

PRIVATE CORPORATIONS TO INFINITY AND BEYOND - GUIDELINES FOR A NEW SPACE AGE

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Abstract

Who owns space? Whether this question is answered by no one, everyone or anyone, it is worth asking. Space law is at a turning point of its history. As technologies evolve, private companies and businesses have their eyes on resources and opportunities happening in outer space. This article aims to see what legal tools can be given to space law to confront its new challenges. One way could be to use the notion of *common heritage of mankind*, developed by the international law of the sea, and to create an international authority accordingly. Another way could be to grant legal personhood to space and to appoint representatives to defend its rights and interests at a global level.

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1. Introduction

Who owns space? In 2003, Mr Gregory W. Nemitz filed a complaint against the American National Aeronautics and Space Administration (commonly known as NASA). He claimed to have property rights towards an asteroid called *Eros*. He tried to prove these so-called rights with a registration made online. As one of the many perks of the world wide web, this situation may seem relatively insignificant. It could have been one of the many questionable actions we make as humans which never go public. However, when NASA landed a spacecraft on *Eros*, Mr Nemitz asked for a compensation of the violation of his property rights in the form of a parking or storage fee. Mr Nemitz quite obviously lost its claim, failing to prove any rights concerning *Eros* (asteroid n°433). Even if this trivial case can make us smile, the status of space raises essential questions.¹

A few months ago, Elon Musk's corporation (SpaceX) sent two Nasa astronauts in orbit to join the International Space Station (ISS). If the launching of a space rocket can never be perceived as an ordinary event, what happened on May 30th is quite revolutionary. It demonstrates that space is now accessible to private corporations. It paves the way for potential space tourism, private exploration and private exploitation of space resources.² On their website, SpaceX mentions that *The Dragon* (the spacecraft used to transport Bob Behnken and Doug Hurley from and to the ISS) '*is capable of carrying up to 7 passengers to and from Earth orbit, and beyond. It is the only spacecraft currently flying that is capable of returning significant amounts of cargo to Earth, and is the first private spacecraft to take humans to the space station*'.³ Their intentions are apparent and ambitious. They state to have multiple goals such as space tourism, '*returning humans to our lunar neighbour*' and '*making the humanity multiplanetary*' by going to Mars and other planets of the solar system.⁴

As science and technologies evolve, space is reachable, perceptible and creates envy among many. We are not anymore facing a middle-aged American who wants to possess a piece of the universe fourteen million miles away from his home on Earth, but powerful corporations which are spending billions of dollars wanting to make space worth investing.⁵ If the perspective of going to Venus or Saturn for the holidays makes your eyes sparkle, very well. The purpose of this article is

¹ Robert Kelly, 'Nemitz v. United States, a Case of First Impression : Appropriation, Private Property Rights and Space Law before the Federal Courts of the United States' (2004) 30 J Space L 297.

² Jonathan Amos, 'SpaceX launch: Nasa astronauts begin historic mission on private spaceship' (2020) BBC News <www.bbc.com/news/av/science-environment-52863779/spacex-launch-nasa-astronauts-blast-off-to-the-international-space-station> accessed 5 July 2020.

³ SpaceX, 'Dragon. Sending humans and cargo into Space' <www.spacex.com/vehicles/dragon/> accessed 10 July 2020.

⁴ SpaceX, 'Human Spaceflight. Making life multiplanetary' <www.spacex.com/human-spaceflight/> accessed 10 July 2020.

⁵ Kelly (n 1).

not to judge current or future opportunities but to analyse how the law governs what is beyond our blue sky. Maybe we can find patterns or models to apprehend space differently, to protect it before it is too late and before we realise that permanent danger has been done to natural objects (any resemblance to situations, real persons, living or dead, is, of course, purely coincidental). On Earth, the concern is more and more towards protection, and we must not forget this purpose while looking into the stars. As space becomes a reality close to human reach, we believe that law should rethink about how to comprehend it as a whole.

In this work, we will look at the current and most emblematic international regulations concerning space. Then, we will try to see if some protective tools applied on Earth's elements could be transferred to outer space to explore it without damaging it. We aim to see what guidelines and legal requirements could be followed by public and private investors for the opportunities arising.

2. International Space Law

2.1. Background

Space law governs everything happening in outer space⁶ from the sending of astronauts to the status of the Moon, the use of images taken by artificial satellites or questions surrounding space resources.⁷ It is not an independent area of law. It falls within the scope of international public law.

Before space exploration and especially before the launch of Sputnik 1 in October 1957, there was no interest in making a legal scheme applicable to outer space. Science made space reachable, and legal thinking followed research and progress. The new technologies made air law insufficient, and as the beginning of the sixties approached, there was a clear need for a more developed and complex body of norms. The majority of current space activities and explorations are carried out within the orbit of the Earth and not much further, but that could change quickly.⁸

The geopolitical situation has massively influenced the creation and elaboration of space law. During the Cold War, space was subject to the envy of the USSR and the US, which made it a potential field of perpetual competition and confrontation. To end the uncertainty, the two great powers and the United Kingdom agreed on the first treaty concerning outer space in 1963. From

⁶ Disclaimer: all authors and scientists do not agree on the limit between air and space. For this work, we will use the word 'space' to indicate what is beyond the Earth's atmosphere.

⁷ Francis Lyall and Paul B. Larsen, *Space Law: A treatise* (Ashgate 2009) 2.

⁸ Bin Cheng, 'The Legal Regime of Airspace and Outer Space: The Boundary Problem Functionalism versus Spatialism: The Major Premises' (1980) 5 *Annals Air & Space L* 323, 328 ; Armand D. Roth, *La prohibition de l'appropriation et les régimes d'accès aux espaces extra-terrestres* (PUF 1992) ; Eligar Sadeh (ed), *Space Politics and Policy: An Evolutionary Perspective* (Kluwer Academic Publishers 2002) xi ; Lyall and Larsen, *Space Law: A treatise* (n 7) 175 ; Frans G von der Dunk and Fabio Tronchetti (eds), *Handbook of Space Law* (Edward Elgar Publishing 2015) 1.

the beginning, the purpose has always been to have a peaceful use of space. The aim of this agreement was ‘to prohibit, to prevent, and not to carry out any nuclear weapon test explosion, or any other nuclear explosion, at any place under its jurisdiction or control: in the atmosphere, beyond its limits, including outer space; or underwater, including territorial waters or high seas (...)’⁹.

Always rewriting itself, space law is now applicable to a significant number of activities and operations (satellites communication, space transportation, space station operations, private spaceflights, resource utilisation, trade). We need to bear in mind that space exploration has never only been a question about acquiring more knowledge and developing scientific understanding. It is a highly political matter which will be more and more on the agenda regarding public policy considerations.¹⁰

2.2. Legal Authorities

Because space law needs ‘a high degree of international cooperation’¹¹, it is primarily regulated by the United Nations. It is the theatre to discuss questions and ideas relating to space and the forum to adopt corresponding legislation.¹² Of course, there is many regulations and relevant principles in national space law or European space law. Still, this article would be hundreds of pages long if we listed it all, so we decided to present only the five principle treaties drafted by the UN because they offer the essential precepts enacted in that matter. The current regime has to be adapted to the new possibilities encountering space. However, these five treaties set some milestones that will probably not be abandoned in the near future.¹³

2.2.1. *The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies*¹⁴

The preamble of what is commonly called the *Outer Space Treaty* sets the tone regarding the position of the UN towards the exploration and potential use of outer space. It is the most crucial treaty of the five because it is the oldest but, also because it is the one which sets the grounding principles.¹⁵

⁹ Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (adopted 5 August 1963, entered into force 10 October 1963) 480 UNTS 43.

¹⁰ Sadeh (n 8) xi ; von der Dunk and Tronchetti, *Handbook of Space Law* (n 8) 2-4, 21.

¹¹ von der Dunk and Tronchetti, *Handbook of Space Law* (n 8) 10.

¹² This has been primarily done by the UNCOPUOS (the United Nations Committee on the Peaceful Uses of Outer Space).

¹³ Roth (n 8) ; Lyall and Larsen, *Space Law: A treatise* (n 7) 175 ; Ruwantissa Abeyratne, *Space Security Law* (Springer-Verlag Berlin Heidelberg 2011) ; Fabio Tronchetti, *Fundamentals of Space Law and Policy* (Springer 2013) 37-38 ; von der Dunk and Tronchetti, *Handbook of Space Law* (n 8) 8-9.

¹⁴ Treaty on principles governing the activities of States in the exploration and use of outer space, including the moon and other celestial bodies (adopted 27 January 1967) 610 UNTS 205 (Outer Space Treaty).

¹⁵ Biswanath Gupta and Ekta Rathore ‘United Nations General Assembly Resolutions in the Formation of the Outer Space Treaty of 1967’ (2019) 17 *Astropolitics* 77.

Acknowledging that significant prospects are open by the fact that men can enter into space, the General Assembly of the UN sets some milestones :

- 1) The exploration of outer space should only be executed for peaceful purposes and should be managed in the interest of all countries. The document speaks of “*The common interest of all mankind*”¹⁶. The exploration of space should benefit everyone regardless of their “*economic or scientific development*”¹⁷. Space projects and activities should only exist to strengthen the “*friendly relations between States and peoples*”¹⁸. The watchwords are *cooperation* and *mutual assistance*^{19,20}
- 2) Privatisation and appropriation of the Moon and other celestial bodies is forbidden.²¹ Military bases and any kind of fortifications or weapons are also banned.²²
- 3) International law applies on Earth as well as in outer space “*in the interest of maintaining international peace and security and promoting international cooperation and understanding*”²³.
- 4) Astronauts are “*envoys of mankind*”²⁴ , and every State is required to assist and help them whenever necessary.
- 5) Every State is liable for governmental or non-governmental activities carried out in outer space and for every object sent beyond the atmosphere. It means that private actors are held accountable by the State they are established in.²⁵

The treaty does not create the non-appropriation principle even if it mentions it. It was discussed in many resolutions predating this Act. During the Cold War, neither of the US or the USSR were sure to be first to seize the Moon or other celestial bodies. So, they both decided that no one could ever be first in that conquest by prohibiting ownership. If the Moon was a *res nullius*, it was too dangerous because the first one to get there would be entitled to keep it. It was more secure to build space regulation around the pattern of *res communis* as it is for the seabed. A *res communis* can be used if this use does not diminish the benefit of others.²⁶

The non-appropriation principle is now questioned, particularly concerning the orbital position of satellites and resources exploitation. Once a satellite occupies an orbit, other satellites cannot be

¹⁶ Outer Space Treaty, preamble.

¹⁷ Outer Space Treaty, art I.

¹⁸ Outer Space Treaty, preamble.

¹⁹ Outer Space Treaty, art IX.

²⁰ Lyall and Larsen, *Space Law: A treatise* (n 7) 187.

²¹ Outer Space Treaty, art II.

²² Outer Space Treaty, art IV.

²³ Outer Space Treaty, art III.

²⁴ Outer Space Treaty, art V.

²⁵ Outer Space Treaty, art VII.

²⁶ ‘Chose commune’ in Gérard Cornu and Association Henri Capitant des Amis de la Culture Juridique Française (eds), *Vocabulaire juridique* (9.éd, Quadrige/PUF 2011) 171.

on the same trajectory. For the installation of bases or colonies, it should not be too difficult because there seems to be enough room for everyone. Still, for the exploitation of resources, it is problematic because a consumable good cannot (by nature) be seen as a common good.²⁷

The non-appropriation principle is set extensively and was the will of States participating in space exploration as well as non-space active countries. They wanted to limit the range of action of great powers, preserving their future rights towards space in the eventuality they join the party. Sovereign equality is a fundamental idea in international law, and it is reproduced similarly in space law. Industrialised countries recognise the importance of all existing and future States, which may be taking action in space exploration.²⁸

Some authors think that when the treaties mention ‘humanity’, it is a simple formula. For us, this wording is used too many times to be a stylistic effect. Humanity designate present and future generations. The Outer Space Treaty has a noble body of principles and rules. Those enunciated in articles I to IV are binding for all States, including the ones that are not a signatory of the treaty because they passed into customary international law.²⁹ Still, it fails to install concrete limitations or obligations towards the sharing of benefits and the necessity for States to enact national legislation towards authorisation or supervision of space activities.³⁰

2.2.2. *The 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and Return of Objects Launched into Outer Space*³¹

The title of the treaty is relatively self-explanatory. Among other things, it concerns the obligation for every State to help and provide assistance for astronauts ‘*in the event of accident, distress or emergency landing, the prompt and safe return of astronauts and the return of objects launched into outer space*’³².

²⁷ Arnel Kerrest, ‘Le principe de non-appropriation et l’exploitation de la Lune et des autres corps célestes’ in Philippe Achilléas, *Droit de l’espace : télécommunication – observation – navigation – défense – exploration* (Larcier 2009) 344-345.

²⁸ Kerrest, ‘Le principe de non-appropriation et l’exploitation de la Lune et des autres corps célestes’ (n 27) 342-343 ; Gupta and Rathore (n 15) 78-79.

²⁹ Roth (n 8) ; Kerrest, ‘Le principe de non-appropriation et l’exploitation de la Lune et des autres corps célestes’ (n 27) 346 ; Lyall and Larsen, *Space Law: A treatise* (n 7) 180.

³⁰ Julian Hermida, *Legal Basis for a National Space Legislation* (Kluwer Academic Publishers 2004) 28-29 ; Roth (n 8) ch3.

³¹ Agreement on the rescue of astronauts, the return of astronauts and the return of objects launched into outer space (adopted 22 April 1968) 672 UNTS 119.

³² *ibid.*

2.2.3. *The 1972 Convention on International Liability for Damage Caused by Space Objects*³³

The Liability Convention asserts that if the launching of any object into space causes damage (death, physical harm, deterioration of assets), there should be ‘*a full and equitable measure of compensation to victims of such damage*’³⁴. Each State is responsible for what is sent into space. If more than one particular country is involved, they are jointly liable. But, what if the damaged party is not a person or a State but space itself?

2.2.4. *The 1975 Convention on Registration of Objects Launched into Outer Space*³⁵

This is a more practical treaty which states that any objects launched into space should be registered as such to be easily identified. It facilitates the liability regime established in the Liability Convention.

2.2.5. *The 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*³⁶

This agreement recognises the critical role the Moon ought to play in the nearby future. Recent statements make the Moon an initial step for men to go to Mars. The purpose of the *Moon Agreement* is to ‘*prevent the Moon from becoming an area of international conflict*’³⁷ and to organise the exploitation of its resources. Article 3³⁸ affirms that the use of the Moon and other celestial bodies can only fulfil peaceful purposes, while article 4 asserts that the Moon is ‘*The province of all mankind*’³⁹ and should benefit everyone. It also states that ‘*Due regards shall be paid to the interests of present and future generations*’^{40, 41}.

Scientific investigation concerning the Moon is freely allowed but with cautious. Some provisions insist on preventing ‘*the disruption of the existing balance of its environment*’⁴². They recall that the Moon and its resources are part of *the common heritage of mankind* and insist that the Moon is not subject to

³³ Convention on the international liability for damage caused by space objects (adopted 29 March 1972) 961 UNTS 187 (Liability Convention).

³⁴ Liability Convention, preamble.

³⁵ Convention on registration of objects launched into outer space (adopted 12 November 1974) 1023 UNTS 15.

³⁶ Agreement governing the Activities of States on the Moon and Other Celestial Bodies (adopted 5 December 1979) 1363 UNTS 3 (Moon Agreement).

³⁷ Moon Agreement, preamble.

³⁸ Moon Agreement, art 3.

³⁹ Moon Agreement, art 4.

⁴⁰ *ibid.*

⁴¹ Lyall and Larsen, *Space Law: A treatise* (n 7) 182.

⁴² Moon Agreement, art 7.

national appropriation. It seems to concern only States, but in fact, private property is also pointed. Therefore, private entities and State's citizens have to respect this interdiction as well.⁴³

2.2.6. Observation

The five UN treaties have undoubtedly ethical and moral values behind the principles they state. Cooperation - common interest - peaceful use - common heritage of mankind, these concepts are all well and good, but they have minimal legal effects.⁴⁴

International space law is a much broader discipline. There are many other instruments in addition to those five UN treaties: bilateral or multilateral agreements, resolutions from intergovernmental space organisations, national laws or internal regulations. Unfortunately or not, a big part of this discipline is constituted of soft law (guidelines, resolutions, desired behaviour or political declarations which are often not binding)⁴⁵. It does not mean it is completely ineffective because it holds political and moral engagement. But will it be sufficient to face new challenges?⁴⁶

3. Challenges for a new space age

Space law is at a turning point of its history. Until now, it was prospective, creating principles and guidelines before they were necessary. However, many opportunities arose, and other actors want to join this space rush. If military aspects were predominant before, it is now the economic dimension which inspires the greatest passions. Some talk about reaching Mars, going back on the Moon, establishing colonies and sending tourists while others want to abolish the non-appropriation principle to make private programs more exciting and worth investing. The UN Treaties did not consider private actors as a real issue. "Non-governmental entities" are only mentioned briefly. The texts are dated and considered ineffective or incomplete. Law has to adapt itself to challenges never encountered by giving detailed rules of conduct and maybe by creating a regulatory institution to control public and private operations. If many difficulties exist (orbital

⁴³ Leslie I. Tennen, 'Article II of the Outer Space Treaty and the Use of Extraterrestrial Resources' in Armel Kerrest (ed), *L'adaptation du droit de l'espace à ses nouveaux défis : Liber amicorum : mélanges en l'honneur de Simone Courteix* (Pedone 2007) 312 ; Kerrest, 'Le principe de non-appropriation et l'exploitation de la Lune et des autres corps célestes' (n27) 347-352 ; Lyall and Larsen, *Space Law: A treatise* (n 7) 184-185.

⁴⁴ Mireille Couston, 'SPATIOETHIQUE Réflexions sur la teneur éthique du droit spatial' in Armel Kerrest (ed), *L'adaptation du droit de l'espace à ses nouveaux défis : Liber amicorum : mélanges en l'honneur de Simone Courteix* (Pedone 2007) 74.

⁴⁵ 'Soft Law' in Jonathan Law (ed), *A Dictionary of Law* (9th edition, Oxford University Press 2018) 638.

⁴⁶ Vladimir Kopas, 'Origins of space law and the role of the United Nations' in Christian Brünner and Alexander Soucek (eds.), *Outer Space in Society, Politics and Law* (Springer Wien New York 2011) 232 ; Fabio Tronchetti, 'Soft Law' in Christian Brünner and Alexander Soucek (eds.), *Outer Space in Society, Politics and Law* (Springer Wien New York 2011) 619.

space debris known as space junk, security, traffic management, etc.), we decided to highlight two of them.⁴⁷

3.1. Resources exploitation & sustainable development

Scientists are studying the possibility to extract and exploit resources existing on the Moon or asteroids (rare gases and metals). This kind of venture will not stay long in the hands of scientists, and private entities are increasingly interested in the commercial prospects entailed. For them, the only way to go would be the possibility to make profits and have property rights towards what could be found on celestial bodies. After all, the Earth's exploration and the many discoveries realised in the 15th and 16th centuries were triggered by economic ambitions. Why should it be different for space?⁴⁸

On Earth, sustainable development and environmental protection are into the spotlight. The precautionary principle works its way in international law. It implies that to anticipate is better than to adapt or to cure. The purpose of this protective movement is to preserve space but also to prevent contamination of the near-earth environment.⁴⁹

3.2. Demands from developing countries

There are incrementally more States creating space programs. The time where there were only a few actors involved is over. Developing nations do not want to be set apart. They refuse to see the inequalities existing on Earth be repeated. With the introduction of the *common heritage of mankind* notion, they wish to see a fair share of resources. Space activities have to be done '*for the benefit and in the interests of all countries*'. Their lack of economic or technological means does not imply they should not benefit from the knowledge and wealth resulting from space exploration and exploitation.⁵⁰

⁴⁷ Armel Kerrest, 'Le droit de l'espace face aux dangers de privatisation et d'unilatéralisme' in Armel Kerrest (ed), *L'adaptation du droit de l'espace à ses nouveaux défis : Liber amicorum : mélanges en l'honneur de Simone Courteix* (Pedone 2007) 13-33 ; Christophe Vent, 'The economic dimension' in Christian Brünner and Alexander Soucek (eds.), *Outer Space in Society, Politics and Law* (Springer Wien New York 2011) 55 ; Edith Walter, 'The privatisation and commercialisation of outer space' in Christian Brünner and Alexander Soucek (eds.), *Outer Space in Society, Politics and Law* (Springer Wien New York 2011) 506 ; Joseph N. Pelton, *The New Gold Rush. The Riches of Space Beckon* (Springer 2017) 159-161.

⁴⁸ Kerrest, 'Le principe de non-appropriation et l'exploitation de la Lune et des autres corps célestes' (n 27) 341 ; Lyall and Larsen, *Space Law: A treatise* (n 7) 187-190.

⁴⁹ Alain Pompidou, *The Ethics of Space Policy* (UNESCO World Commission on the Ethics of Scientific Knowledge and Technology – COMEST 1999) 6 ; Lyall and Larsen, *Space Law: A treatise* (n 7) 191, 280, 291.

⁵⁰ Roth (n 8) 111 ; Francis Lyall, 'On the security of the broad principles of space law' in Armel Kerrest (ed), *L'adaptation du droit de l'espace à ses nouveaux défis : Liber amicorum : mélanges en l'honneur de Simone Courteix* (Pedone 2007) ; Yvonne Schmidt, 'International space law and developing countries' in Christian Brünner and Alexander Soucek (eds.), *Outer Space in Society, Politics and Law* (Springer Wien New York 2011) 696.

We will now see if there are schemes we can use to oversee those potential problems or if we can think of other solutions to protect space environment and to ensure that there is no injured party throughout this adventure.

4. Framework and guidelines

*‘When a new field of law appears, it is always very useful to try to see if there is a possibility to make comparisons and to use the possible similarities to consider analogies with other domains and take advantage of precedent practice to enlighten the new field of activities’*⁵¹. The seabed and Antarctica have respectively been a framework for space and celestial objects.⁵²

4.1. International Law of the Sea

This framework offers excellent prospects to apprehend space. The greatest of them all is the notion of *common heritage of mankind*, developed when the maritime floor and its resources became an object of desire. This notion has been initiated by the Maltese representant at the UN to make sure the seabed was only used for peaceful purposes. It resulted in the Montego Bay Convention⁵³, which developed peculiar zones of protection and the notion of common heritage of mankind. Since the Moon Agreement and its article 11, the idea of common heritage of mankind is also applicable to space.⁵⁴

What does it mean when a territory is qualified of *common heritage of mankind*? There is no agreed definition, but there are standard features whether the definition applies to the high seas, some parts of Antarctica or outer space:

- 1) **Non-appropriation.** The resources of the designed area belong to every member of the international community. It is forbidden for a sovereign State to revendicate a portion of it.
- 2) **A fair share of resources.** The resources (or at least the resultant profits) have to be used for the benefit of all humankind. They should be shared equitably between all nations, regardless of their involvement in the process. It is essential for developing countries because it is a protective tool against overexploitation by industrialised nations. It makes them accountable for their actions and increases their degree of responsibility.

⁵¹ Armel Kerrest, ‘Space law and the law of the sea’ in Christian Brünner and Alexander Soucek (eds.), *Outer Space in Society, Politics and Law* (Springer Wien New York 2011) 247.

⁵² Roth (n 8).

⁵³ United Nations Convention on the Law of the Sea (adopted 10 December 1982) 1833 UNTS 3.

⁵⁴ Roth (n 8) ; André Oraison, ‘Remarques sur la conservation et la gestion durable des ressources naturelles des grandes profondeurs océaniques. La notion de “patrimoine commun de l’humanité” en droit international de la mer et la nécessité de son élargissement aux divers éléments de notre environnement’, (2006) 3 *Revue Européenne de Droit de l’Environnement* 275, 275-278.

- 3) **Representatives of every State.** All countries are involved in the management of the resources. They share the benefits of the exploitation but also the burdens of their administration.
- 4) **Peaceful use & scientific freedom.** Weapons storage or use are strictly forbidden, but scientific exploration and studies are more than welcome.
- 5) **Preservation of the area for future generations.** There is a long term goal in the idea of common heritage. It is aiming to preserve the environment for present and future generations, making humanity a continuum.⁵⁵

The common heritage of mankind is very similar to the *res communis*. The only differences lay in the importance of the sharing of benefits and the fact that the international community intervene upstream for the common heritage of mankind. For a *res communis*, the area and its resources can be used without excess, and the international community acts only when a problem arises. Not everyone in the doctrine adheres to apply the notion of common heritage of mankind to space. Some authors consider it too vague or ineffective because of the small number of States which ratified the Moon Agreement. On the contrary, we believe this notion is an excellent basis to enact ground rules for the extraction, trade and use of space resources.⁵⁶

To monitor sea exploitation, an International Seabed Authority was created. Its role is to coordinate the State's actions and to preserve and manage resources by acting in the name of the whole of humanity. The seafloor is handled collectively. For this system to work out, States must cooperate, collaborate and accept to give up a part of their sovereignty. Although this sounds very democratic and protective of developing nations, industrialised countries have created the possibility to block any recommendation which may adversely affect them.⁵⁷

What about space? The idea of common heritage of mankind, as we just presented it, is also applicable to outer space, the Moon and other celestial objects. However, there is no international organisation to coordinate everything yet. Though, it is not for lack of trying. The UN repeatedly proposed to create a global space organisation to have an overall view of the remaining challenges. Maybe it is about time to bring this idea back to life and to overcome individualistic fears and

⁵⁵ Oraison (n 54) 279-281 ; Nadia Belaidi and Agathe Euzen, 'De la chose commune au patrimoine commun. Regards croisés sur les valeurs sociales de l'accès à l'eau' (2009) 45 De Boeck Supérieur-Mondes en développement 55, 57 ; Schmidt (n 50) 690-697 ; Chelsea Bowling and others, 'The Common concern of Humankind : A Potential Framework for a New International Legally Binding Instrument on the Conservation and Sustainable Use of Marine Biological Diversity in the High Seas' <https://www.un.org/depts/los/biodiversity/prepcom_files/BowlingPiersonandRatte_Common_Concern.pdf> accessed 10 August 2020.

⁵⁶ Cheng (n 8) ; Naman Khatwani, 'Common Heritage of Mankind for Outer Space' (2019) 17 Astropolitics 89,90.

⁵⁷ Oraison (n 54) 280-284.

economic interests. As history showed us with the formation of the ISS, massive international cooperation is possible if there is political will.⁵⁸

4.2. Antarctica

As space, Antarctica is difficult to access and hostile to human presence. As space, Antarctica is full of rare resources. As space, Antarctica is essential for maintaining environmental balance. However, the continent still has issues relating to sovereignty and demilitarisation. Other nations revendicate parts of it. This framework can show us that it is possible to resolve problems concerning resources while letting the sovereignty issues apart. The Antarctic Treaty of 1959⁵⁹ (Treaty of Washington) provides for the peaceful use of the area as well as the freedom of scientific investigation. The Protocol on Environmental Protection of 1991⁶⁰ prohibits mining and activities with a negative environmental impact. Antarctica is thereof often considered to be part of the common heritage of mankind even if it is never expressly told and even if the non-appropriation component is absent. It means that States do not have free access to the resources and that they must ensure an equitable sharing of the profits made. Developing countries wish to see the same pattern applied to space mining. Again, it calls for international management and the creation of a relevant institution.⁶¹

4.3. What if space was a person?

The right for a clean environment is consecrated in more than eighty constitution or human rights declarations worldwide. Movements towards the protection of nature increase on Earth, and we believe that it is just a question of time before those considerations are held concerning space, at least for the near-Earth environment. Some of the protective mechanisms developed on Earth adopt an ecocentric perspective by directly conferring rights to nature. Rivers, mountains or forests across the globe have recently been granted the status of a legal person either through legislation or courts decisions.⁶²

⁵⁸ Juan Manuel de Faraminan Gilbert and Claudio Zanghi, 'L'organisation mondiale de l'espace : un défi oublié ?' in Armel Kerrest (ed), *L'adaptation du droit de l'espace à ses nouveaux défis : Liber amicorum : mélanges en l'honneur de Simone Courteix* (Pedone 2007) 161-173.

⁵⁹ The Antarctic Treaty (adopted 1 December 1959) 402 UNTS 71.

⁶⁰ Protocol on Environmental Protection to the Antarctic Treaty (adopted 4 October 1991) 2941 UNTS 3.

⁶¹ Kerrest, 'Le principe de non-appropriation et l'exploitation de la Lune et des autres corps célestes' (n 27) 353-354 ; Alexander Soucek, 'The Polar Regions' in Christian Brünner and Alexander Soucek (eds.), *Outer Space in Society, Politics and Law* (Springer Wien New York 2011) 277 ; Khatwani (n 56) 95-97.

⁶² Gabriel Eckstein and others, 'Conferring legal personality on the world's rivers : A brief intellectual assessment' (2019) 44 *Water International* 804 ; Elizabeth Jane Macpherson, *Indigenous water rights in law and regulation. Lessons from Comparative Experience* (Cambridge University Press 2019) 34-39.

“The personification of nature is not new. Humans have long considered their environment or some of its main components – the sun, the Moon, the Earth, the ocean, the rain, the river, the lake – as living entities or even gods. These beings, however, were outside or above the law. Now that our environment is deteriorating despite all the laws and treaties adopted to protect it, we feel that we ought to defend its existence, not just for our sake but also for its own survival. Just as oppressed minorities throughout history have become right-holders to defend their identity, nature is now being granted rights of its own. It is becoming a legal person like corporations, public agencies or civil associations.”⁶³

Granting legal personhood to something means granting three specific rights: property rights, contractual rights and the right to go to court. It gives a voice to natural objects to protect their interests directly. Obviously, an old tree or a mountain cannot detach itself from the ground and sit quietly on the court’s benches. For this system to be effective, custodians or guardians need to be appointed. They would be there to represent the right holder, to give it a voice and defend it. They would judge if human activities interfere with nature’s rights and deliver permits for certain operations.⁶⁴

It requires to implement a whole new system with independent judges and a high authority with the ability to settle disputes. This institution could maybe be built similarly as the International Tribunal for the Law of the Sea.

A declaration of the rights of Mother Earth⁶⁵ inspired by the Universal Declaration of Human Rights and the Earth Charter has recently been proposed. Although this declaration has not been adopted, it is very informative to apprehend what could be done about the utilisation of natural resources. It emphasises the importance of the protection of nature and the necessity for the law to recognise nature’s rights to prevent climate change and other negative impacts. It asserts that humans have a special responsibility to prevent harmful damages and protect the environment they evolve in.⁶⁶

What if we do not wait until it is too late? What if granting space some rights was the best scheme to protect it and prevent exaggerations while letting exploration and reasonable use occur? We would need to define precisely the outline of this new legal person and to appoint guardians or representatives to act in its name. The best would certainly be to create an international organisation or NGO to act as a custodian in order to represent and protect space or some more specific areas.⁶⁷

⁶³ Eckstein (n 62).

⁶⁴ *ibid.* ; Herman Kasper Gilissen and others, ‘Towards a Rights-Based Approach in EU International River Basin Governance? Lessons from the Scheldt and Ems Basins’ (2019) 44 Water International 701.

⁶⁵ Proposal Universal Declaration of the Rights of Mother Earth < <https://pwccc.wordpress.com/programa/> > accessed 3 August 2020.

⁶⁶ Peter Burdon, ‘The Rights of Nature: Reconsidered’ (2010) 49 Australian Humanities Review 69.

⁶⁷ Eckstein (n 62) ; Gilissen (n 64).

5. Conclusion

Who owns space and its resources? At this particular moment, no one can, nor Mr Nemitz or some billionaire. The five founding treaties of space law drafted by the UN ensure this impossibility. However, not everyone is satisfied with this statement and many wish to see it abolished to make profits via space activities.

What are the solutions to make the coexistence between private corporations and movements towards the protection of space possible?

Firstly, we could consider developing the *common heritage of mankind* principle created by the international law of the sea. As we have seen, it is possible to mobilise it with or without its non-appropriation component if sovereignty revendications continue to grow further (see Antarctica). Private appropriation would not mean the impossibility of protection.

Secondly, we could explore the possibility to create a brand new framework following the example of the Gange in India or the Whanganui River in New Zealand which have been granted legal personhood. We could transform space into a legal person so an international organisation could sign contracts in its name or represent its interests in court. That way, space would have equals arms to confront private corporations.

We believe these two propositions are the best suited to accomplish the current challenges of space law. The potentiality of global harm calls for a global approach. It would allow scientific exploration and sustainable development while controlling the exploitation of materials present in outer space, on the Moon and on other celestial bodies as well as preventing military use. These patterns will not adversely affect developing countries which may not have the technologic or economic resources yet to get on board.

Whatever framework we choose, we will need a pinch of imagination but also and more importantly, a handful of political will. Change will not be easy, and the difficulties seen while the climate conferences about Earth wellbeing are not reassuring. However, it is not impossible. International collaboration is possible at a high level. Indeed, it was a monstrous mission to build the International Space Station, but it now exists.⁶⁸ The role of private actors has to be thought about carefully. There is a risk to never see space as we currently know it, but there is also a magnificent opportunity of reform. The legal tools exist. What remains to be done is to use them correctly. Hopefully, the continuation and success of space activities also depend on the creation of new legislation, so negotiation has to be done at some point.⁶⁹ Reforming the actual rules of

⁶⁸ Alexander Soucek, 'International Law' in Christian Brünner and Alexander Soucek (eds.), *Outer Space in Society, Politics and Law* (Springer Wien New York 2011) 389.

⁶⁹ Fabio Tronchetti, *Fundamentals of Space Law and Policy* (n 13) 81-84.

space law will necessitate political consensus and a high degree of cooperation between States and private actors whether or not they have the means to participate in this new space rush.

“We set sail on this new sea because there is new knowledge to be gained, and new rights to be won, and they must be won and used for the progress of all people. For space science, like nuclear science and all technology, has no conscience of its own. Whether it will become a force for good or ill depends on man (...). I do not say that we should or will go unprotected against the hostile misuse of space any more than we go unprotected against the hostile use of land or sea, but I do say that space can be explored and mastered without feeding the fires of war, without repeating the mistakes that man has made in extending his writ around this globe of ours”.

(John F. Kennedy, *Moon Speech*, 1962)⁷⁰

⁷⁰ John F. Kennedy, ‘Moon Speech’ (12 September 1962) <<https://er.jsc.nasa.gov/seh/ricetalk.htm>> accessed 20 August 2020.