PRIVATIZATION OF OUTER-SPACE AND OWNERSHIP: ISA AS A MODEL OF REGULATION FOR RESOURCE EXPLOITATION

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I. Introduction

The folly of a man is to think that he can conquer something which is not meant for him to conquer. A similar situation lies before us when the USA is preparing to lay siege to the domain of Outer-Space in the hope of owning it. The Outer-Space includes all expanses that lie outside the atmosphere of the earth. Outer-space also includes other celestial bodies such as the moon, asteroids, planets, stars, etc. The development of technology and the ambition of man led mankind into the Outer-Space for the first time in 1961[1] and then to the Moon landing in 1969.[2] The ideal purpose of these forays into space was exploration and expanding human knowledge, though space missions were funded by state governments for showcasing their technological prowess, advancing

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1 Jim Wilson, NASA - *Yuri Gagarin: First Man in Space*, https://www.nasa.gov/mission_pages/shuttle/sts1/gagarin_anniversary.html (last visited May 29, 2019).

2 Alan Taylor, 1969, *The Year Apollo 11 Landed on the Moon* - The Atlantic, https://www.theatlantic.com/photo/2014/07/45-years-ago-we-landed-men-on-the-moon/100775/ (last visited May 29, 2019).

military technology and to win the so-called 'Cold-War'.[3] The threat of militarisation of space kept the superpowers, USA and the Soviet Union, in check with their pursuit of appropriation of space.[4] The global consensus was established with the signing of the 'Outer Space Treaty'[5] after a UN resolution was passed to regulate the activity of the realm of man in Space by declaring that Outer-Space is a province of mankind or heritage of mankind thus categorizing it as a 'res-communis' territory incapable of appropriation.[6] The space-faring superpowers agreed to it as they didn't want their rival to control any part of space. However, after the collapse of the Soviet Union a new development took place where private entities started taking interest in outer-space for commercial purpose.[7] This interest is due to the emergence of new technology, concentration of capital necessary to infuse in a space mission in the hands of private individual or entities and also because of the policy of the state like USA.[8] The prospect of exploitation of natural resources of a celestial bodies is immense with astronomical returns as some research

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[3] *Why Did We Go To The Moon*? Seeker (2010), https://www.seeker.com/why-did-we-go-to-the-moon-1765122661.html (last visited May 29, 2019).

[4] Amy Shira-Teitel, *The Outer Space Treaty Promised Peace In Space Seeker* (2013), https://www.seeker.com/the-outer-space-treaty-promised-peace-in-space-1767936768.html (last visited May 29, 2019).

[5] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 18 UST 2410, 610 UNTS 205, 6 ILM 386 (1967). (hereinafter known as Outer Space Treaty/OST).

[6] The Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space, General Assembly resolution 1962 (XVIII) of 13 December 1963.

[7] Monica Grady, *Private companies are launching a new space race – here's what to expect,* The Conversation, http://theconversation.com/private-companies-are-launching-a-new-space-race-heres-what-to-expect-80697 (last visited May 29, 2019).

[8] Andrew Griffin, *It's now legal to own and mine asteroids*, The Independent (2015), http://www.independent.co.uk/news/science/asteroid-mining-made-legal-after-barack-obama-gives-us-citizens-the-right-to-own-parts-of-celestial-a6750046.html (last visited May 29, 2019).

put the valuation of some asteroids to 10,000 quadrillion dollars.[9] To tap into such opportunity, private entities are lining up with their own space missions, even though they are still at a preliminary stage, in the hope of appropriating and exploiting space resources by way of establishing some form of property right aka privatization of space. This development begs several questions which need to be discussed as regulation of activities in Outer-Space is of utmost importance for the development of mankind, given its immense resources and opportunities. Can outer-space be privatised? Should it be privatised? Should outer space be treated as a heritage of mankind? If yes, then how can we create an exploitation model which will be for the benefit for all, including developing countries?

II. Can Outer-Space be Privatized?

Before going into the question of privatisation of outer-space it's important to first understand what is meant by privatisation. Privatisation can be under understood as the transfer of ownership of any kind of resource or business to a private entity.[10] The keyword here is the 'transfer of ownership'. Under property law jurisprudence, ownership denotes to possession of an object and a bundle of rights over that object. These rights are "Right to use, Right to exclude, Right to dispose and Right to enjoy."[11] However, not all objects can be possessed by a private entity and property jurisprudence makes a distinction between the objects capable of possession (res in commercium) and objects incapable of

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[9] Sean Rossman, *NASA planning mission to an asteroid worth $10,000 quadrillion,* USA TODAY, https://www.usatoday.com/story/tech/nation-now/2017/01/18/nasa-planning-mission-asteroid-worth-10000-quadrillion/96709250/ (last visited May 29, 2019).

[10] Mary M. Shirley, *The What, Why, and How of Privatization: A World Bank Perspective*, 60 Fordham L. Rev. S23 (1992).

[11] Will Kenton, *Bundle of Rights: What Everyone Should Kno,* Investopedia, https://www.investopedia.com/terms/b/bundle-of-rights.asp (last visited May 29, 2019).

possession (res extra commercium).[12] The reason for this distinction is that some objects cannot be appropriated or subjected to human control and hence they are outside the realm of commercialisation.[13] This is one of the reasons why the air on earth or the water in the ocean cannot be owned by a private entity, as it is outside the realm of human control. A similar reason exist for the outer space and celestial body, that human control over them was outside the realm of possibility hence they were considered *res extra commercium.*[14] The concept of res communes (common things) is also a subset of the *res extra commercium*. Just like how air that we breathe is a common thing to all or the open oceans, similarly the outer space is also considered *res communes* by several jurists.[15] An argument under property jurisprudence can be made that if, due to development in technology, private entities can exploit the outer-space objects and subject them to human control then they can possess the outer space object. That is why space craft sent to space are always considered the property of the launching state.[16] Similarly celestial bodies like planet, moon or asteroids can be possessed if the private entity puts them under some sort of human control, its similar to an analogy of oceans, for e.g. If you take some amount of water from the ocean and distil it then you own that amount of water. However, even giving way to such a wide interpretation of property law in space, the space as whole can never be owned by an entity as it doesn't have the

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[12] Rafael Domingo, The Law of Property in Ancient Roman Law, SSRN Online (2017), https://papers.ssrn.com/abstract=2984869 (last visited May 29, 2019).

[13] Melville & Robert Dundonald, Manual of the principles of roman law relating to persons, property, and. 202 (1915).

[14] Melville & Robert Dundonald, Manual of the principles of roman law relating to persons, property, and. 208 (1915).

[15] Id.

[16] Article 8, Outer Space Treaty.

quality of an object, and only celestial bodies up to a 'certain limit'[17] or man-made object sent to space can be appropriated.

A. Space Law and Ownership

Space maybe devoid of life but it is not devoid of law and several treaties exist for regulating activities in space. The most important space law treaties are United Nation's '*Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*' or commonly known as 'Outer-Space Treaty 1967'[18] (hereinafter known as OST) and '*Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*' or Moon Agreement 1979.[19] The Outer Space treaty was based on the UN resolution of '*Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*'.[20] Article I of the OST provides that;

"The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any

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[17] i.e. only that portion which can be subjected to human control.

[18] *Supra* note 5.

[19] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1363 UNTS 21; 18 ILM 1434 (1979); 18 UST 2410. (Hereinafter Moon Agreement)

[20] *Supra* note 6.

kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies."[21]

Article I of OST declares Outer-Space including celestial bodies to be a 'province of mankind' thereby denoting a common ownership or res-communes status to it. Further Article I also provides that the use of the outer-space should be done for the benefit of all countries but at the same time it also provides in the second Para of article I that Outer Space will be free to use by all states 'on a basis of equality' and 'in accordance with international law'. The intention of the provision is to provide access to use and explore outer-space to all countries freely and in accordance with the international law. This essentially means that one cannot exclude others from using or explore any part of the celestial body or outer-space. Right to exclude and Right to use are the most important element of ownership and possession but Article I essentially negates such rights in outer space. Article II further declares that outer space including celestial body cannot be appropriated by use, claim of sovereignty or occupation etc.[22] Article VIII states that the ownership and control of the object sent to space lies with the launching/owner of the object, and similar treatment will be provided to the object landed or constructed on a celestial body.[23] Thus, it can be assumed that OST only provide ownership rights in outer-space for only the object sent from earth or constructed in outer-space through human interaction.

It is interesting to note that OST specifically talk about states and their obligation but what about private entities, are they free from any obligation in space from the OST treaty? The answer should be a resounding no,[24] as even the activities of private entities can be said to be

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[21] Article I, Outer Space Treaty.

[22] Article II, Outer Space Treaty.

[23] Article VIII, Outer Space Treaty.

[24] Loren Grush, *How an international treaty signed 50 years ago became the backbone for space law* THE VERGE (2017), https://www.theverge.com/2017/1/27/14398492/outer-space-treaty-50-anniversary-exploration-guidelines (last visited May 29, 2019).

governed by OST by virtue of Article VI which provides that the state will be responsible for activities carried out by national or even non-governmental agencies and puts an obligation upon the state to perform activities in conformity with the provisions of OST, it also puts a responsibility upon the state to regulate the activities of non-governmental entities in accordance with the treaty provisions by providing authorization and continued supervision.[25] So a corporate entity cannot on itself go into outer space and mine asteroid thus appropriating space resource without a specific authorization from the state, but the state cannot give such an authorization as such an act will go against the OST provisions.

The 'Moon Agreement' further reiterates under Article IV that Moon, including other celestial bodies,[26] shall be the province of all mankind and exploration and use of such bodies should be for the benefit and interest of all countries.[27] The most important Article in moon agreement, from the perspective of space ownership is article XI which provides that moon's resources is a common heritage of mankind, and cannot be appropriated.[28] Para 3 of Article XI specifically forbids any property rights to a state or non-state entities over surface, subsurface, or any part thereof or natural resources in place of a moon or other celestial bodies. Para 5 of Article XI further puts obligation on the state parties to establish an international regime for the purpose of exploitation of space resources based on the principle of equitable sharing of benefits derived from those resources with special consideration to developing countries.[29] However, it's important to note that 'Moon Agreement' has been rejected by most of the major space faring nation and some jurists

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[25] Article VI, Outer Space Treaty.

[26] Moon includes other celestial bodies in solar system, Article I, Moon Agreement.

[27] Article VI, Moon Agreement.

[28] Article XI, Moon Agreement.

[29] Para 7, Article XI, Moon Agreement.

consider it a failed treaty but nonetheless important from an international law perspective.[30]

Similarly, the principle that use of Outer-space should be for the benefit and interest of all mankind, that outer-space cannot be appropriated and its free for use and exploration by all states on basis of equality finds mentions in the UN resolution proclaiming 'Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space'.[31]

Considering the above legal provisions, it is safe to assume that private ownership of space or its resources is forbidden under the International Space Law framework.[32] The question of private property in space under International Law also doesn't exist as there is no sovereign in space and without a state granting title to the private entities, such rights are impossible to exist for want of enforcement.[33] However, even if private property rights don't exist but technically certain other ancillary rights can exist, and one of the important one is the 'Right to Use' by virtue of Article I of OST.[34] Article I provide the right of access and use to all states with a condition that it's use is *erga omnes*. It can be argued that, the use of the statement 'for the benefit of mankind' in OST is vague, but still it has acquired the characteristics of peremptory norm under International law.[35] So, private entities can 'use' resources in outer

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[30] USA and other major nations did not sign the moon treaty; Michael Listner, *The Space Review: The Moon Treaty: failed international law or waiting in the shadows?* THE SPACE REVIEW, http://www.thespacereview.com/article/1954/1 (last visited May 29, 2019).

[31] *Supra* note 6.

[32] Matthew Hytrek, *Property Rights in Current Space Law: A Hindrance to Space Exploration*, 39 Whittier L. Rev. 90 (2018).

[33] Article IV, Outer Space Treaty; Ilie Marian, *The Status of Property Rights in International Space Law*, 4 Contemp. Readings L. & Soc. Just. 306 (2012).

[34] Cestmir Cepelka, et al., *The Application of General International Law in Outer Space*, 36 J. Air L. & Com. 30 (1970).

[35] Id.

space if authorised by the national governments provided that such use is for the 'benefit of the mankind' and for 'peaceful purpose', but it cannot extend to appropriation of resources as it will be tantamount to exclusion, which will go against the principle of free access to all.[36]

III. Should Outer Space be Privatized?

Outer Space is considered as the 'province of mankind' and privatizing it may seem controversial.[37] However, if we are to give due consideration to the economic philosophy of laissez faire approach then privatizing outer space seems like logical conclusion.[38] Proponent of capitalistic ideology argues that existence of private property leads to prosperity, innovation and the success of all western countries is due to the protection of private property.[39] Similarly the existence of private property in space will lead to private investment in space industry and unprecedented growth.[40] That is one of the reason why they are in favor of property rights in outer space on the basis of first use or discovery, essentially if you can claim the property for yourself by first use then you can get exclusive property rights over it.[41] Some portray the development of property rights in space to the era of colonialism, where western

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[36] Id.

[37] Gbenga Oduntan, *Who owns space? US asteroid-mining act is dangerous and potentially illegal* THE CONVERSATION, http://theconversation.com/who-owns-space-us-asteroid-mining-act-is-dangerous-and-potentially-illegal-51073 (last visited May 29, 2019).

[38] Timothy D. Terrell, *The Privatization of Space Mises Institute* (2012), https://mises.org/library/privatization-space (last visited May 29, 2019).

[39] Kurt Anderson Baca, *Property Rights in Outer Space*, 58 J. Air L. & Com. 1041 (1993).

[40] Id.

[41] Id.

colonial nations occupied territories across the world, as a good example of how privatization of space will look like, which will lead to more prosperity for the world and mankind. However, such an argument conveniently ignores the misery and subjugation, if not wars and strife, which was present due to colonialism. It can also be argued that we are giving undue importance to the debate of private property, as it is the lack technological development which is stopping the mankind from exploiting the space.[42]

Another argument from the Global South that can be made against the privatization or appropriation is inequality that exists in the world. There are only few countries that have the technology and economy to conduct a space program. Outer Space treaty specifically says that any use and exploration should be done in the interest of the all countries, including developing countries.[43] Similarly, there is a provision for equitable use and sharing of resources of celestial bodies for the developing countries under the moon agreement.[44] The reason for this provision can be understood from a global justice perspective where large numbers of state were pillaged or subjugated hence they couldn't be economically strong and now cannot take part in space ventures due to lack of capital and technology. Thus, it will be wrong to leave them behind. However, with the introduction of private property in space, it will become almost impossible for the developing or under-developed countries to use space for their own benefit as by the time they are able to conduct any space venture, most of the resource rich celestial bodies would already have been claimed by the technologically and economically strong (and mostly western) states, leaving nothing for the majority of the countries.[45] Thus, a new cycle of inequality will be

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[42] Michael C. Mineiro, The Development of Outer Space: Sovereignty and Property Rights in International Space Law, 35 Annals Air & Space L. 457 (2010).

[43] Article I, Outer SpaceTreaty.

[44] Article XI, Moon Agreement.

[45] Ezra J. Reinstein, Owning Outer Space, 20 Nw. J. Int'l L. & Bus. 59 (2000).

created where the haves (states with technology) will exploit the resource rich space and have not (developing or under-developed) will be left far behind in poverty.[46]

A. Role of Sovereignty

One of the important questions in outer space regarding private property is that there is no sovereign who controls it, and no country can appropriate outer space or celestial bodies for themselves.[47] If private property is to be created in outer space then a sovereign body needs to be established who can enforce such property rights. Unilateral action of state on earth cannot allocate private property to their citizens[48] and reason can be found in one Latin maxim '*Nemo dat quod non habet'*, one cannot give something which they do not own.[49] States don't have any titles in outer space or celestial bodies and thus they cannot allocate these titles to their citizens in the form of private property.[50] However it would be wrong to assume that state don't have any sovereignty in space, they can still exercise jurisdiction over the craft or something constructed in outer space. They also have jurisdiction over the personnel operating these crafts in outer space.[51]

B. Perils of Privatization: Militarization

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[46] Id at 64.

[47] Cestmir Cepelka, et al., The Application of General International Law in Outer Space, 36 J. Air L. & Com. 30 (1970).

[48] Id.

[49] Balavar, *The Doctrine Of Nemo Dat Quod Non Habet And Its Exceptions*, Journal of Applied Environmental and Biological Sciences (2014).

[50] Supra note 47.

[51] Hertzfeld, Henry R. and von der Dunk, Frans, *Bringing Space Law into the Commercial World: Property Rights without Sovereignty,* Space, Cyber, and Telecommunications Law Program Faculty Publications 15 (2005).

Militarization of space is prohibited under the Outer Space Treaty and for a good reason, as it can lead to a disruption of world peace. Outer space treaty also outlaws any military installation and deployment of weapons of mass destruction in space.[52] However, the logical end of private property in space will be militarization of space.[53] Private property is exclusionary in nature, and for enjoyment of private property its enforcement is necessary. If Outer space is allowed for appropriation it can lead to situation where every country or corporation through their country would like to stake a claim. Even unilateral action of certain space faring nations can lead to such a scenario. In that circumstance, it's natural to assume that conflict of interest will occur and states will scramble to save their interest by deploying military assets in space. The creation of 'US Space Force' is only a precursor to such a development.[54] While establishing US space force, Vice-President Mike Pence proclaimed that the objective of Space force was to protect 'American way of living and Private Property". [55] Let's think of a scenario in future where a very resource rich asteroid is found and several states or corporation through their states are claiming it to be their own property. Let say that one state lands at that asteroid and occupy it, but other state also wants to exploit it. Naturally, why would anyone respect the claim of another state or corporation in outer space, unless such a claim is backed by a military threat? Consequently, unregulated appropriation and creation of private property will lead to militarization of space, where the

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[52] Bin Cheng, The Legal Status of Outer Space and Relevant Issues: Delimitation of Outer Space and Definition of Peaceful Use, 11 J. SPACE L. 89 (1983).

[53] Clive Thompson, *The Minerals Found in Asteroids and Faraway Planets Could Be Worth Trillions. Who Gets to Mine Them?*, WIRED, 2016, https://www.wired.com/2016/01/clive-thompson-11/ (last visited May 29, 2019).

[54] Jeremy Rehm , Spaceflight, *What Is the U.S. Space Force*? Space.com, https://www.space.com/42089-space-force.html (last visited May 29, 2019).

[55]Pentagon, *Remarks by Vice President Pence on the Future of the U.S. Military in Space*, The White House, https://www.whitehouse.gov/briefings-statements/remarks-vice-president-pence-future-u-s-military-space/ (last visited May 29, 2019).

philosophy of 'might makes everything right' will reign, and such a situation is not in the best interest of world peace and mankind.

C. Unilateral Actions: USA and Luxembourg

In 2015, USA passed the 'US Commercial Space Launch Competitiveness Act", shortly known as SPACE Act (Spurring Private Aerospace Competitiveness and Entrepreneurship).[56] The objective of the act was to provide regulatory mechanism to the private corporations interested in space exploration by incorporating private players in its space ventures, and also set out a legal regime for private player interested in asteroid or space mining. The most important element of this act is under title IV: Space Resource Exploration and Utilization Act of 2015.[57] Under section 51302 of this act, US will facilitate the 'commercial' recovery of space resource and will also protect such a recovery from outside 'harmful' interference.[58] Further, section 51303 provides that;

"A United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States."[59]

The unilateral proclamation by the USA through the above provision is a very radical departure from its International obligation.

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[56] Frans von der Dunk, *The US Space Launch Competitiveness Act of 2015*, Jurist, https://www.jurist.org/commentary/2015/11/frans-vonderdunk-space-launch/ (last visited May 29, 2019).

[57] Space Resource Exploration and Utilization Act of 2015, Public Law No: 114-90 (11/25/2015).

[58] Id.

[59] Section 51303, *id*.

USA is allotting the title of space resource to US citizen based on their exploitation of that resource. This provision go directly against the outer space treaty where national appropriation is outlawed and principle of free access to all the nation is fundamentally established whereby any commercial appropriation will lead the violation it. Further, the provision under section 51302(a)(3) which provides that US will protect the its citizens from any 'harmful interference' and it can be interpreted as proclamation of 'exclusionary zones' for the protection of private property. Outer Space treaty forbids such exclusionary zones because it violates the principle of free access to outer space. Though, under section 403 this act, US proclaims that it is not asserting any claim of sovereignty or sovereign or exclusive rights or jurisdiction over, or the ownership of, any celestial body.[60] However, such a provision seems contradictory in nature since in another provision US is providing title over space resources to its own citizen and also proclaiming exclusionary zones.

Similarly, Luxembourg also passed a Space Law which provides for the appropriation of the space outer space resources by private entities under Article I.[61] Furthermore, the Luxembourgian space law provides under Article 4 that any private entity incorporated under the Luxembourg law is capable of appropriating space resources.[62] This provision is in stark contrast with the SPACE act of USA which only recognizes private entities owned by its natural citizens to be capable of appropriating space resources under it. The implication of such a

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[60] Section 403, *supra* note 56.

[61] Article I of Space Law, https://gouvernement.lu/dam-assets/fr/actualites/communiques/2016/11-novembre/11-presentation-spaceresources/Draft-law-space_press.pdf (last visited September 11, 2019)

[62] Article IV, *Id*.

provision may lead to creation of 'safe-haven' in Luxembourg for any private entity interested in appropriating natural resources.[63]

Arguably, SPACE Act and Luxembourgian Space Law is an open invitation of militarization of space, as more and more countries will take unilateral action by passing national legislation to protect their interest in space thus threatening the international space law regime based on non-militarization and common heritage of mankind principles. This will create a 'wild west' in space where everyone will compete with each other to hoard away as much as possible, and this may include states, corporations etc.[64] The intention of these legislation seems to threaten the International Space Law regime as it has become a hurdle in its way for the exploitation of space.[65]

IV. Heritage of Mankind: finding a model for resource exploitation

The emergence of private corporations in space exploration and their interest in space resource exploitation presents a challenge in front the international space law regime. It can be argued that the role of private space players can be positive as it can led to more investment, research, innovation and commercialization which will benefit the mankind as a whole[66] but at the same time unregulated

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[63]Laurent Thailly & Fiona Schneider, The Luxembourg Space Law | Ogier Ogier.com (2019), https://www.ogier.com/news/the-luxembourg-space-law (last visited Nov 3, 2019).

[64] Vidya Sagar Reddy Avuthu, ComLaurent Thailly & Fiona Schneider, The Luxembourg Space Law | Ogier Ogier.com (2019), https://www.ogier.com/news/the-luxembourg-space-law (last visited Nov 3, 2019).
mercial space mining: Economic and legal implications ORF, https://www.orfonline.org/research/commercial-space-mining-economic-and-legal-implications/ (last visited May 29, 2019).

[65] Matthew Hytrek, Property Rights in Current Space Law: A Hindrance to Space Exploration, 39 Whittier L. Rev. 90 (2018).

[66] Doris Elin Salazar 2018-10-12T11:01:20Z Spaceflight, How Will Private Space Travel Transform NASA's Next 60 Years? Space.com, https://www.space.com/42113-nasa-future-private-spaceflight.html (last visited May 29, 2019).

commercialization or privatization of space may also lead to mayhem and creating a 'wild-west' in space with its militarization and such a scenario has to be avoided.[67]

Outer space is categorized as res-communes and a 'heritage of mankind' under the International Space Law. The concept of 'heritage of mankind' is not a new concept applied to outer space. This concept is already in use its application to the high seas and seabed where no nation can claim sovereignty over them as they belong to all of the mankind.[68] There is a stark similarity between Oceans on earth and outer space as both cannot be appropriated as a whole and no country can claim them for itself.[69] Considering that, it's logical to learn from the lessons of UNCLOS[70] and applying these principles to the outer space for a peaceful regulation of the exploitation activities.[71] However, 'Open Sea' concept gives the freedom of navigation and to exploit the fishing stocks in the high seas and thus such a principle cannot be applied in outer space for the reason that fish stocks are biological resources and can be replenished and same cannot be said about the outer space resources hence the analogy with Open ocean may fail.[72] The model of

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[67] Supra note 61.

[68] John Noyes, *The Common Heritage of Mankind: Past, Present, and Future*, *Denver Journal of International Law & Policy* 40, 447 (2011).

[69] Prue Taylor, The Common Heritage of Mankind: A Bold Doctrine Kept Within Strict Boundaries | The Wealth of the Commons, http://wealthofthecommons.org/essay/common-heritage-mankind-bold-doctrine-kept-within-strict-boundaries (last visited May 29, 2019).

[70] United Nations Convention of Law of the Sea, 1833 UNTS 3; 21 ILM 1261 (1982). (hereinafter UNCLOS).

[71] Thomas, Jonathan C. "Spatialis Liberum." Florida Coastal Law Review. Vol. 7. 579 (2006).

[72] Senjuti Mallick and Rajeswari Pillai Rajagopalan and Senjuti Mallick, If space is 'the province of mankind', who owns its resources? ORF, https://www.orfonline.org/research/if-space-is-the-province-of-mankind-who-owns-its-resources-47561/ (last visited May 29, 2019).

International Seabed Authority (ISA)[73] which regulates the deep seabed mining and is the closest one that can be used to regulate the activities in space without creating friction and conflict. We have proven principle and legal theories in ISA which are working well and accepted by a large majority of countries, and there is a need to adopt these legal principles for the regulation of space resource exploitation.

A. International Seabed Authority Model

International Seabed Authority is established to regulate the use of seabed for resource extraction and mining.[74] Like open ocean, the seabed is also considered as the common heritage of mankind.[75] Part XI of UNCLOS also proclaims that no State can claim sovereignty over the seabed and all the rights over seabed belongs to mankind, and whose behalf the ISA will act.[76] It further forbids the alienation of resource from seabed, other than the authorization of the ISA, nor can any state claim any rights over the extracted resource unless it's done according to the provisions of UNCLOS.[77] The ISA fulfils its function of providing a benefit to mankind by equitable sharing of financial and other economic benefits,[78] and also, is instrumental in protecting the interest of the developing countries by facilitating 'transfer of technology' so that even the poor countries can participate in resource extraction and such steps can lead to the development of mankind as a whole. Essentially, this model of resource extraction allows for the private appropriation, with

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[73] Erik Franckx, The International Seabed Authority and the Common Heritage of Mankind: The Need for States to Establish the Outer Limits of their Continental Shelf, 25 The International Journal of Marine and Coastal Law 543–567 (2010).

[74] Part XI, UNCLOS.

[75] Article 136, UNCLOS.

[76] Article 137, *id*.

[77] Article 137, *id.*

[78] Article 140, *id.*

the authorization of ISA, but with the condition that it leads to the sharing of the benefits as the resources are heritage of mankind.[79] A similar model, if applied in outer space can work as it provides the appropriate balance between several interests to keep militarization or conflict away but at the same time ensures that private entities have a role in the development of space frontiers as they can still keep heft amount of profit to themselves, while the benefits are getting shared among all the countries in an equitable manner. The Moon agreement also proposes the regulation model based on an equitable sharing of benefits and ISA is the best candidate to fulfill that condition.[80] The ISA inspired organization can work under the aegis of United Nations Committee on the Peaceful Uses of Outer Space (COPOUS) or it can be an independent body. Such an organization can provide charter-based rights for resource extraction from outer space and put a legal obligation on the basis of sharing the benefit, best proposal to recover and environmental regulation to prevent wastefulness.

V. Conclusion

We are living in a capitalistic era but it would be wrong to assume that it's the ultimate economic ideology for human society. However, reality cannot be set aside for a hypothetical future, and the important role that private corporations can play in outer space cannot be denied. Unilateral action of US or any other country for privatization of outer space will only lead to conflict, even if we ignore that such actions are violating international law. It needs to be accepted that current legal regime is inadequate for the purpose of space resource exploitation as it lacks clarity. However, instead of unilateral action, a global governance model based on the principle of equity and 'benefit of the mankind' has

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[79] Jonathan Sydney Koch, *Institutional Framework for the Province of all Mankind: Lessons from the International Seabed Authority for the Governance of Commercial Space Mining*, 16 Astropolitics 1–27 (2018).

[80] Article XI, Moon Agreement.

to be developed.[81] Space belongs to all of the mankind, it's not a property of one nation and hence state practice of one nation cannot decide the future for all of us. The Global governance model should be developed through international consensus, as the future of all the countries is at stake. In the 57th session of UNCOPUS held in 2018, one of the agenda of debate was consideration of potential legal model for activities in the exploration, exploitation and utilization of space resources.[82] One of the best potential models for the governance of outer space is the ISA, which has been discussed above. It is the best balance between exploitation of resources, respecting the role of private entities, but at the same time protecting the interest of the all of the mankind including developing and underdeveloped nations. Obviously, ISA cannot be transplanted as it is to the outer space and it has to be *sui generis* in nature, but outer space model of governance can be greatly inspired by the principle followed under ISA. Such a model can be the only way to ensure the International peace, prosperity and demilitarization of space.

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[81] Supra note 69.

[82] 'General exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources', Report of the Legal Subcommittee on its fifty-seventh session, held in Vienna from 9 to 20 April 2018, United Nations General Assembly.