

# CONTENTION ON SPACE COMMERCIALIZATION

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## ABSTRACT

States with advanced space technologically support are always at the center of advancing and protecting their national interests in various international forums to continue the “commercialization” of outer space. On the other hand, developing countries are still focused in their effort to achieve prosperity and secure jobs for their citizens. As time goes by, commercial activities in telematics, remote sensing, space transportation, space industry, space insurance, and space tourism continue to develop.

This study used current legal regulation on space treaty supported by review of literatures. To ensure new world order which is just and based on the spirit of humanity, a re-arrangement of international law is needed through international dialogues and cooperations so that the development of space activities can benefit all mand kind.

**Keywords :** Contention, space commercialization, international law.

## I. INTRODUCTION

It is common for developed states with very advanced technological support to always be at the forefront in protecting their national interest in various international forums in the past or at present in the subject of commercialization of space. Space commercialization<sup>1</sup> here is defined as a series of continued, systematic, measurable, economically viable endeavors in relations to space exploration and use. On the other hand, developing countries, with all their limitations, are more focused in improving prosperity and seeking for breakthroughs and opportunities to provide for their citizens in order to survive.

This seemingly opposite picture becomes even clearer on the different interpretations of 1967 space treaty, initially proposed by UNCOPUOS (United Nations Committee on Peace Uses of Outer Space). The 1967 Space Treaty is the quintessential reference of international law on the use and exploration of outer space, including the Moon and other celestial bodies. Countries with potential technological edge has a clear advantage in becoming the first to benefit from space use and exploration, with the rest of the world being “follower” countries.

The direction and development of space activities, which was initially geared towards research and development, has seen a shift into unlimited practical utilization of space for commercial endeavors in recent years. Along with the increasing commercial activities in space, other industries have also seen rapid developments in correlation with space exploration and use, including telematics, remote sensing, transportation, industry, mining, insurance, tourism and many more. To ensure that space commercialization is legal and safe, and that such activities improve the welfare and values of humanity, there needs to be adequate rules and regulations. These legal regimes must be able to anticipate legal issues that may arise from the commercialization of space.

The contemporary exploration and exploitation of space are clearly different from the ones made in the 1970s. In the past, space law regime was still in its infancy. Space exploration and use has become an inseparable part of human lives in many aspects, be it politics, social, economics, security and defense. It has become so advanced that the original legal regime on space use and exploration may no longer be adequate, that a new regime is needed.

Although the core principles of 1967 Space Treaty has laid the cornerstone in the regulation of space use for the benefit of all mankind and for peaceful purposes, in reality

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<sup>1</sup> Agus Pramono, *Komersialisasi Ruang Angkasa Reintepretasi Space Treaty 1967* (Pustaka Zaman, 2014) pg. 1

many states are still weary on the possibility of using space for military purposes, which is diametral to the purpose of peace.

The focus on this discussion will be to give a general description on the use and exploration of outer space and to challenge the adequacy of current legal regulation, of which the advancement of space technology and global demand may have outpaced.

## **II. METHODOLOGY**

This study is based on the research in the currently applied space law supported by relevant literature studies.

## **III. DISCUSSIONS AND RESULTS**

### **A. A General Description of Exploration and Use of Outer Space**

The regulation of outer space was instituted soon after the launch of Sputnik 1, an artificial satellite made and launched by the USSR, on October 1957. United Nations General Assembly issued a resolution on November 14<sup>th</sup> 1957,<sup>2</sup> of which objective is to regulate matters on weapons non-proliferation and to emphasize the importance of international cooperation in research in space object launch and to ensure that such endeavors are solely made for scientific and peaceful purposes.<sup>3</sup>

To understand the narrative on the direction and development in the use of outer space, we need to understand how various space activities came to be commercialized. This knowledge will give context on further analysis on this discussion, particularly on many of the relevant legal aspects. According to Ida Bagus Rahmadi, space activities which show great prospects are:<sup>4</sup>

#### **1. Telecommunications**

The commercialization of space activities in telecommunications began when COMSAT ("Communication Satellite Company") was founded in the United States in 1962, which was followed by the coming of INTELSAT ("International Telecommunications Satellite Organization"), which were meant to operate global communication satellites systems commercially. The formation of INTELSAT was then followed by the establishment

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<sup>2</sup> UNGA Res. 1146 (XII)

<sup>3</sup> Christol, Crl Q, *The Modern International Law of Outer Space*, Pergamon Press, USA, 1982, pg.13

<sup>4</sup> Ida Bagus Rahmadi Supancana, *Peranan Hukum dalam Penerbangan Kedirgantaraan*, Bandung: Mitra Karya, 2003, pg. 154-160.

of INMARSAT, in which early at its operation provided communication services for the maritime and search-and-rescue community. In its development, INMARSAT expanded its services to include global “mobile communication”. There are also consortiums of satellite service providers which serves specific regions, such as EUTELSAT, ARABSAT, as well as national systems services providers such as PALAPA and AUSAT. Nowadays, commercialization of communication satellite services is often carried out by private or non-governmental entities.

## **2. Space Transportation**

Increasing space traffic is a logical consequence of the development in space commercialization. Space transportation covers activities such as satellite launch / orbital placement, construction of space industry installations, in-space satellite reparations and maintenance, space stations supply replenishment, space tourism or even space accommodations.

In line with the development of space flight, we have also seen developments and deployments of more and more space crafts, from conventional rockets such as the Delta (McDonnell-Douglas), the Titan (Martin Marietta), the Atlas Centaur (General Dynamics), the Long March (Great Wall Industries), and the Ariane (Arianespace) to space ships such as the Space Shuttles (USA), the Buran (ex-USSR). Recent development also gave birth to new aero-space planes such as the Hotol-Antonov (UK and ex-USSR), the Saenger (Germany), the Hermes (ESA), the Star H (France), the HOPE (Japan) and National Aerospace Plane (USA).

## **3. Remote Sensing**

The commercial prospect and activities of remote sensing in space is noticeable, considering the benefits which can be taken from such activities. Remote sensing in space allows mapping, terrestrial resources detection, agriculture, city planning and forest conservation, natural disaster prevention and many more. It is vital for the development effort of any government, particularly those of developing states.

## **4. Space Manufacturing**

Along with the development of commercialization in space activities in other fields mentioned above, manufacturing also shows good prospect. The German company MBB SPA-OI (Messerschmitt-Bölkow-Blohm), for example, has developed “an automated, retrievable space factory” which will be leased to private companies for remote sensing or

mineral processing purposes. Japanese NASDA (National Aero Space Development Agency) has studied the possibility of manufacturing in space as well.

Space programs were initially run almost exclusively by a handful of state with minimal private entities participation.<sup>5</sup> It was thought that these programs were far too important for national security and pride to be awarded as contracts to the private sector. However, eventually the economic viability and issues in capital acquisition as well as risk assessment of the use of space outweighs such reasoning to keep private entities out of the play. This leads to gradually increasing participation of private companies in global space industries. In 2009, the total earning figure from global space industries (including satellite manufacturing, launching, services, and other supporting service) was recorded at 2.62 billion dollars, which was a much higher figure than global spending for space use for military purposes at the same year.<sup>6</sup>

Space privatization has become a vital component of global economy, due to the benefits that traditional satellite communication services and the input by which this industry has made on a global scale in the last decade. New commercial fields, such as commercial space transportation which has been developed, has become a prominent element for activities which are very dependent on the use of space, such as spaceport navigation systems and space tourism. Navigation systems will become the next pillar in the commercialization of space. Indeed, this development is the result of the development and demand of global community as mentioned in the 1967 Space Treaty. All international treaties fall into the category of public law.<sup>7</sup>

In the United States, the biggest market of launch services, space transportation was initially held by the government in a monopolistic manner. In the beginning of 1980s, difficulties in keeping with the increasing demands slowly phased out unmanned launches and the failure of space programs to reduce cost and add launch frequency opened the opportunity for European Aerospace Consortium to participate in space programs as a shareholder.<sup>8</sup>

In 1984 Commercial Space Launch Act was formally established. This law regulates clearance and insurance requirements for the first time, and enables the government to accelerate the development of American commercial space ports industries. This act also

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<sup>5</sup> See Harold W. Bashor, dalam *Annals of Air and Space Law*, McGill University, Canada 2007 pg 166-167

<sup>6</sup> *Ibid*

<sup>7</sup> Priyatna Abdurrasyid, *Mata Rantai Penerbangan Ilmu Teknologi dan Hukum Dirgantara Nasional Indonesia*, Jakarta, Hikayati Aneska, 2011, pg. 119

<sup>8</sup> See Yun Zhoo in *Annals of air and Space Law*, McGill University, Canda, 2007, p.

allows the United States government to enter into international negotiations to support fair competition in launch services.<sup>9</sup>

## **B. Criticisms on Legal Regulations on Space**

Since the activities are international in nature, international law *prima facie* applies. As it stands now, there are five international space treaties in place, namely, 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); the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space 1968 (Rescue Agreement); the Convention on International Liability for Damage Caused by Space Objects 1972 (Liability Convention); the Convention on Registration of Objects Launched into Outer Space 1975 (Registration Convention); and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies 1979 (Moon Agreement). The Outer Space Treaty is deemed to be the “Constitution” of outer space as it lays down certain principles that are regarded as rules of customary international law.<sup>10</sup>

The five international space treaties were, however, drafted at a time when space activities were solely within the province of the States. The treaties were not intended for private commercial activities in space & Speaking on the emerging aerospace transport, authors Jakhu and Nyampong state that “no international space treaty specifically and effectively regulates space safety<sup>11</sup>.” While the statement was specifically made in relation to aerospace transportation, it appears to be true and applies with equal force to commercial space activities in general<sup>12</sup>. The same authors state further that the “current international space treaties are insufficient for current and future space utilization needs.”

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<sup>9</sup> *Ibid*

<sup>10</sup> Ram S. Jakhu & Yaw Otu M. Nyampong, *International Regulation of Emerging Modes of Space Transportation*, SPACE SAFETY REGULATIONS AND STANDARDS 220 (Joseph N. Pelton & Ram S. Jakhu eds. 2010). The principles include: '(a) that the exploration and use of the outer space must be carried out for the benefit and in the interests of all mankind; (b) outer space and celestial bodies are free for exploration and use by all States on the basis of equality and in accordance with international law; (c) outer space and celestial bodies are not subject to national appropriation by any means; (d) States party to the Treaty are obliged not to place in orbit around the Earth any objects carrying nuclear weapons or any other kind of weapon of mass destruction; and (e) in the exploration and use of outer space, States are to be guided by the principle of cooperation and mutual assistance and must conduct all their space activities with due regard for the corresponding interests of other States.”

<sup>11</sup> Jakhu & Nyampong, *supra* note 13, at 222

<sup>12</sup> Sylvia Ospina, *International Responsibility and State Liability in an Age of Globalisation and Privatisation*, 27 ANNALS AIR & SPACE L. 479, 491 (2002) (“The texts of the outer space treaties have not been amended since they were first drafted in a context that is very different from to-day's socio-economic and political contexts. Whereas before a very limited number of States were involved in space activities, today a growing

Whether the international legal framework is sufficient to deal with commercialization of space activities would prima facie depend on the nature of the activity concerned and the international law, if any, that applies to it. This article is, therefore, intended to examine a number of space activities and the legal issues and implications that arose or might arise from their commercialization. While it would be beyond the scope of this article to examine every feasible issue, this article will examine certain select issues and the impact of commercialization thereof. Namely it will examine “orbit hoarding,” remote sensing, and space mining before concluding with some remarks on the militarization of outer space.

The use of satellites has become virtually indispensable in our daily lives. Their uses may be found in banking, global positioning systems, meteorological services, satellite broadcasting, satellite communications, rescue services, and many others.

However, to have such applications, one has to launch satellites into space and place them in the relevant orbits.<sup>13</sup> The significance of satellites to global telecommunications is witnessed in the UN Resolution 1721 (D), which unanimously declares that satellite telecommunication services should be made available on a global and nondiscriminatory basis<sup>14</sup>. To operate satellite telecommunication, one needs radio frequencies. Both radio frequencies and geostationary earth orbital positions are, however, limited natural resources, as explicitly recognized in the International Telecommunication Union (ITU) Constitution: “Member States shall bear in mind that *radio frequencies and any associated orbits*, including the geostationary-satellite orbit, are *limited natural resources* and that. . . countries . . . may have *equitable access* to both, taking into account *the special needs of the developing countries and the geographical situation of particular countries*.”<sup>15</sup>

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number of States and corporations have launch capabilities, and incentives to venture into a variety of space activities, including 'tourism' or space flights paid for by private parties.”)

<sup>13</sup> Jakhu, *Legal Issues*, supra note 7, at 72. (“There are several orbits from where a satellite can operate. The geostationary orbit (GEO) is the most preferred and used orbit. The 24-hour 'visibility' of a satellite in GEO makes it uniquely advantageous for telecommunications and certain other services. Other orbits, such as Low Earth Orbit (LEO) and Medium Earth Orbit (MEO), have been used for telecommunication satellite constellations, reconnaissance, early warning, science, and other purposes.”)

<sup>14</sup> G.A.Res. 1721 (XVI) (Dec. 20, 1961)

<sup>15</sup> Int'l Telecomm Union Constitution art. 44.2 [hereinafter ITU Constitution, <http://www.itu.int/en/histo17/HistoryDigitalCollectionDocLibrary/contitutionsConventions/5.12.6Len.100.pdf> [<https://perma.cc/A95J-VNNU>] (“In using frequency bands for radio services, Member States shall bear in mind that *radio frequencies and any associated orbits*, including the geostationary-satellite orbit, are *limited natural resources* and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have *equitable access* to those orbits and frequencies, taking into account *the special needs of the developing countries and the geographical situation of particular countries*.”) (emphasis added); see also Int'l Telecomm. Union, Radio Reg. pmb1. (2012) [hereinafter ITU RR].

With more economic development, particularly in the developing countries, there has been more demand for instantaneous, satellite-based communications. This may be seen in such countries as China, India and Indonesia which have large populations. Satellite based communication have a number of advantages over land-based infrastructure, particularly in terms of costs and mass coverage. The term “equitable access” is not defined in the ITU Constitution. However, some of the provisions therein suggest that the special needs of developing countries and the geographical location of certain States must be considered when allocating and utilizing orbital positions and radio frequencies. The provisions also suggest that member States may have equitable access only in conformity with the ITU Radio Regulations (ITU RR).<sup>16</sup> Due to the difficulties associated with any amendment of the ITU RR, equitable access has been affected in relation to some allotment plans only.

Radio frequency spectrums can be considered as exploitable natural resources in space. Although there are several reasons which support its public availability of such resources, few discussions and conclusions on the Space Treaty challenge the influence of *res communis* principle in the matter, which allow general opportunities and greater coverage in the exploration and use of an area and the resources in it.<sup>17</sup> At the same time, it can be seen in the Article II of the Space Treaty that the principle of *res nullius* is rejected. Furthermore, international practices on this matter up until now have been based on the *res communis* principle.<sup>18</sup> Another argument which is based on Article II of the Space Treaty uses similar emphasis to that of the “space, the Moon and other celestial bodies”. If natural resources not assumed to be within the definition of this expression, then any application of prohibition which is attached to Article II of the Space Treaty in granting the exploitation rights to such resources would be an excessive measure. It is for these reasons that the excavation of natural resources for commercial purposes by states must be allowed by and based in Article I and II of the Space Treaty.

Furthermore, it can be stated that the same applies to activities run by private entities and intergovernmental organizations internationally. In accordance to Article VI which states that the first and second sentence in the Space Treaty, states can be held liable in an international court for any activities by them or their citizens in the use of space. In relation to this, it is commonly accepted that what is meant by “freedom” in the Space Treaty

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<sup>16</sup> Ranjana Kaul, *Control of Space Assets-Ethics in Diplomacy dalam Annals Air and Space Law*, McGill University, 2006, p. 450-451.

<sup>17</sup> *Ibid*



also extends to non-governmental or private entities. Article VI of the Space Treaty states that:

*Article VI*

*States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.*

The third sentence from which liability is derived in the Space Treaty states that for “activities” in the outer space by intergovernmental organizations, the responsibility of such activities is held by both the state and the entity involved. Moreover, all the requirements of the treaty apply to activities of both the intergovernmental organization and the states involved, as stated in Article XIII of the Space Treaty:

*Article XIII*

*The provisions of this Treaty shall apply to the activities of States Parties to the Treaty in the exploration and use of outer space, including the moon and other celestial bodies, whether such activities are carried on by a single State Party to the Treaty or jointly with other States, including cases where they are carried on within the framework of international intergovernmental organizations.*

*Any practical questions arising in connection with activities carried on by international intergovernmental organizations in the exploration and use of outer space, including the moon and other celestial bodies, shall be resolved by the States Parties to the Treaty either with the appropriate international organization or with one or more States members of that international organization, which are Parties to this Treaty.*

Therefore, essentially the use of space is allowed for both private entity and intergovernmental organizations, and the commercial use and exploration of natural resources in space is eligible by law, including extraction of mineral and other resources.

Article II of the Space Treaty put forth limitations on the use of outer space, which does not allow national appropriation. Article I, paragraph 1 of the Outer Space treaty states that any form of the use of space must be done for the benefit and the interest of all mankind. It states that:

### *Article I*

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

*There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation.*

### *Article II*

*Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means*

Pursuant to Article I, paragraph 1, of the Outer Space Treaty, an attempt to explore and use outer space must be done in accordance to the interest of all states. This means that there is a clear limit that space and all objects within belongs to all mankind, and all or any part of it cannot be claimed by a state. Every claim of sovereignty or occupation by force from a state is an action against global interest.

Article II of the Space Treaty states that space, including the Moon and all other celestial bodies, cannot be the subject of national appropriation or claim of sovereignty by means of use, occupation, or any other way. The idea of national claim is derived from traditional domestic law instead of international law.

As stated in Article XXXI of 1969 Vienna Convention, general meaning takes precedent than domestic law definition in the interpretation of laws. This notion is highly related to the nature of international laws. Article II of the Space Treaty explains further on the concept of appropriation as an idea derived from domestic laws. A number of accounts clearly prohibits the established right of states to claim an area of space or the resources within it. Furthermore, the expression “..by any other way...” may point to the claim of private rights by ways other than use or occupation. This seems to be at least possible that Article II Space Treaty covers legal rights in private and public, which relate to areas from space and especially space objects. However, this interpretation is still open for debate.

Therefore, the function of Article II Space Treaty becomes very clear when viewed together as relevant provisions. Whereas Article I, paragraph 1 of the Space Treaty allows

each country to use space and openly commercial use of such use by other countries, Article II strengthens these rights affirming that any rights to property that affect the public interest. The provisions of Article II of the Space Treaty clearly give a direction which prevents any exclusive claim on space and in space objects by only permitting use and exploration based on the principle of "*Res communis*". This use is solely for inclusive use, not exclusive use. Thus, it is clear that no party or state may lay claim to space as the jurisdiction of a certain party.

#### **IV. CONCLUSION**

Space commercialization is a necessity that is in line with the development of space technology and as such it needs regulations. The current laws, which is a result of an agreement among member states of the United Nations, are no longer sufficient in the context of global dynamics, so it tends to provide space that is more profitable for countries with advanced technology. In the context of the benefit of the international community to create a new world order society that is more equitable and has the same dimension of space use, the dialogue for the revision of international legal instruments that regulate space becomes important as a priority agenda for both UNCOPOUS and ITU.

#### **REFERENCES**

- Agus Pramono, *Komersialisasi Ruang Angkasa Reinterpretasi Space Treaty 1967* (Pustaka Zaman, 2014)
- Christol, Crl Q, *The Modern International Law of Outer Space*, Pargamon Press, USA, 1982
- G.ARes. 1721 (XVI) (Dec. 20, 1961)
- Harold W. Bashor, in *Annals of Air and Space Law*, McGill University, Canada 2007
- Ida Bagus Rahmadi Supancana, *Peranan Hukum dalam Penerbangan Kedirgantaraan*, Bandung: Mitra Karya, 2003.
- Int'l Telecomm Union Constitution art. 44.2 [hereinafter ITU Constitution, <http://www.itu.int/en/histo17/HistoryDigitalCollectionDocLibrary/contitutionsConventions/5.12.6Len.100.pdf> [<https://perma.cc/A95J-VNNU>]
- Jakhu, *Legal Issues*, *supra* note 7, at 72.

Priyatna Abdurrasyid, *Mata Rantai Penerbangan Ilmu Teknologi dan Hukum Dirgantara Nasional Indonesia*, Jakarta, Hikayati Aneska, 2011.

Ram S. Jakhu & Yaw Otu M. Nyampong, *International Regulation of Emerging Modes of Space Transportation*, SPACE SAFETY REGULATIONS AND STANDARDS 220 (Joseph N. Pelton & Ram S. Jakhu eds. 2010).

Ranjana Kaul, *Control of Space Assets-Ethics in Diplomacy dalam Annals Air and Space Law*, McGill University, 2006, p. 450-451.

Sylvia Ospina, *International Responsibility and State Liability in an Age of Globalisation and Privatisation*, 27 ANNALS AIR & SPACE L. 479, 491 (2002)

UNCA Res. 1146 (XII)

Yun Zhoo in *Annals of Air and Space Law*, McGill University, Canada, 2007.