FAC55F96072F7A7772C5E5>>, accessed 25 July, 2022.

² European Space Agency, EnVision: Understanding Why earth's Closest neighbour is so Different, Impact Assessment Report (2021) <<https://www.cosmos.esa.int/web/m5-public-presentation/home>>, accessed 24 July, 2022.

³ *Ibid* 7.

recommendations from different sources, with the sole objective to establish sustainable practices and technologies for lunar missions. Two factors guide this pursuit: first, the vulnerability of the lunar and other celestial bodies .⁴ Second, the benefits that exploitation of the moon and other celestial bodies' resources' can bring to improving the quality of life on Earth. An appropriate legal regime organizing this exploitation in an orderly and safe way, which – to the extent, it does not exist – is thus, strongly needed.⁵

In light of the above-mentioned themes, the following paragraphs discuss a few of the many conditions which warrant prioritizing the development of standards for the sustainable conduct of lunar activities.⁶

2. The Six Conditions

There is adequate literature that speaks of gaps in the existing international legal frameworks that concern the responsibilities of states and other actors towards the moon and other celestial bodies, and that there are reasonable grounds to pursue reforms aiming for stronger regulatory mechanisms. The most cited conditions for reform are (1) gaps in existing treaty frameworks, (2) evidence of harm and contamination of the Moon and its environment, (3) the rapid pace of technological developments, (4) the emergence of new theoretical frameworks and consciousness, (5) laws' expansion, and (6) the growing interface across international legal regimes.

⁴ Giuliana Rotola, 'The Legal Framework Protecting Cultural Heritage Sites on the Moon and In Situ Preservation' in Annette Froehlich (ed.), *Protection of Cultural Heritage Sites on the Moon* (Springer 2020).

⁵ Fabio Tronchetti, *The Exploitation of Natural Resources of the Moon and Other Celestial Bodies A Proposal for a Legal Regime* (BRILL 2009).

⁶ UNCOPUOS, *Guidelines for the Long-Term Sustainability of Outer Space* (2019) <https://spacesustainability.unoosa.org/content/the_guidelines> accessed 9 July; United Nations, 'Space2030: Space as a driver for peace' (*UNITED NATIONS Office for Outer Space Affairs* 25 September 2018) <<https://www.unoosa.org/oosa/en/outreach/events/2018/spacetrust.html>> , accessed 8 July, 2022.

Under the first condition, legal frameworks for outer space activities i.e. the space treaties, including the Outer Space Treaty (OST), Moon Agreement, and others have been found inadequate⁷ First and foremost, they do not specifically address the agenda of sustainability. The OST, for instance, does not contain provisions that are relevant and applicable to the modern international debate on space sustainability” .⁸ In terms of economic and commercial ventures, both the OST and the Moon Agreement are found to be inadequate..⁹ In response to these gaps, sustainability-led agendas are made workable through voluntary guidelines and non-binding resolutions. The LST Guidelines are one such example.

Linked to the first condition, the second condition concerns the harm and contamination of the Moon and its environment. According to Altabef, celestial bodies are vulnerable to harm and exploitation in the absence of adequate environmental regulations.¹⁰ And the need for regulating harm has led to the adoption of voluntary codes like the Space Debris Guidelines, which have propelled private actors and states to incorporate them in their space-related activities.¹¹ The concept of harm has also facilitated norm interaction in international human rights law, international environmental law, and outer space law.

The third condition is based on the rapid pace of technological advancements, which have opened great possibilities for space exploration. These technological

⁷ United Nations, ‘International Space Law: United Nations Instruments’ (*United Nations office of the outer space* 2017) <<https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html>>, accessed June 5, 2022.

⁸ M Palmroth and Others, “Towards Sustainable Use of Outer Space: Economic, Technological and Legal Perspectives” (2021) 57 *Space Policy*.

⁹ Morgan Sterling Saletta, Kevin Orman-Rossiter, “Can Space Mining Benefit all of Humanity? The resource fund and citizen’s dividend model of Alaska, the last frontier” (2018) 43 *Space Policy*.

¹⁰ William B. Altabef, ‘The Legal Man in the Moon: Exploring Environmental Personhood for Celestial Bodies’ (2021) 21(2) *Chicago Journal of International Law* 476.

¹¹ IADC Steering Group and Working Group 4, ‘IADC Space Debris Mitigation Guidelines’ <<https://orbitaldebris.jsc.nasa.gov/library/iadc-space-debris-guidelines-revision-2.pdf>>, accessed 4 July, 2022.

leaps demand greater regulatory measures. In this regard, Bratu writes about the present-day use of artificial intelligence (AI) enabled systems in space.¹² In his paper *Artificial Intelligence for Future Lunar Societies*, he writes, future space exploration missions will have limited communication with Earth and AI will give autonomous systems independent decision-making capabilities. And several missions will need the autonomous capability to explore with no human intervention. Space rules and policies will have to take these possibilities into account.¹³

The fourth condition is the emergence of new theoretical frameworks or what can be called emerging consciousness, embedded in the worth and sacredness of non-human life and forms. Studies from across several fields have contributed to the development of a universal consciousness/ethic on protecting and nurturing the non-human world. Posthumanism, for instance, stands as a response to humanism, which according to Figdor, “situates the human species as distinct and unique from the non-human categories in terms of their cognitive capacities (superior and advanced), ability to self-reflect, reason, and communicate through language. These abilities forge the basis for developing a system of respect for all those that are humans”.¹⁴ In response, posthumanism speaks of the “human beings’ inextricable embeddedness in biological and technological worlds.”¹⁵ Life, under posthumanism, is viewed as interconnected and relational.¹⁶ It seeks the dignity of

¹² Ioana Bratu, “Artificial Intelligence for Future Lunar Societies: A Critical Analysis of the Liability Problem”, 5th Global Moon Village Workshop & Symposium (2019).

¹³ Kai-Uwe Schrogl, Christina Giannopapa, Ntorina Antoni, Introduction: A research agenda for space policy in the 2020s, in Kai-Uwe Schrogl, Christina Giannopapa, Ntorina Antoni (eds.) *A Research Agenda for Space Policy* (2021).

¹⁴ Carrie Figdor, “The Psychological Speciesism of Humanism” (2021) 178 *Philosophical Studies* 1545-1569.

¹⁵ Danielle Celermajer, David scholesberg, Laurn Rickards, Makere Harawira, mathias Thaler, Petra Tschakert, Blanche Verlie, Christine Winter, “Multispecies Justice: Theories, Challenges, And a Research Agenda for Environmental Politics (2021) 30 (1-2) *Environmental Politics* 119-140, 123.

¹⁶ Jasmine B. Ulmer, “Post humanism as Research Methodology: Inquiry in the Anthropocene” (2017) *International Journal of Qualitative Studies* 6.

the living.¹⁷ In the words of Pietrzykowski, present-day and future challenges demand that we move beyond “the dualistic divide of the world into persons and things.”¹⁸ In the book *Non-Human Nature in World Politics*, Carter and Harris write about how the notions of the non-human have shaped a range of disciplines including “archaeology, human geography, anthropology, and architecture”.¹⁹

Linked to the above condition is the fifth condition- laws’ expansion. The more recent literature on the future of international law assumes that the law has begun to evolve toward the equal representation of the interests of humans with non-human entities. According to Wilson, there is growing interest in valuing the connection humans have with the natural world²⁰. Take the example of conferring legal personhood to nature including rivers, lakes, and forests. According to Tanasescu, conferring legal personality creates rights that provoke strong advocacy and protection. And rights have a non-negotiable character that cannot be traded off.

The sixth condition involves the growing interface across different legal regimes namely human rights law, space law, heritage law, humanitarian law, environmental law, etc. The claims to ‘protecting the non-human interests’, have been discussed under these regimes, making them highly valuable and of a universal nature.

The above-mentioned six conditions establish the grounds for advancing the interests of the Moon and other celestial bodies.

¹⁷ Malte-Christian Gruber, *Why Non-Human Rights?* (2020) 32 (2) *Law and Literature* 269

¹⁸ Tomasz Pietrzykowski, ‘The Idea of Non-personal Subjects of Law’ in V.A.J. Kurki T. Pietrzykowski (eds.), *Legal Personhood: Animals, Artificial Intelligence and the Unborn* (Law and Philosophy Library, 2017) 65.

¹⁹ Bob Carter and Oliver J. T. Harris, ‘The End of Normal Politics: Assemblages, Non-Humans and International Relations’ in Joana Castro Pereira, André Saramago (eds.), *Non-Human Nature in World Politics: Theory and Practice* (Springer 2020).

²⁰ Grant Wilson, ‘Humans Have Rights and So Should Nature’ (*Nautilus*, 6 January 2021) <<https://nautil.us/humans-have-rights-and-so-should-nature-9518/>> accessed July 15, 2022.

3. Notable Recommendations for Reforms

Concerning the exploitation of the natural resources of the Moon and other celestial bodies, Tronchetti argues for a balance between two considerations. First, a legal regime to regulate actors both of a public and a private nature is needed. Secondly, the legal regime is structured in a way as to appear attractive to space-faring nations and private operators to provide them with the concrete possibility to make a profit from the exploitation of space resources. In the words of Tronchetti, “striking a balance between these two elements represents the key for giving the legal regime the chance of being successful and widely accepted by states as well as private operators”.²¹

The domain of space treaties introduces the foundational principles for outer space activities. Selective authors refer to the provisions of the Outer Space Treaty, particularly the principles concerning “use and exploration”, “freedom of use for the benefit and interest of all countries”, and “freedom of access and prohibition of appropriation”.²² Few others contribute to determining the scope of protection for the Moon and challenges under existing international frameworks.²³

The Moon Agreement, according to Lindgren, “aims to establish rules for the cooperative use and exploitation of the Moon and celestial bodies, bearing in mind the distribution of benefits to developing countries who may otherwise lack access to such resources and the ability to benefit from them.”²⁴ Under Article 4, the Moon Agreement provides, “the exploration and use of the moon shall be the province of

²¹ Fabio Tronchetti, *The Exploitation of Natural Resources of the Moon and Other Celestial Bodies A Proposal for a Legal Regime* (2009) 288.

²² Le Bao Ngoc Pham, “Does the Outer Space Treaty Permit the Protection and Preservation of Cultural Heritage Sites on the Moon?” in Annette Froehlich (ed.), *Protection of Cultural Heritage Sites on the Moon* (Springer 2020) 27-40.

²³ Alexandros Eleftherios Farsaris, How to Preserve Humanity’s Lunar Heritage, in Annette Froehlich (ed.), *Protection of Cultural Heritage Sites on the Moon* (Springer 2020) 73-84.

²⁴ David Lindgren (ed.), *An Assessment Framework for Compliance with International Space Law and Norms: Promoting Equitable Access and Use of Space for Emerging Actors* (Springer 2020) 28.

all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Due regard shall be paid to the interests of present and future generations”. The Agreement also “prohibits harmful contamination as well as disruption of the existing balance of the lunar environment. Harmful contamination can occur by the introduction of extra-environmental matter as well as by other means, and harmful contamination is one but not the only manner in which the existing balance of the environment can be disrupted.”²⁵

The principles incorporated under the Moon Agreement have also been cited time and again.²⁶ However, low participation from among the States is found to be a great limitation. Further, the process of reforms and amendments to existing agreements can be “laborious and lengthy”.²⁷ To overcome the deficiencies, one way forward is to draw inspiration from other existing legal frameworks. In *Protection of Cultural Heritage Sites on the Moon*²⁸, for instance, the authors propose drawing from existing global commons regimes for forging a framework for the protection and preservation of the Moon. The authors refer to the Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) and the Convention on the Protection of the Underwater Cultural Heritage (2001) to formulate a model law for the heritage on the Moon.

Another way forward is to embrace the “rules of the road approach” inclusive of “best practices” or “rules of conduct” for encouraging collaboration and sustainable

²⁵ See Patricia M. Sterns, Leslie I. Tennen, “Lacuna in the updated planetary protection policy and international law” *Life Sciences in Space research* <<https://doi.org/10.1016/j.lssr.2019.02.006>> accessed 17 July 2022

²⁵ Deepa Kansra, “Space Law”, in Sue Gonzalez, Raffaella Kunz, Max Milas (eds.), *Public International Law* (2022). <https://en.wikibooks.org/wiki/Public_International_Law/Space_Law#2._The_Moon_Agreement,_1979> accessed 8 July, 2022.

²⁶ Ibid.

²⁷ Bratu (n 12).

²⁸ Annette Froehlich (ed.), *Protection of Cultural Heritage Sites on the Moon* (Springer 2020).

space activities.”²⁹ This certainly entails drawing from the non-binding rules like the Long Term Sustainability Guidelines³⁰, Space Debris Management Guidelines³¹, Building Blocks for the Development of an International Framework on Space Resource Activities, 2019 (Building Blocks),³² etc.

The following paragraphs take a closer look at two such proposals, namely the MVA’s Best Practices Framework for the sustainable conduct of lunar activities, and the call for attributing legal personhood to the Moon.

4. MVA's best practices framework

The first notable proposal is the Moon Village Association’s Best Practices Framework, 2020 (BPF hereinafter),³³ adopted in furtherance of its mandate for the peaceful, sustainable, and equitable exploitation of the Moon resources.³⁴ The BPF comes close to what Tronchetti argues should be an attractive arrangement to the space-faring nations and private actors.³⁵ In addition, certain novel features can also be found in the BPF which can vouch for the “rules of the road approach”.³⁶

A part of the MVA’s objectives is *to* support the creation of a new open dynamic field enabling space agencies, commercial space, donors, philanthropists, and citizens from all countries to interact. Secondly, to create global awareness of the benefits of Moon Village. And thirdly, to represent the civil society and

²⁹ Bratu (n 12).

³⁰ UNCOPOUS, Guidelines for the Long-Term Sustainability of Outer Space (2019) <https://spacesustainability.unoosa.org/content/the_guidelines> accessed 15 July, 2022.

³¹ Ibid.

³² Building Blocks for the Development of an International Framework on Space Resource Activities <<https://www.universiteitleiden.nl/en/law/institute-of-public-law/institute-of-air-space-law/the-hague-space-resources-governance-working-group>> accessed 15 July, 2022.

³³ ‘Tag Best Practices’ (*Moon Village Association* 2020) <<https://moonvillageassociation.org/tag/best-practices/>>, accessed 18 July, 2022.

³⁴ Ibid.

³⁵ Tronchetti (n 21).

³⁶ Bratu (n 12).

international space community in the decision-making process concerning the Moon Village concept.³⁷

The MVA set up the Global Expert Group on Sustainable Lunar Activities (GEGSLA) to include voices from academia, the public, governments, and other actors.³⁸ GEGSLA has established sub-groups “to facilitate its work and tackle the most pressing issues in the future of lunar exploration, namely: Information Sharing; Safe Operations and Lunar Environmental Protection; Compatibility and Interoperability; and Responsible Governance”.³⁹ In its recent submission before the UN COPUOUS, it endorsed a comprehensive understanding of “lunar governance” to include issue related to problems that will arise in the coming years of lunar exploration, e.g. information-sharing, safety zones, environmental, interoperability, sustainability, and heritage protection”.⁴⁰

In addition, the MVA’s BPF represents a comprehensive set of measures to implement a sustainable manner of conduct of lunar activities. The following paragraphs cover the core features of the BPF, including scope and application, responsibilities, and novel and exploratory features.

4.1 Scope and Application

The BPF applies to all space actors, government and private, in terms of the application, creation, and amendment of standards. Under Clause 2 it provides, “space actors are encouraged to conduct lunar activities in accordance with applicable international law, including, but not limited to, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space,

³⁷ Moon village association <<https://moonvillageassociation.org/about/>>

³⁸ Global Expert Group on Sustainable Lunar Activities (GEGSLA) <<https://moonvillageassociation.org/global-expert-group-on-sustainable-lunar-activities-gegsla/>> accessed 10 July, 2022.

³⁹ UN COPUOUS, Report of the Moon Village Association on the Global Expert Group on Sustainable Lunar Activities – Status/Plan, 59th Session (2022).

⁴⁰ Ibid.

including the Moon and Other Celestial Bodies (the “Outer Space Treaty”).

Clause 4 (vi) of the BPF provides, States have “international responsibility for the lunar activities of its nationals and should bear liability to pay compensation for damage caused by its space objects, as outlined in the Convention on International Liability for Damage Caused by Space Objects”. Clause 2 brings within its scope a wide range of standards, binding and voluntary, concerning outer space activities.

In addition, the BPF is non-legally binding and intended as a voluntary standard of conduct for the long-term sustainability of lunar activities for the benefit of all countries and humankind. As provided, the BPF is intended to evolve incrementally in step with technological and economic development.

4.2 Responsibilities

The BPF speaks of benefit sharing, information sharing, and impact assessments. On benefits sharing, it provides, “resource activity does not inherently constitute national appropriation of celestial bodies”. Clause 4 speaks of the interests of all nations and humanity *vis-à-vis* lunar activities. In particular, it speaks of the interests of developing countries and those with incipient space programs. Also, benefit-sharing is sought to be ensured by fostering “the development of space science and technology and its applications; Cooperation in education and training; Access to and the exchange of information; Interoperability; and Cooperative ventures”.

On sharing of information, establish an internationally available database to encourage sharing of information to facilitate international cooperation among governmental agencies, private entities, and the general public in the expansion of lunar activities. Information, under the BPF, includes scientific information obtained from lunar activities, and best practices concerning lunar activities.

On the requirement of impact assessments, Clause 4 (v) provides, “all harmful interference with the lunar activities of other space actors should be avoided. If a space actor has reason to believe that planned lunar activities would potentially cause harmful interference with the lunar activities of other space actors, it should undertake appropriate consultations before proceeding with such activities.” Under clause 4, the BPF draws from existing legal regimes which mandate impact assessments for policy clearances and as a preventive and precautionary tool of governance.

4.3 Novel and Exploratory Features

Harm Avoidance, Under the BPF, clause 5 covers the objective of “avoiding harm”. There are two kinds of harmful activities are listed, including harmful intervention with the lunar activities of other space actors. The BPF provides, that “all harmful interference with the lunar activities of other space actors should be avoided. If a space actor has reason to believe that planned lunar activities would potentially cause harmful interference with the lunar activities of other space actors, it should undertake appropriate consultations before proceeding with such activities.” (Clause 4)

The other harm caused is to space, read as “adverse changes” and “harmful contamination of the Moon”. The BPF provides,

“space actors are encouraged to take measures to the extent possible; to avoid causing adverse changes to the lunar environment or cislunar space, including the harmful contamination of the Moon in contravention of planetary protection policies; to mitigate the creation of lunar orbital debris; to avoid causing harmful interference with existing or planned lunar activities, and to avoid

causing adverse changes to internationally endorsed sites of significant scientific or historical interest”.

A notable aspect of the BPF is its reference to hard and soft laws. Under clause 8, the BPF provides that space actors should also support the development of both hard and soft laws that provide guidance and legal certainty regarding safety standards, priority rights, and non-interference, among other issues, to actors involved in space resource activity. In time, it may be beneficial to create a process to limit space resource activity as to location and duration to ensure equitable and responsible use of limited resources. Space actors are encouraged to support the development of both hard and soft laws to facilitate the establishment and expansion of lunar activities, including, but not limited to, initiatives regarding interoperability, engineering standards, safety practices, finance, and environmental protection (clause 11).

On the importance of soft law instruments, Banna writes, they have several advantages, and fill the gaps and delays in making hard laws. He writes, “the instruments of soft law are flexible and can be concluded quickly through a variety of methods that avoid unfinished debates about controversial key phrases and definitions. Soft law has emerged simply as an international norm when there was a gap in the hard law on how to handle a new issue. One wonders if soft law characterizes international law by its lack of a binding tool and the absence of legally binding force. This is exactly the aim of states: not to be engaged in obligations they cannot fulfil. And since outer space states need certain freedom and flexibility, the instruments of the soft law are the best suited.”⁴¹ The BPF’s emphasis on the adoption of both soft law and hard law represents a rather truism about the way outer space law works.

⁴¹ Mahir AlBanna, “Soft Law to Regulate Outer Space Activities” (2019) 7 (6) Multicultural Education.

The MVA's contributions have also been acknowledged and its ideas have gained momentum and led to several international discussions, activities, and networks. As part of its novel features, it has facilitated critical thinking on global themes while integrating socio-political-cultural considerations, in addition to environmental, operational, and human-related considerations.⁴² The GEGSLA stands as a multi-stakeholder dynamic platform to facilitate collaborative activities and research for moving towards sustainable practices and technologies in the future.

5. Legal personhood for the moon

In addition to the MVA's BPF informing international deliberations, there is a lot of enthusiasm about establishing legal personhood for the Moon. The law, generally, has a long tradition of conferring legal/juristic personhood to non-human entities. The attribution of personhood has served multiple purposes of economic, cultural, social, and ecological value. In the words of Fitzgerald, "legal persons are beings, real or imaginary, who for legal reasoning are treated in greater or less degree in the same way as human beings."⁴³ On juristic personhood, the court in the case of *Karnail Singh v. the State of Haryana*⁴⁴ states that the fictional personality of any entity, living inanimate, objects or things has evolved to respond to several socio-political-scientific developments. In the words of Tanasescu, legal personality and legal standing are a package, by which whoever or whatever has a legal personality becomes a 'person' in front of the law. Conferring a legal personality on on-human entities would also make any legal claims legitimate.

Over the years, notable developments in the fields of technology, philosophy, and

⁴² Dr. Sandra Häuplik-Meusburgera and Piero Messina, 'Envisioning the Moon Village – A Space Architectural Approach' (69th International Astronautical Congress (IAC), Bremen, Germany, October 2018) <<http://spacearchitect.org/pubs/IAC-18-A5.1.8.pdf>> accessed 15 July, 2022.

⁴³ P.J. Fitzgerald, *Salmond on Jurisprudence* (12th edn, Sweet & Maxwell Ltd 2009) 62.

⁴⁴ *Karnail Singh v. the State of Haryana* (2019); CRR-533-2013.

other disciplines have moved non-human entities to the forefront of legal reforms, domestic and international. The more recent literature on the subject brings forth the grounds behind the rise of the non-human in law. In *Non-Human Nature in World Politics: Theory and Practice*, the editors cite two grounds. Firstly, there is a clear understanding that “nature is not external to human politics” and thus must be represented in the political spaces, and secondly, “harm and violence inflicted on non-human nature compromises human security and the very conditions that enable life (human and non-human)”.⁴⁵ In *Rights in Nature: A Critical Introduction*, the author writes, that rights of nature are best understood in the context of first, rights expansion, and second, intensification of human pressure on the environment through capital flows.⁴⁶ As observed in *DG Khan Cement Co. Ltd. v. Government of Punjab through its Chief Secretary, Lahore*⁴⁷ (Pakistan Supreme Court), the environment needs to be protected in its own right”. And these rights can be asserted to defend and protect the environment from harm.

The law’s turn towards conferring legal personhood to non-human entities has been hailed as a major evolutionary leap. Take the example of the Rive Te Pwa in New Zealand, which was conferred a legal status through statutory law This decision, according to Charpleix, is a “landmark political decision recognizing the legal personhood of a river. The decision provides insights into how relationships with non-human nature may be recognized in the future”⁴⁸

⁴⁵ Joana Castro Pereira, André Saramago (Eds.), *Non-Human Nature In World Politics: Theory And Practice* (Springer 2020).

⁴⁶ Tanasescu (n 22).

⁴⁷ *DG Khan Cement Co. Ltd. v. Government of Punjab* C.P.1290-L/2019.

⁴⁸ Liz Charpleix, “The Whanganui River as Te Awa Tupua: place-based law in a legally pluralistic society” *The Geographical Journal* (2017).

In the context of the Moon, the key question that emerges is why legal personhood? Does the Moon qualify for such status? And, can we support the legal concept of personhood for the Moon?⁴⁹

In support of legal personhood, Altabef relies on the concept of environmental personhood that bestows juridical personhood upon natural features, enabling them to have stood so that other entities or persons can bring claims on their behalf.⁵⁰ More so, environmentally conscious actors can seek judgments through international litigation. And, the concept of personhood would cure the potential defects in law over environmental damage to an extra-terrestrial environment, such as the Moon.⁵¹ According to Siebrits, conferring legal personhood on the Moon will limit the scope of appropriation of resources. At the same time, it will recognize the Moon's natural heritage, making harm avoidance a right-based proposition.

In light of the above views, three reasons to attribute personhood to the Moon can be endorsed. First, legal personhood for the Moon stands in sync with the mandate under space law to prevent harm and contamination of the Moon's environment. This works similarly to the place-based protection conferred to certain environmental entities on Earth.⁵² This also draws from the jurisprudence of harm and the laws' obligation to reduce and prevent harm to entities. Second, legal personhood is in sync with the developments in international law, particularly environmental law. Advancing the concept of stewardship, the UN Human Development Report (2020) states, that if equity, innovation, and stewardship become central to what it means to live a good life—then human flourishing can

⁴⁹ Alice Gorman, "Can the Moon be a person? As lunar mining looms, a change of perspective could protect Earth's ancient companion" *The Conversation* (Melbourne, 27 August 2020) <<https://theconversation.com/can-the-moon-be-a-person-as-lunar-mining-looms-a-change-of-perspective-could-protect-earths-ancient-companion-144848>> accessed July 17, 2022.

⁵⁰ Altabef (n 10) 479.

⁵¹ Ibid 484.

⁵² Charpleix (n 48).

happen alongside easing planetary pressures.⁵³

Third, it is also in sync with the post-human turns in international law and international relations (IR) which make for powerful discourses (similar to the kind of theoretical shifts in astrobiology⁵⁴). In other words, traditional IR approaches locate the human as a knowing and governing subject. In contrast, present-day approaches assume the importance of a shift towards planetary understandings.⁵⁵

6. Conclusion

In terms of laws' evolution, the new theoretical frames like posthumanism, planetary scales, and legal personhood for celestial entities make way for "re-imagining representation, democracy, and institutional governance".⁵⁶ In light of the developments cited in the paper, it stands substantiated that protecting and representing the worth and integrity of non-human life forms is a legitimate demand. Why should it not be read into outer space law?

On the standards for the sustainable conduct of lunar activities, soft law formulations have come to play a significant role in matters of outer space. The prioritization of rules by consensus and the creation of voluntary codes of conduct offer reasonable solutions to the current and anticipated problems. This approach is what is real and most tangible, for it places the leading concerns of humanity in the hands of law, the character of which is voluntary, contractual, and flexible.

⁵³ UN Human Development Report, *The Next Frontier: Human Development and the Anthropocene*, (2020). <<https://www.hdr.undp.org/en/2020-report>> accessed 18 July, 2022.

⁵⁴ Frank et al (n 1).

⁵⁵ Delf Rothe, Franziska Müller, and David Chandler, "The Anthropocene: From the Global to the Planetary" in David Chandler, Franziska Müller and Delf Rothe (eds.), *International Relations in the Anthropocene: New Agendas, New Agencies and New Approaches* (Springer 2021).

⁵⁶ Joe Gray, Anna Wienhues, Helen Kopnina and Jennifer DeMoss, *Ecodemocracy: Operationalizing ecocentrism through political representation for non-humans* (2020) 3 (2) *The Ecological Citizen*.

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