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Space War and the Regressive Development of the Principle of Common Heritage of Humankind: Legal vs. Technological Weapons

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Abstract

Deep under the waters, HMS Challenger discovered the polymetallic nodules during its scientific expeditions in the Kara Sea part of the Arctic Ocean in 1868. Whilst in the vastness of the skies above, the Clementine and Lunar Prospector indicated the existence of water ice at the lunar poles during the period of 1994 to 1999. In 2003, the SMART-1 lunar orbiter of the European Space Agency discovered the key chemical elements of the Moon. Going even further back, in 1988, NASA published a work on Helium-3 blown away by the solar wind onto the Moon, and the possibilities of harvesting it as an alternative energy source for the continuation and advancement of human race. The deep seabed and the outer space, along with their resources, are both internationally governed under the same underlying principle: the Common Heritage of Humankind. Yet, while the former has begun to take shape, the latter still has very little progress. Various factors ranging from laws to politics to economics and undeniably the advances in science and technology have hindered the development of the principle of Common Heritage of Humankind in the outer space regime. Hence, this paper is to argue on how best to reform the principle, and consequently, determining which of its elements that might be spared in order for it to eventually work in balancing the contrasting interests from diverse stake-holders: the developed and the developing countries; the sovereign and the corporations – with their respective weapons of laws or of technology.

Keywords: Common Heritage of Humankind; Outer Space Regime; Deep Seabed

Abstrak

Jauh di dasar samudera, HMS Challenger menemukan polymetallic nodules dalam ekspedisi ilmiahnya di Laut Kara bagian dari Samudra Arktik pada tahun 1868. Sementara di ruang angkasa yang tak terbatas, Clementine dan Lunar Prospector menunjukkan adanya air es di kutub-kutub di Bulan dalam periode 1994 hingga 1999. Pada tahun 2003, pengorbit bulan SMART-1 dari Badan Antariksa Eropa menemukan unsur-unsur kimia utama Bulan. Lebih jauh ke belakang, pada tahun 1988, NASA menerbitkan sebuah karya tentang Helium-3 yang diterbangkan oleh angin matahari ke Bulan, dan kemungkinan memanennya sebagai sumber energi alternatif untuk kelanjutan dan kemajuan umat manusia. Dasar samudera dalam dan ruang angkasa, beserta seluruh kandungan sumber dayanya, secara internasional diatur berdasarkan prinsip fundamental yang sama: Common Heritage of Humankind. Namun, sementara pengaplikasian prinsip ini di rezim Hukum Laut mulai terbentuk, rezim Hukum Ruang Angkasa hanya memiliki sedikit kemajuan. Berbagai faktor mulai dari hukum hingga politik, ekonomi dan tidak dapat dipungkiri kemajuan ilmu pengetahuan dan teknologi telah menghambat perkembangan prinsip Common Heritage of Humankind di rezim ruang angkasa. Oleh karena itu, tulisan ini adalah untuk mendebat cara terbaik untuk mereformasi prinsip tersebut, dan menentukan elemen mana yang mungkin dapat dikorbankan agar pada akhirnya prinsip ini dapat benar-benar berlaku dengan cara yang dapat menyeimbangkan kepentingan yang berlawanan dari berbagai pemangku kepentingan: negara maju dan negara berkembang; pemerintah dan korporat – dengan senjata hukum atau ataupun senjata teknologi masing-masing.

Kata-kata Kunci: Common Heritage of Humankind; Rezim Ruang Angkasa; Dasar Samudera Dalam

Introduction

HMS Challenger discovered the polymetallic nodules in 1868 during its scientific expeditions in the Kara Sea part of the Arctic Ocean.¹ During the period of 1994 to 1999, the Clementine and Lunar Prospector indicated the existence of water ice at the lunar poles.² In 2003, the *SMART-1* lunar orbiter of the European Space Agency discovered key chemical elements of the moon.³ Going even further back, in 1988, NASA published a work on Helium-3 blown away by the solar wind on to the moon and the possibilities of harvesting it.⁴ Those are all the richness of resources that the deepness of our seas and the vastness of our skies have to offer – or to tempt us with. They belong to no one and to everyone. Thus, in telling the tale of international resources management, particularly exploitation of those that are yet to be within the grasp of humankind, the outer space⁵ and the deep seabed⁶ are often paired next to each other.

The two regimes are abundantly rich of unspoilt natural resources to support not only the life, but also the advancement of human race. Hence, the two of them share the same underlying principle: Common Heritage of Humankind.⁷ Which above all else, the two regimes face the same deliberate rejection from the United States and other powerful nations on that very principle.⁸ Common Heritage of Humankind generally comprises of five key elements: non-appropriation, international management, equitably shared benefit, peaceful purposes and to some extent, environmental protection. In international law of the sea on deep seabed mining, the implementation of the principle has begun to take shape for quite some times. At the very least, deep seabed mining is monitored by the International Seabed Authority whose mandates are, amongst

¹ International Seabed Authority, *Polymetallic Nodules* (as of 12 January 2019) International Seabed Authority < <https://www.isa.org.jm/polymetallic-nodules> >

² Paul D Spudis, *The Robotic Exploration of the Moon* (as of 12 January 2019) NASA < <https://moon.nasa.gov/exploration/history/> >

³ Ibid

⁴ NASA Scientific and Technical Information Branch, *Lunar Helium-3 and Fusion Power* (NASA Conference Publication, workshop held at NASA Lewis Research Centre, Ohio, 25-26 April 1988)

⁵ Leonard David, *Is Moon Mining Economically Feasible?* (7 January 2015) Space.com < <https://www.space.com/28189-moon-mining-economic-feasibility.html> >

⁶ Jack Barkenbus, *Deep Seabed Resources: Politics and Technology* (1979) 5

⁷ John E Noyes, 'The Common Heritage of Mankind: Past, Present, and Future' (2012) 40 *DENV. J. INT'L L. & POL'Y* 447, 449-451

⁸ Tullio Scovazzi, 'The Concept of Common Heritage of Mankind and the Genetic Resources of Seabed Beyond the Limits of National Jurisdiction' (2007) 25 *Agenda Internacional* 11, 14

others, the arrangement of fair distribution of the shared benefit and the promotion of the developing countries participation in the exploitation activities through the regime's Reserved Areas and the Enterprise.⁹ Even then, Common Heritage of Humankind in the law of the sea is still in needs of further development. Yet, in comparison with its sibling, the implementation of such principle in outer space regime is much less developed.

Some of the factors that hinder the development of the Common Heritage of Humankind principle under the outer space law are first, the fact that up to this day there is only one piece of legal instrument that explicitly governs the Common Heritage of Humankind, the 1979 Moon Agreement, which desolately only managed to gather no more than eighteen State parties;¹⁰ second, on a more political point of view, the handicaps of developing nations in terms of funding, technologies, or in some cases, experts, have more or less caused the lingering unwillingness of the developed nations to join on board the Agreement due to the equitably shared benefit and the international management elements in the principle; third, economically, the contrasting legal status between the natural resources of, say, the Moon while they are still contained within and once they have been extracted then removed has led to a balance point that is almost impossible to strike between the public nature of the benefit from the resources and the communal ownership of the outer space that would grant tremendous control to the government while creating a friendly environment for private parties' activities and commercialisation of the resources.

Problems Formulation

This paper is to argue on two points: *one*, in order for the principle of Common Heritage of Humankind to cease its chasing-tail development under the outer space law, at least one of its elements has to be sacrificed, this writing hence identifies which element is it that needs to be casted; *two*, the certainty of the equitable sharing benefit of the space resources element must be clearly defined and re-arranged between the monetary benefit and non-monetary benefit.

⁹ *United Nations Convention on the Law of the Seas*, opened for signature 10 December 1982, 1833 UNTS 397 (entered into force 16 November 1994) art 148, 156 & 170 [‘UNCLOS’]

¹⁰ *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, signed 18 December 1979, 1363 UNTS 3 (entered into force 11 July 1984) [‘1979 Moon Agreement’]

Research Objectives

Derived from the aforementioned problems, this paper aims: to rationalise why the element of international management of resources must be the one to be sacrificed, that it may fire up the flares to call for the developed nations to come; and to redefine the equitable benefit sharing of space resources in a way that somehow would balance the needs of all parties involved.

Research Method

This paper is of normative nature which was born of a complex study with both statutory and conceptual approaches. It was done so by utilising the primary legal materials that comprise of both international law sources such as international agreements and general principles of international law; as for the secondary legal materials, library study was conducted on a good number of books, journal articles, reports, documents, other researches of similar nature and other articles. Everything is eventually deduced in qualitative analysis and presented in a descriptive manner.

Discussion and Results

Common Heritage of Humankind in The Law Governing the Use of Outer Space

1. Elements of the Principle of Common Heritage of Humankind

The principle of Common Heritage of Humankind was historically derived from the concern of its founding father, former Ambassador Arvid Pardo of Malta, for the equal welfare of the developing nations in the enjoyment of the world's natural resources. The principle was initially established under the regime of international law of the seas, and is widely recognised and applied to govern the matters on deep seabed mining.¹¹ Hence, it is important to note the development of Common Heritage of Humankind principle and its elements under the law of the seas before assessing its progress under the law governing the use of outer space. Common Heritage of Humankind is included under Part XI of the 1982 *United Nations Convention on the Law of the Sea* ('UNCLOS').¹² To begin with, UNCLOS labels the deep seabed

¹¹ Martin Harry, 'The Deep Seabed: The Common Heritage of Mankind or Arena for Unilateral Exploitation?' (1992) 40 *Naval Law Review* 207, 226

¹² UNCLOS art 136-137, 140-141

– or, referring to its own specific terminology, ‘The Area’¹³ – as well as its *in situ* resources¹⁴ and its extracted minerals¹⁵ as Common Heritage of Humankind.¹⁶ In this regime, particularly, the principle of Common Heritage of Humankind that is attached to the deep seabed is understood to have four key elements.

First, that all States are prohibited from claiming jurisdiction and exercising sovereignty over the deep seabed (non-appropriation).¹⁷ *Second*, that the deep seabed shall be used exclusively for peaceful purposes.¹⁸ *Third*, that the resources from the deep seabed shall be managed internationally.¹⁹ *Fourth*, the benefit of the resources shall be shared equitably.²⁰

About two points coming out as the consequence of the deep seabed being the Common Heritage of Humankind: first, based on the non-appropriation nature of the deep seabed, it shall then be used for the sole benefit of the whole mankind, regardless the geographical condition of being land-locked or coastal States;²¹ and second, in the light of the international management and equitable sharing of benefit of the resources from the deep seabed, the promotion and encouragement for the participation of developing countries in deep seabed mining activities are to be undertaken.²² To ensure these two striving points will carry out accordingly, the International Seabed Authority (ISA) was established,²³ which true to its name, is mandated with the powers and functions over activities on the deep seabed.²⁴ Whilst the actual technical matters on the promotion and encouragement for the participation of the developing countries are mostly vested upon the Enterprise,²⁵ and its particular scheme called “Reserved Area.”²⁶

¹³ UNCLOS part XI

¹⁴ UNCLOS art 133 (a) defines solid, liquid or gas minerals located in or beneath the seabed as ‘resources’

¹⁵ Whilst UNCLOS art 133 (b) defines all the mined resources as ‘minerals’

¹⁶ UNCLOS art 136

¹⁷ UNCLOS art 137 (1)

¹⁸ UNCLOS art 141

¹⁹ UNCLOS art 150-152

²⁰ UNCLOS art 140 (2)

²¹ UNCLOS art 140 (1)

²² UNCLOS art 148

²³ UNCLOS art 156 (1)

²⁴ UNCLOS art 157

²⁵ UNCLOS art 170

²⁶ In the mining of polymetallic nodules in the deep seabed, if a private entity of a developed nation is to submit an application of mining activities to be conducted in a certain area of the deep seabed to the ISA, it shall

UNCLOS has somehow implied that the defined, thus promoted, activities on the deep seabed to be the marine scientific research – which also includes provisions on peaceful purposes²⁷ and international cooperation²⁸ in benefitting the mankind as a whole – rather than exploration and exploitation of the resources. Although the the matters concerning the latters have also been detailed further – including how much is the share that the ISA or the Enterprise should get from the benefit of the mined resources.²⁹

Promoting and encouraging the participation of developing countries on the other hand, brings further, rather ambitious implications. On the part of benefit of all mankind alone, it is stipulated that the financial and other economic benefits derived from the activities on the deep seabed shall be distributed equitably.³⁰ And above all, UNCLOS requires transfer of technology and scientific knowledge regarding the activities on the deep seabed to the ISA,³¹ the Enterprise,³² and most importantly, the developing countries.³³

2. The Birth of Common Heritage of Humankind in the Law Governing the Use of Outer Space

a. From the General Principles under UNGA Resolution 1962

The United Nations General Assembly Resolution 1962 (XVIII) of 13 December 1963 ('UNGA Resolution 1962') has created the bedrock for the principle of Common Heritage of Humankind in the outer space regime – without actually stating the specific terminology of the very principle. it contains similar yet differential notions on Common Heritage of Humankind to that of the law of the seas. Essentially, *UNGA Resolution 1962* sets up that the activities carried out in the outer space are to be divided into 'exploration' and 'use' of the outer

have to submit two thoroughly assessed areas instead, in which between the two, only one that would be granted approval while the other one would be 'reserved' for the developing countries. International Seabed Authority, *Reserved Areas* (as of 12 January 2019) International Seabed Authority < <https://www.isa.org/jm/contractors/reserved-areas> >

²⁷ UNCLOS art 143 (1)

²⁸ UNCLOS art 143 (3)

²⁹ UNCLOS art 151

³⁰ UNCLOS art 140 (2)

³¹ UNCLOS art art 144 (1) (a)

³² UNCLOS art 144 (2)

³³ UNCLOS art 144 (1) (b) & 144 (2)

space. It is also in this very *Resolution* that the notion of 'sovereign equality'³⁴ in the outer space regime was first explicitly introduced. Sovereign equality is deemed to be the basis on which the exploration and the use of the outer space must be meant to accommodate the benefit and interests of all mankind. And from thereon, the remaining elements of non-appropriation of the outer space, reserving the outer space exclusively for peaceful purposes, and additionally, international cooperation and mutual assistance are developed within the the scope of the *UNGA Resolution 1962*.

In short, with its sovereign equality, international cooperation and mutual assistance elements, the *UNGA Resolution 1962* has somehow sort of merged together the two principles of Common Heritage of Humankind, as well as Common Concern of Humankind,³⁵ on the probable ground that the outer space is supposedly a realm more sensitive than others.

b. To the 'Province of All Mankind'

The principle of Common Heritage of Humankind is apparently absent throughout the provisions set forward in the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies* ('1967 Outer Space Treaty'), and in some extent of the *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies* ('1979 Moon Agreement'). Instead, the two space treaties are referring to the specific terminology of 'province of all mankind'. Province of all mankind strives a more limited scope as compared to Common Heritage of Humankind. At best, province of all mankind can be generally understood as a variety to *res communis*,³⁶ thus, communal ownership of the

³⁴ Historically, the term 'sovereign equality' was first proclaimed in the *1943 Declaration of Moscow* by four developed nations: the United States, United Kingdom, Soviet Union and China. It is then defined that "no state can be legally bound under international law against its will," and that it is solely international law that can bind the states, not any national law of other state. Hans Kelsen, 'The Principle of Sovereign Equality of States as A Basis of International Organisation' (1944) 53 *Yale Law Journal* 207, 209

³⁵ The principle under international law that is strongly related to the environmental protection issues that are affecting the common areas (*res communis*) or the planet as a whole that requires the international cooperation of all states that the burden could be shared amongst the states.

³⁶ As opposed to *terra nullius*, the *res communis* or the land that belongs to no one, is the place that cannot be occupied in any manner that would establish the sovereign rights of states. While *terra nullius* is yet to be subject to sovereignty of any states, therefore, it is capable of occupation. In Bin Cheng, 'International Law and High Altitude Flights, Balloons, Rockets and Man-made Satellites' [1959] *International and Comparative Law Quarterly*, 494

outer space as a shared 'place', and that the activities shall be limited to mere exploration and use of such place. Nevertheless, the principle of province of all mankind still demonstrates some similar values to Common Heritage of Humankind. Hence, the *1967 Outer Space Treaty* might still serve as a considerable piece of international legal instrument on this very principle in the outer space regime, to support that of the *1979 Moon Agreement*. Many even argue that, regardless the absence of the actual mentioning on the principle, the *1967 Outer Space Treaty* still somehow upholds the values of Common Heritage of Humankind.³⁷ It is just the matter that the version of Common Heritage of Humankind as found in the *1967 Outer Space Treaty* is more of the flexible one, since it indicates that the Moon and its resources are opened for all States and available for their enjoyment,³⁸ without necessarily saying that the outer space is owned by all as found in the *1979 Moon Agreement*, making it the probable supposition as to why the USSR is party to the *1967 Outer Space Treaty* but not to the *1979 Moon Agreement*.³⁹

The *1967 Outer Space Treaty* has managed to gather 107 State parties and 23 signatories, making it quite a reliable multilateral space treaty. It defines activities of States in the outer space as both 'exploration' and 'use',⁴⁰ while promoting the freedom of scientific investigation.⁴¹ Freedom of use of the outer space, equality and reciprocity have therefore become the three key principles brought forward by the *1967 Outer Space Treaty* within its scope of province of all mankind. This is where its similarities with the Common Heritage of Humankind stand out: exploration and use of outer space shall be carried out for the benefit and interests of all countries,⁴² which consequently, such activities must be transparent, in which the United

³⁷ Paul Henry Richards, *Some Current Problems of International Space Law*, (Doctor of Philosophy Theses, The Council for National Academic Awards, 1985), 93-94

³⁸ Referring to 'freedom of use of the outer space'.

³⁹ *Ibid*

⁴⁰ *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies*, opened for signature 27 January 1967, 610 UNTS 205 (entered into force 10 October 1967) art I [*'1967 Outer Space Treaty'*]

⁴¹ *Ibid*

⁴² *Ibid*, while *UNCLOS* (above n 18) defines the sovereign equality to be irrespective of the States' geographical condition of whether being land-locked or coastal States, the present treaty defines equality as irrespective the degree of States' economic or scientific development.

Nations (UN) Secretary General, the international community and public as a whole are entitled to be informed;⁴³ the outer space shall not be subject to appropriation or occupation by any States;⁴⁴ and the that of the outer space is to be used exclusively for peaceful purposes.⁴⁵

Additionally, the *Treaty* governs that States shall authorise the activities of their nationals or private entities in the outer space,⁴⁶ which leads to the States assuming international responsibility over such nationals or private entities.⁴⁷ If they have reasons to believe that the activities planned by its natural or juridical person are potent to cause harmful interference with the activities of other States, international consultation shall be undertaken before proceeding with the activities.⁴⁸

Based on the principles of equality and reciprocity, not only that the *Treaty* obliges the States to promote international cooperation and mutual assistant, it has also binds the international responsibility of States on environmental protection.⁴⁹ Both international cooperation and environmental protection of and by the States are to be done in the *Treaty's* concept of 'peer review': if States have reasons to believe that the activities planned by other States might cause harmful interference with the peaceful use of outer space, request for consultation may be made;⁵⁰ States may request to observe the flight of space object launched by other State;⁵¹ and on top of it all, stations, installations, equipment and space vehicles of States shall be open for visit by representatives of other States upon notification.⁵²

While the actual definition of province of all mankind is merely implied in the *1967 Outer Space Treaty*, the *1979 Moon Agreement* provides a better clarity. It limits the province of all mankind into the Moon and other

⁴³ Ibid art XI

⁴⁴ Ibid art II

⁴⁵ Ibid art IV further defines that non-peaceful uses of the outer space such as instalment of nuclear weapons or weapons of mass destruction, establishment of military bases, carrying out military manoeuvres or weapons testing are prohibited.

⁴⁶ Ibid art VI

⁴⁷ Ibid

⁴⁸ Ibid art IX

⁴⁹ Ibid

⁵⁰ Ibid

⁵¹ Ibid art X

⁵² Ibid art XII

celestial bodies within our solar system,⁵³ as well as orbits or trajectories around the Moon (and other celestial bodies).⁵⁴ The Earth itself, and the extra-terrestrial materials naturally brought to Earth are excluded from this definition.⁵⁵ The *1979 Moon Agreement* upholds the same values as the *1967 Outer Space Treaty* on the province of all mankind, with specific additional stressing points as follow: the rights to collect and remove samples of the Moon⁵⁶ for scientific purposes, and that such samples shall be made available for other States;⁵⁷ since the *1967 Outer Space Treaty* only implies the environmental protection of the Earth, the present treaty regulates environmental protection of both the Earth and the Moon;⁵⁸ the activities of exploration and use are extended to be those that are allowed on the surface as well as below the surface of the Moon;⁵⁹ and last but not least, when the *1967 Outer Space Treaty* limitedly prohibits harmful interference to the activities of other States, the present agreement simply prohibits any interference.⁶⁰

c. To the Sole International Space Treaty for Common Heritage of Humankind

While revisiting and providing some additional key points on province of all mankind, the *1979 Moon Agreement* has eventually introduced the principle of Common Heritage of Humankind to the outer space regime, making it the only current space treaty that governs about the said principle in the international space law. The present agreement has taken a bit of a leap of faith, by explicitly stating that the Moon and its resources are

⁵³ The wording of ‘within our solar system’ might sound rather ordinary. But while the most feasible space exploration and exploitation, being the Moon, is yet to be actually undertaken, there are other solar systems out there that the future technology might reach effortlessly, hence it is quite important to note these solar systems are excluded from the *1979 Moon Agreement*, and therefore, are not part of Common Heritage of Humankind. Generally, see Deborah Schreerer, *Our Solar System – Ancient Worlds, New Discoveries* (Stanford University Press, 2013) 43-44

⁵⁴ *1979 Moon Agreement* art 1 (2)

⁵⁵ *Ibid* art 1 (3)

⁵⁶ the reference to the word “Moon” in the present agreement are meant for the general, swept-up purpose since the Moon is currently the only feasible and closer celestial body to Earth for exploration, use and exploitation activities. By expressing “the Moon”, the present agreement also simply refers to the other celestial bodies within our solar system – that would be equally feasible as the Moon.

⁵⁷ *Ibid* art 6 (2)

⁵⁸ *Ibid* art 7 (1)

⁵⁹ *Ibid* art 8 (1)

⁶⁰ *Ibid* art 8 (3)

Common Heritage of Humankind,⁶¹ hence, legally extending the activities of States in the outer space to include also the 'exploitation' of the Moon's resources.⁶² But the nectar-sweet promise brings its own not-so-desired implication, especially to those of the developed nations, particularly the United States: that Common Heritage of Humankind means international management and equitable benefit sharing of the resources, as found in the law of the seas. This grand and noble idea, is the one that has somehow plunged the *1979 Moon Agreement* into mere 18 State parties, with 4 signatories, that its current *status quo* as the only legal basis for the Common Heritage of Humankind in the outer space regime has become almost meaningless.

On a justifiable presumption, that might have been the supposition as to why in listing the elements of Common Heritage of Humankind, the portion of the *1979 Moon Agreement* that governs about such principle seems to have only been emphasising on non-appropriation element in accordance with the *1967 Outer Space Treaty*, to add up to the aforementioned elements of province of all mankind, as contained both in itself and in its sister treaty – the benefit of all countries and the peaceful purposes.⁶³ Additionally, with the two key space treaties repeatedly highlights the international obligation on environmentally sound activities of States in the outer space, it has then been widely recognised that environmental protection is the fifth element of Common Heritage of Humankind in this regime.

As for the international management and equitable sharing of benefit derived from exploiting the resources of the Moon, the present agreement still leaves a rather spacious empty room for the much-needed development. For one, in the absence of its own authority in the outer space law equivalent to ISA in the law of the seas, the *1979 Moon Agreement* highlights the need to establish an international legal regime and procedure to govern about the exploitation activities,⁶⁴ including the rational management of the Moon's

⁶¹ Ibid art 11 (1)

⁶² Ibid art 11 (5)

⁶³ Ibid art 11 (2)-(4)

⁶⁴ Ibid art 11 (5)

resources and the equitable sharing of benefits from such resources with special consideration for the developing countries.⁶⁵ These open-ended provisions are not there without a cause, they are simply in hopes that, the fact that these elements of Common Heritage of Humankind are yet to be progressed under the present agreement, the space-faring nations would jump into the further negotiation and eventually becoming the State parties to it.

The Development of Common Heritage of Humankind in The Outer Space Regime

1. A Legal Weapon Born Out of the Regressive Development

The governance of both province of all mankind and Common Heritage of Humankind principles in the *1979 Moon Agreement* have contributed in offering a bit of a clarity on the legal status that should be applied to the Moon and its resources: the Moon itself is both Common Heritage of Humankind and communal ownership; samples of the Moon minerals or other substances are also communal ownership; natural resources of the Moon *in situ* are Common Heritage of Humankind, yet those that have been collected, extracted or removed, are to belong to the miners; while the benefit derived from those extracted resources are Common Heritage of Humankind – but then again, to what extend that such benefit would remain as Common Heritage of Humankind? How should we draw the line between the miners' ownership and the communal ownership? And on top of it all, the simplest, yet grandest question: what kind of benefit?

The development of the international law should naturally flow in a progressive current from time to time. But those questions above alone have shown that the development of Common Heritage of Humankind principle in the outer space regime is yet to be deemed as such. The least is to say that the development has been stagnant at the time being. The worst is that it might have been going through a regressive, tail-chasing development. There are

⁶⁵ Ibid art 11 (7) (b) & (d)

three factors that hold back the development of Common Heritage of Humankind principle in the international space law.

First is the very apparent legal issue of the 1979 *Moon Agreement* having only been legally binding to no more than 18 State parties, it is shrinking in size as compared to other, far more superior multilateral treaties from other regimes. It is simply not a ground solid enough to provide a firm legally binding effect, thus applicability, of the Common Heritage of Humankind – not even through customary international law.⁶⁶ With only a handful of UN Treaties that were negotiated during the critical period of 1960's to the 1970's – some of them does not even manage to gather enough sympathisers – and most States caught themselves in space disputes would rather solve them through diplomatic means than actually willing to go through the court litigation system, both nationally or internationally,⁶⁷ there is still very small number of case laws that might be directly applicable to space disputes.⁶⁸ Although, but some supporting analogies can still be drawn from similar circumstances, such as those of the law of the seas.

Second, economically speaking, the prospectus business actors of space mining seem to have failed to distinguish that non-appropriation does not necessarily mean “capturing”, “extraction” and “removal” of natural resources in the outer space. Hence, by being told that claiming ownership of the Moon and its *in situ* resources is prohibited, the automatic response still remain so is claiming ownership over the mined resources of the Moon. Also, there is no recognition on “first come, first serve” principle as found in the law of property ownership⁶⁹ in the enjoyment of all mined resources of the Moon, which consequently, it has yet to provide a friendly environment for privatisation and

⁶⁶ For the law to be recognised as customary international law, it requires two elements: state practise and *opinio juris*. The latter is further understood as the believe of the society, in this case the international community, that a general practise is accepted and recognised as the law (see Christian Dahlman, ‘The Function of *Opinio Juris* in Customary International Law’ (2012) 81 *Nordic Journal of International Law* 327). In the outer space regime, the principle of Common Heritage of Humankind is yet to fulfil at least one of those elements.

⁶⁷ For instance, see the dispute of *Cosmos 954* generally in Alexander F Cohen, ‘Cosmos 954 and the International Law of Satellite Accidents’ (1984) 10 *Yale Journal of International Law* 77, 79-81

⁶⁸ Henry Hertzfeld, ‘Current and Future Issues in International Space Law’ (2008) 15 *ILSA Journal of International & Comparative Law* 325, 328-329

⁶⁹ Carol L Buxton, ‘Property in Outer Space: The Common Heritage of Mankind Principle vs. the First in Time, First in Right Rule of Property’ (2004) 69 *Journal of Air Law and Commerce* 688

commercialisation in the outer space, alongside the still tremendous control power vested on the governments through the schemes of granting authorisation and assuming international liability to and over their nationals and private entities. To address this issue, the *Joint Statement on the Benefits of Adherence to the Moon Agreement in 2008* highlights that *the 1979 Moon Agreement* does not preclude exploitation by public or private entities, nor does it prohibit commercialisation, it is simply obliging the stake-holders who are to conduct the space exploitation and commercialisation in accordance with the principle of Common Heritage of Humankind. Additionally, it sets up some sort of a middle way of joint development mechanism through joint venture arrangement.

Last but certainly nowhere near being the least, the political tensions from the well-developed space-faring nations have become the ultra-significant factor that has hindered the development of the principle in the law governing the use of outer space. The *1979 Moon Agreement* has initially been the product of political bargains amongst these space-faring nations to glean legality on the ownership of space resources as a further step after settling with the communal ownership of the Moon under the *1967 Outer Space Treaty*. But by observing the fact that the leading states were backing off even further and further away from signing the *Agreement*, it is safe to draw a presumable conclusion that those leading nations have yet to reach their initial political and economic interests upon the conclusion of the negotiation for the *1979 Moon Agreement*. Instead, the *Agreement* still values the international management and equitable benefit sharing of the space resources, that somehow, contradict to the values upheld by these space-faring nations.

2. The Views of the Space-faring Nations on Space Resources: Sharpening Their Technological Weapon

The *1979 Moon Agreement* holds the membership of 18 State parties. Meaning, there are over a hundred of states out there that, frankly speaking, refuse to believe in the applicability of the principle of Common Heritage of Humankind in the space exploration and exploitation activities. Or, at the very least, refusing to uphold one or two of its elements, if not all five of it. The

reason why the United States refuse to become party to the 1979 *Moon Agreement* is because Russia is not a party to it. And the reason why Russia refuse to become a party to it is because the United States is not. While it has been everyone's autopilot response to picture the United States and Russia tensely sitting on opposite ends of the table when one is to think about the space race that it has almost become a dull illustration; below is the discussion on how the United States and another, less-anticipated space-faring nation, Luxembourg – that is also, obviously, not a party to the 1979 *Moon Agreement* – set up their domestic space laws that in one way or another, has incapacitated the development of the Common Heritage of Humankind principle. These are only the views from mere two developed states, which from this point, one can only envision what could probably happen in the near future, and how the layout of the international space treaty on Common Heritage of Humankind would look like, if more states are to join their moves – which the preliminary circumstances suggest that they would.

a. The United States' Domestic Law on Space Mining Activities

Staying true to what it believes in, as it has refused to be a party to the *UNCLOS*, the United States of America, much unsurprisingly, has a very liberalised view on space mining activities that develops in such a fast-paced tempo. When the international community has walked along this line in a series of tiny baby steps while taking its sweet time to develop from the space treaties that govern the space activities to only be exploration and use before considering the exploitation of space resources, the United States on the other hand, has determined the space exploitation activities from square one. The 2015 *US Commercial Space Launch Competitiveness Act* ('*US Space Act*') guarantees to facilitate and to discourage any government barriers on the commercial exploration and recovery activities of, not only the general space resources,⁷⁰ but also down to the very detail of asteroid resources⁷¹ done by its citizen.⁷² At the first, slightest glance, distinguishing between

⁷⁰ *US Commercial Space Launch Competitiveness Act*, 51 USC 10101 § 51301 (2) [*2015 US Space Act*]

⁷¹ *Ibid* § 51301 (1)

⁷² *Ibid* § 51302

general space resources and asteroid resources might have rendered no further implications other serving for the certainty of law. But, as it has been discussed earlier, the *1979 Moon Agreement* has only been governing that the coverage of communal ownership over celestial bodies and their resources is merely to the extent of those that are within our solar system. It is exceedingly possible that for an interstellar asteroid to have come from other solar system while passing through ours. For instance, an asteroid called *Oumuamua* that was caught by the Pan-STARRS1 telescope of the University of Hawaii.⁷³ That is to highlight that, on one side, there is yet another legal loophole in the *1979 Moon Agreement*, and on the other side, most of all, that it is simply how the United States dances around the loopholes. That being said, some celestial bodies and their resources – both *in situ* or extracted – are no longer incapable of being appropriated.

Aside of that, while the international space treaties are still struggling with developing the methods for the international management of the space resources and the equitable sharing of benefit derived such extracted resources, let alone to actually address the ownership rights of space resources mined by individuals or private entities of a State, the United States has gone even further by truly granting the ownership rights to its citizens over any space or asteroid resources that they have mined.⁷⁴ Although the law has stated that by doing so, the United States is not claiming its jurisdiction or exercising its sovereignty over any part of the outer space.⁷⁵ Yet, by being entitled to the rights of ownership over the mined space resources, citizens of the United States are free to possess, hence to transfer the right to possess to other party by selling or by any other possible means, to transport or to use it in anyway they like.⁷⁶

The *US Space Act* has somehow shrunk the special and extraordinary nature of space resources into a mere ordinary property subjected to

⁷³ NASA, *Oumuamua* (19 October 2017) NASA Science Solar System Exploration < <https://solarsystem.nasa.gov/asteroids-comets-and-meteors/comets/oumuamua/in-depth/> >

⁷⁴ Ibid § 51303

⁷⁵ Ibid § 51403

⁷⁶ Ibid § 51303

common property law.⁷⁷ If anything, it has regressed the international community's attempts to settle the matters on the equitable sharing of benefit derived from space resources. As if to ensure that, the *Act* provides that the discouragement of government barriers on space resources recovery and granting ownership rights over such resources remain to be done in accordance with the international obligations of the United States. Without saying much, so long as the United States remains to be non-party to the only Common Heritage of Humankind agreement in the international space law, it is free to do as it pleases.

b. Luxembourg Domestic Law on Space Mining Activities

On the exact same page as the United States, Luxembourg has developed its own *Draft Law on the Exploration and Use of Space Resources* ('*Luxembourg Draft Space Law*') only within two years after the enactment of the *US Space Act*, and the law opens with its very first article stating that the "space resources are capable of being appropriated".⁷⁸ In that one single short sentence, the *Luxembourg Draft Space Law* has thrown its rock even further than that of the United States. Under the *Draft Law*, commercial exploration and use of space resources are to be done upon authorisation granted by the relevant minister in Luxembourg.⁷⁹ Although, such authorisation may only be given to public limited liability company, private limited liability company, limited corporate partnership, all established under the law of Luxembourg, or to European company registered in Luxembourg.⁸⁰ That being said, the *Luxembourg Draft Space Law* has yet to regulate space commercialisation done by natural persons.

The issue is, since authorisation to conduct the commercialised exploration and use of space resources can be given to not only public entities of Luxembourg but also the private ones, the specific chosen word of 'appropriation' for space resources in the *Draft Law* is simply just too strong

⁷⁷ Carol L. Buxton, above n 63

⁷⁸ *Draft Law on the Exploration and Use of Space Resources* (Luxembourg) 13 July 2017, art 1 [*'Luxembourg Space Law'*]

⁷⁹ *Ibid* art 2 (1)

⁸⁰ *Ibid* art 4

to use when addressing the space mining activities done by private corporations.

Not to mention the fact that the *Luxembourg Draft Space Law* has failed to distinguish between the space resources *in situ* and the extracted space resources. Appropriating the space resources that are still contained within the celestial body might as well amount to appropriating that celestial body on itself, immensely needless to say, violating the international law – and international belief – that the Moon and its resources *in situ* are *supposed to be* communal ownership.

The Way Forward

1. Differentiating Between the Monetary and Non-Monetary Benefit

Before discussing further about the equitable sharing of benefit derived from the space mining activities, it is important to differentiate between monetary benefit and non-monetary benefit ‘derived from the space resources’ – or directly ‘of the space resources’. The *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization* (*The Nagoya Protocol*) has provided some illustrations for both monetary and non-monetary benefit to be shared equitably that might be applicable in the outer space regime. The monetary benefit under *The Nagoya Protocol* may include access fees for every sample of resources that has been collected, up-front payments, milestone payments, payment of royalties, licence fees in commercialisation of the resources, special fees paid to the trust funds in support of the conservation and sustainable use of biodiversity, mutually agreed salaries and preferential terms, research funding, joint ventures, or joint ownership of relevant intellectual property rights.⁸¹

As for the non-monetary benefit on the other hand, *The Nagoya Protocol* also offers a huge number of possible arrangements that, by and large, is centred around the attempts to prioritise the interests of the developing nations, such as research collaboration, participating in product development,

⁸¹ Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, signed 29 October 2010 (entered into force 12 October 2014), annex art 1 [*The Nagoya Protocol*]

strengthening the human resources and institutional capacities, access to information, and above all, transfer of technology.⁸² Similarly, *UNCLOS* has obliged the transfer of technology and scientific knowledge regarding the activities on the deep seabed to be made to the ISA⁸³ as well as the Enterprise,⁸⁴ and on top of it all, the developing countries.⁸⁵ Along this line, *Draft Building Blocks for the Development of an International Framework on Space Resource Activities* ('*Draft Building Blocks*') developed by The Hague Space Resources Governance Working Group has also come up with a more promising enabling clause approach for the equitable sharing of benefit to be enjoyed by the developing countries.⁸⁶

In the spirit of promoting the participation of developing countries, the enabling clause under the *Draft Building Block* has firmly stated that the international framework for the development of enjoyment of space resources should not entail the mandatory monetary benefit sharing.⁸⁷ Instead, it promotes the establishment of an international funding institution for encouraging and assisting the involvement of developing countries in the space mining activities.⁸⁸ That way, the *Draft Building Block* has still combined both non-monetary benefit and some variety of monetary benefit in a well-designed way. The rest of the benefit sharing developed by the *Draft Building Block* shall include, but not exclusively limited to: facilitating and fostering the development of space technology and knowledge in these countries and the development of relevant and appropriate skills amongst their productive citizens;⁸⁹ promoting the international cooperation and contribution in educating and training the space knowledge, technology, and relevant skills;⁹⁰ widely opening up access to and exchange of information regarding the exploration and exploitation of space

⁸² Ibid annex art 2

⁸³ *UNCLOS* art art 144 (1) (a)

⁸⁴ *UNCLOS* art 144 (2)

⁸⁵ *UNCLOS* art 144 (1) (b) & 144 (2)

⁸⁶ The Hague Space Resources Governance Working Group, 'Draft Building Blocks for the Development of an International Framework on Space Resources Activities' (Preliminary work, Leiden Law School, 13 September 2017) point 12.1 [*Draft Building Block*]

⁸⁷ Ibid point 12.2

⁸⁸ Ibid point 12.1 (g)

⁸⁹ Ibid point 12.1 (a) & (b)

⁹⁰ Ibid point 12.1 (c)

resources;⁹¹ promoting the possibility for incentives of joint venture arrangements; and promoting the exchange of expertise and technology amongst States in a reciprocal manner.⁹² From these aforementioned points, it is almost crystal clear that the *Draft Building Block* extends the coverage of the benefits to be shared equitably is as simple as that of the 'space resources', instead of limiting them to be that of 'derived from the space resources' – the seemingly small change that makes a world of differences.

That being said, however, non-monetary benefits would certainly serve better as the much-desired portion of benefits that can be enjoyed by the developing nations for their advancement in the exploration and exploitation of international resources, as it offers something that is more beneficial than mere financial or other economical benefits derived from those resources. Hence, it is then up to the matter of arranging the fair distribution of such benefit.

2. Arranging the Fair Distribution of Benefit of the Space Resources

Fair is a very subjective word. Is non-monetary benefit fairer than monetary benefit, or vice versa? Does 'benefit of the space resources' really have more to offer rather than 'benefit derived from the space resources'? What is fair for the developed countries might not – or perhaps even would never be – fair for the developing and least developing ones. It is of a very utopic view to believe that there can actually be an equilibrium point to balance between benefit for the developing nations and benefit for the developed ones. But the international community, be it through *UNCLOS*, the *1967 Outer Space Treaty* or the *1979 Moon Agreement*, has sealed their commitment to promote and to encourage the more active partaking of the developing countries in the management and enjoyment of international resources since a very long time when those agreements were first signed. The ink has long gone dried. There is no stepping back from what we have once promised ourselves collectively as the citizens of the Earth.

⁹¹ Ibid point 12.1 (d)

⁹² Ibid point 12.1 (f)

However, the current idea for equitable sharing of benefits derived from the extracted space resources, particularly when keeping the developing countries in mind, is still applying a rather passive, sort of 'giveaway' approach by only considering the probable interests and needs of the developing countries, without actually offering chances that are enabling them to participate actively in space exploration and exploitation.⁹³ In response to that, the *Draft Building Blocks* has indeed opted for a more enabling approach of benefit sharing of the space resources as being laid out previously. But the problem with the benefit sharing as introduced by the *Draft Building Blocks* is that the space-faring nations are supposedly more keen on sharing the monetary benefit rather than non-monetary benefit, the benefit to be shared equitably is still, by law, limited to the 'benefit derived from the resources', that is but a long way from 'benefit of the resources'. Whilst very much on the contrary, those developed nations, say the United States, would not mind so much as to share the monetary benefit derived from the space resources rather than non-monetary benefit of, say, transfer of technology. Therefore, what the two sides need is the middle ground, as fair as the law, the political tensions and the economic equation can give.

Therefore, instead of only deciding in a sharp fixated way between monetary benefit or non-monetary benefit, or between benefit of the space resources and benefit derived from the space resources, the near-future international framework for equitable benefit sharing can simply combine all of them. First of all, is to have both monetary benefit and non-monetary benefit, but it is to be developed in a way that the monetary benefit shall be the benefit derived from the space resources as it is the most rational strategy, while the non-monetary benefit must be considered to be that of directly drawn from the space resources. For instance: monetary benefit be the share of income acquired from the selling of Helium-3 mined from the Moon to some nuclear reactor developer company; as for the non-monetary benefit be the knowledge of how to safely mine the Helium-3, what are the chemical components of Helium-3, or how to actually function it as an alternative energy resource. Secondly, in the

⁹³ 1979 Moon Agreement, art 11 (7) (d)

light of the latter scenario and considering the current development of space science and technology undergone by the major developed states players, transfer of technology might have sounded as if we are to ask the United States to paint the moon green – which they probably can.

Hence, on that note, some of the more neutral fashions for equitable sharing of benefit offered by the *Draft Building Block* might be applicable. The best scheme would be to promote the arrangement of exchange of expertise in a mutually agreed, reciprocal government to government basis to replace the transfer of technology requirement. A developing nation may not have the money or the advanced technology, but they still have population, most of them even have a large number of population, and that means a bigger chance, a bigger possibility, a bigger pool to fish an expertise – or to train an expertise – from. The basic method in doing so can be copied from the typical Bilateral Investment Treaties (BITs) arrangements in the international investment regime: that is to have an agreement between two contrasting interests of a developed state and a developing one, while the former has money to build an infrastructure, the latter has many other possible things to offer such as the land on which the infrastructure is to be built, the manpower, or perhaps the natural resources.⁹⁴ Yet, tricky would be a simple way to put it. BITs might have worked properly – if not perfectly – because one party, being the developed capital-exporter nation, subject itself under the jurisdiction of the other party, being the developing capital-importer nation. While the latter is somewhat on a weaker bargaining position, it is still its land and its own resources that the relevant investment of the former is evolved around, thus, the developed state should have no other option than to lower its ego and play along with the developing state on a levelled playing field.⁹⁵ The same circumstances cannot be applied to the outer space regime: not a single portion of outer space – safe for the way the United States regulates about the asteroid resources – is under the jurisdiction of one country; a developed nation would not feel necessary to consider the interests of the developing nation simply

⁹⁴ Generally, see Andrew Newcombe, Lluís Paradel·l, *Law and Practise of Investment Treaties* (Kluwer, 2009)

⁹⁵ Jeswald W Salacuse, 'The Emerging Global Regime for Investment' (2010) 51 *Harvard International Law Journal* 427

because it is mining a celestial body which at the time being is situated above the territorial boundaries of that developing nation. Here is where the common sense is expected to appear, that is to return back to the initial commitment to encourage the active participation of the developing nations. Additionally, training of expertise and education of space knowledge can be offered by the developing space miners as a form of non-monetary benefit sharing of space resources, that one day, these citizens of the developing nations may develop their own technology without the United States or Luxembourg necessarily being forced to transfer theirs. The technology that the advanced space miners might be interested in, that perhaps, one day, they would give in to the notion of transfer of technology.

3. The Element of International Management of Space Resources: the Sacrificial Lamb

As mentioned in the beginning of this paper, that in order for the Common Heritage of Humankind principle to progress with its development in the international space law, one of its elements, being the international management of resources, must be sacrificed. The truth is, with or without an international legal framework that is developing the principle in the way that its international management element is casted away, the developed nation has actually begun to shape the principle this way. By granting ownership rights over mined space resources to its citizens, or by declaring that the space resources are available for appropriation, the United States, Luxembourg, and other states following their footsteps closely behind, is already firing out bright flares that they intend to manage the space resources that they have mined by themselves, thus, no more international management for these resources.

That being said, we are left with almost no other choice but to flow along the stream of the law development, as law would not be a governing law if its society would not believe its virtue as the law. The international management of space resources element may only be thrown away from the Common Heritage of Humankind principle if it fulfils these two requirements: first, that the space resources to be managed individually by States instead of collectively by the international community shall be limited to only those of the mined

resources, the resources *in situ* shall still be subject to communal ownership; second, that the equitable sharing of monetary benefit derived from the space resources and non-monetary benefit of space resources in the way that is prioritising the interests of the developing countries must be upheld to compensate the soon-to-be absence of international management of space resources element.

Conclusion

In order for the principle of Common Heritage of Humankind to cease its chasing-tail development under the outer space law, the legal certainty for the element of equitable sharing benefit of the space resources must be established in the way that the equitable sharing of the monetary benefit is reserved for the benefit derived from the space resources, while the equitable sharing non-monetary benefit is specified for the direct benefit of the space resources. Additionally, we all must be willing to sacrifice the element of international management of extracted space resources. That hopefully in the end, will somehow meet the needs of the developing countries while balancing the interests of the space-faring nations – and the private corporations under their embraces. A rather gigantic, ambitious notion to achieve, but there is no hurt in trying.

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