

Report on the Symposium on Legal Aspects of Space Resource Utilisation

IIASL, Leiden University, 17th April 2016

Hamza Hameed, Dimitra Stefoudi

LL.M. Candidates, Air and Space Law, IIASL, Leiden University

On the 17th of April 2016, the International Institute of Air and Space Law held a Symposium on the “Legal Aspects of Space Resources Utilisation”. The event was hosted in the premises of the Law School of Leiden University. In attendance were many prominent members of the space law community from all sectors including industry, academia, students and members of various NGO’s.

The symposium started off with a welcome address by **Frits von Meijenfeldt**, Programme Manager Space Policy of the Ministry of Economic Affairs and Acting Head of Delegation of the Netherlands to the European Space Agency, who was also acting as Chair for the session. He described the symposium as a precursor to the upcoming Hague Working Group on Space Resources¹ meeting and spoke about how the Netherlands is gradually becoming an important player in the space industry and is increasing its contributions to many areas, including in particular the creation of space infrastructure like launchers, satellites and parts for the International Space Station. He explained it is of utmost importance to determine the legal dimensions of space activities and this is why the Working Group has been established. He continued with an elaboration of the space policy of the Netherlands, which is focused on cooperation with international organisations and the creation of infrastructure with regard to space research and space applications. He stated that the Netherlands is aiming at maintaining a global level-playing field for exploration and exploitation of outer space; hence the work of the Hague Space Resources Group is supported by the Dutch Ministries of Economic Affairs and Foreign Affairs. He further elaborated on the work of the Group to identify building blocks in the discussion around the legal regulation of space resources, with

¹ The Hague Working Group on Space Resources : <http://law.leiden.edu/organisation/publiclaw/iiasl/working-group/the-hague-space-resources-governance-working-group.html>

the purpose to come up with a deliverable result by the end of 2017. He then described its main objectives as the following:

- 1) Assess the need for a regulatory framework for space resource activities related to the use of mineral and volatile materials on the Moon and other Celestial Bodies
- 2) In case of need, to lay the groundwork for the definition of such a regulatory framework derived by UN Treaties on Outer Space
- 3) The groundwork required will include the identification and formulation of building blocks for the governance of space resources with possible implementation strategies as well as the identification of a relevant forum for the negotiations
- 4) Following its conclusions the Working Group would like to encourage states to start negotiating an international agreement or non-legally binding instrument, such as a code of conduct to regulate the use of Space Resources.

The next speaker, **Giuseppe Reibaldi**, Executive Secretary of the Hague Space Resources Governance Working Group, presented on the topic “State of the Art of the Industry”. He first made a comparison between the past and present of space exploration with the future of exploration of space resources. He explained that there had been a transition from exclusively government-led space programs operated for solely political and scientific reasons to private and commercial organizations operating with a profit-making business model. He added that the future will continue this trend towards commercialization of space exploration. He then gave an introduction to what space resources exploration is and explained that this term is used to describe the capability to use what is available on the celestial bodies including the moon and asteroids for commercial purposes, whether this use be back on Earth or *in situ* (in space). He highlighted the positive contribution of space mining activities to increasing and redistributing wealth around the world, a key element according to him, though the participation of developing countries, especially in funding such activities and providing technological expertise. He concluded with some useful information on the amount of available resources and the technical feasibility to extract them, while making reference to some recent developments. In particular, he mentioned the project of Luxembourg to set a legal framework to regulate the participation of private actors in space mining and the plans revealed by ESA to establish a “Moon Village”, both of which underline the need for a regulatory solution on the issue of space resources governance.

Dr. Reibaldi received several questions from the audience. The first referred to the participation of Russia to the work of the Group, to which he replied that the country, having

taken part in the initial meeting of the Hague Institute for Global Justice in December 2014 , decided to take part as an observer of the Working Group. The following question asked whether the future of space activities will be driven by private entities, leaving to governments the role of ensuring their compliance. Dr. Reibaldi highlighted again his view on the democratisation of outer space, based on a partnership between the public and the private sector. A question followed about the speaker's opinion on the appropriate relationship between governmental and non-governmental entities, to which he replied that democratisation demands the participation of more countries, as well as of the private sector, but the percentage of that participation depends on the specific initiatives. The last question concerned the economic feasibility of space resource exploitation. The answer came from the Chair of the session, who replied that it is difficult to make a financial estimation, since there are a lot of technical issues involved and the costs vary between the exploitation of space resources in situ and the transfer for use back to Earth.

The programme continued with a presentation on “Space Resource utilisation and International Law” given by **Tanja Masson-Zwaan**, Deputy Director of the International Institute of Air and Space Law at Leiden University. Ms. Masson-Zwaan thanked the participants on behalf of the International Institute of Air and Space Law of Leiden University for their presence and proceeded with an overview of the legal issues related to the use of space resources. First, she referred to the Statement made by the Board of Directors of the International Institute of Space Law in 2009, which recognised the need for a specific regime for space resources that would provide legal certainty to the companies intending to be involved in mining activities. She then spoke about the Outer Space Treaty of 1967 and the Moon Agreement of 1979 as the relevant treaty law on the matter. She touched upon the status of these two treaties and said that whereas the Outer Space Treaty is the *magna carta* of space law and its provisions can safely be regarded as customary international law, on the other hand, the Moon Agreement only has 16 parties currently which excludes major space players such as the USA and is at times regarded as a failed treaty. The Moon Agreement however is the only treaty that puts forth the opinion endorsed by UNCOPUOS on the issue of commercial space resources exploration. The next part of the presentation was dedicated to the Moon Agreement. In particular, Ms. Masson-Zwaan spoke about Article 6 of the Agreement, which allows for the use of space resources to support scientific missions, Article 9, which describes the requirements for establishing space stations, and Article 10 concerning protection of human life and health. She also mentioned that the Common Heritage of

Mankind provision of Article 11 is problematic and gives rise to negative judgments of the Agreement, since it requires the establishment of an international regime for the management of space resources. However, she recalled the Joint Statement made by the States parties to the treaty in 2008, explaining the benefits of adhesion to the Agreement, which does not preclude the exploitation of space resources. She explained that there are benefits in adhering to the treaty in that it clarifies several terms of the OST. She also explained that the Moon Agreement prohibits ownership of resources *in situ*, and added that ownership of extracted resources is subject to the establishment of an international regime under the Moon Agreement, but seems to be allowed under the Outer Space Treaty. She then drew an analogy to fishing in the high seas and how resource extraction may be deemed a similar activity. Ms. Masson-Zwaan concluded that the space treaties provide for a general framework, but a special legal regime is needed, which is also indicated by the recent adoption of a new item on the UNCOPUOS Legal Subcommittee's agenda for 2017. She also referred to the relevant national legislation of the US, as well as to the plans of Luxembourg to establish a national regime.

Some of the comments from the audience focussed on the similarities with Earth mining activities, the difference between use and utilisation, as well as the recent establishment of national laws relevant to space mining. A final remark was made by the Chair on whether the Netherlands should wait for the outcome of the WG before regulating space mining, which would depend, according to Ms. Masson-Zwaan on whether the country wants to attract the industry. Moreover, being a party to the Moon Agreement, the Netherlands may have to wait for an international regime to be in place before proceeding.

The following presentation was delivered by **Sagi Kfir**, from Deep Space Industries (USA), who addressed the US national legislation on space resource utilisation. His aim was to focus on US law from the industry perspective, which he briefly presented through the activities of Deep Space Industries. His speech took off from the reasons behind the need to explore and utilise space resources, which are found in the inherently curious human nature and the growing need for raw materials supply on Earth. In particular, he mentioned that the utilisation of Earth-based resources is not sustainable, while several usable materials can be found on asteroids. As far as the US legislation is concerned, Mr. Kfir stressed the need for regulatory certainty, in order for private companies to be able to access financial investments. Mr. Kfir also referred to the previous drafts of the Asteroids Act of 2014², which was proven

² H.R.5063 - Asteroids Act, 113th Congress (2013-2014): <https://www.congress.gov/bill/113th-congress/house-bill/5063>

problematic in practice, but put the basis for further discussion on the issue of space mining. He continued elaborating on the non-appropriation principle which does not prohibit the use of space resources, and emphasised the provisions of Article VI of the Outer Space Treaty. In particular, he clarified that in the case of the US, it was the private industry that initiated the talks on the establishment of a legal regime, in order for the State to authorise and supervise the activities of its private sector, as required by the aforementioned article. He described the actions of the US as analogous to the act of fishing trawlers going out to the Atlantic or the Pacific to catch fish, ownership is only of the fish captured and similarly ownership is only of the resources mined and not of the body of water or the celestial body.

The speaker received several questions on whether international regulations should be deployed for the benefit of the industry, and whether the interests of the industry would eventually become those of the government. In his response, Mr. Kfir supported that the government advocates on behalf of the commercial market, while there already exists a symbiotic relationship between governmental authorities and private actors. He was also asked for his opinion on the potential conflict of different national interpretations of the space treaties, and was of the view that the only requirement is the compliance of national laws with international obligations. He also mentioned that any similar national attempt is important, since it forces and facilitates the discussion around the use of space resources.

After the break, the Symposium continued with a presentation by **Olavo Bittencourt**, from Santos University in Brazil, on the topic “Reactions to US national legislation: the view of emerging space powers”. He started with a disclaimer that the views he was going to present were not his own, but those of various emerging space powers presented at the recent session of the Legal Subcommittee of UNCOPUOS. These views concerned the differences between developing and developed nations, the unilateral action of the US to introduce its legislation internationally without prior consultation, the historical perspective of the impact of the colonial rule on predatory exploitation of resources, the potential of the US taking advantage of space resources, being the first State to attempt their extraction, as well as the principle of the Outer Space Treaty on carrying out space activities for the benefit and in the interest of all mankind. It was emphasised by these States that the US did not consult the rest of the world before making this legislation when it should have done so, keeping in mind the fact that outer space is the province of mankind. The US law is seen as very US centric and *prima facie* as a piece of legislation to facilitate the exploitation of space resources. Many emerging states see it as a colonialist move in that the US is partaking in predatory

exploitation and the US legislation is identified by them as an abusive initiative towards commercial exploitation of a global common. The emerging states would have preferred a multilateral solution. The legislation is seen as creating a “first come first serve” system which is not preferable, as most emerging states do not possess the capacity to explore space resources and will not possess this in the foreseeable future. By creating a *‘fait accompli’*, the USA is trying to extend its sphere of influence and this has many geopolitical consequences in that some states will gain a strategic advantage not available to others. Mr. Bittencourt ended his speech with a reference to the need for confidence-building initiatives and the importance of strengthening international dialogue.

The discussion continued with comments and questions from the audience. At first, it was noted that for developing countries the need for regulation of space mining is functioning as a negotiating weapon towards the technological advancement of developed countries. The speaker commented that there indeed exists a gap, which makes it hard for the major actors to understand each other. The next question was whether utilisation of space resources should be regarded as a national or international problem. According to that participant, in the former case, the US fairly attempted to introduce national legislation, especially using the term “utilization”, which has a positive meaning as compared to “exploitation”. He also drew similarities with the regime governing frequency allocation, which functions on a “first-come first-serve” basis. To the question which countries had expressed concerns, Mr. Bittencourt stated that there were not yet any official positions clear enough to be presented internationally, but several States were caught by surprise by the introduction of the US space mining law. Similarly, another participant wondered whether the countries concerned about the US legislation on the grounds presented by the speaker, recommended any positive measure in order to ensure fair distribution for the benefit and in the interest of all mankind. The speaker commented that the US legislation raises both political and economic concerns, and that the issue of space mining has many aspects.

The next speaker, **Thomas Cheney**, from the Space Generation Advisory Council and the University of Sunderland, United Kingdom, elaborated on the Reactions to the US Space Act 2015 and the statements made at the recent COPUOS session. He started his presentation with the role and history of the Committee on Peaceful Uses of Outer Space and continued with reference to the various reactions heard about the US space mining legislation. The first argument he focussed on was that of the US, which feels that the global community is misunderstanding them. The US is not claiming sovereignty in space but rather it had to take

action because there was no multilateral mechanism for space resources exploration and the Act will be interpreted and applied in accordance with the obligations of the US under international law. He then explained the Russian stance, which argued that COPUOS is the sole forum for space law issues and states cannot legislate unilaterally. Such unilateral adoption of national legislation is not acceptable and space mining poses risks for all of humanity and is contradictory to the non-appropriation principle. Russia assimilated resources and celestial bodies, and hence appropriation of one equals appropriation of the other.

Belgium is not a supporter of the US law and is concerned about the global economic imbalance that space resource exploration could lead to. It would prefer an international approach and would even accept an *ad hoc* legal regime for the time being. Outer space natural resources cannot be appropriated by extension of national jurisdiction and Belgium prefers implementation of Art. 11 of the Moon Agreement. It understands the needs and concerns of the industry but a national and unilateral approach is not the solution. Mr. Cheney continued with the view of Italy, which considers the Moon Agreement as contradictory to the freedom of use established by the Outer Space Treaty. According to this country, only States can interpret the Space Treaties, and not UNCOPUOS, while a confidence was expressed that the US will apply its national legislation in accordance with its international obligations. Mr. Cheney concluded his presentation with addressing the introduction of a new item in the COPUOS Legal Subcommittee agenda for 2017, following a Belgian proposal, to discuss the issue of space resources, namely “General exchange of views on potential legal models for activities in the exploration, exploitation and utilisation of space resources”. His final remarks concerned the different translations of the terms “exploitation”, “exploration” and “utilisation” in different languages, which may give rise to certain conflicts.

The final speaker was **Michael Simpson**, Executive Director of Secure World Foundation, US, with a presentation prepared in cooperation with Mr Ian Christensen, titled “Links between Space Resources Development and the United Nations Sustainable Development Goals (SDGs)”. Mr. Simpson first addressed the history of SWF, a privately operating foundation with the vision to create cooperative solutions for secure, sustainable and peaceful use of outer space, in order to contribute to global stability. He proposed to focus on the ways in which space resources could be used for the benefit and in the interest of all mankind, instead of the concerns that this subject creates. He stated that there are ways to make utilisation and sustainable development compatible, but for the moment the cost of mining activities is very high, and it is more beneficial to exploit resources *in situ*. He also

emphasised the fact that space mining might disrupt the international trade of terrestrial commodities, and mentioned various ways in which it could contribute in dealing with the achievement of the SDG, as long as the right decisions are made. To name but a few, precious metals, *in situ*/returned, raw/processed, space and traditional mining, distribution in favour or against inequalities. Mr. Simpson concluded his presentation addressing the drivers of resources development, namely the economic returns, the development of outer space exploration, in-space commercial application, technological innovation, as well as the scarcity of terrestrial resources.

After this, **Frits von Meijefeldt** concluded the symposium by providing a short summary of the subject matter of each speaker's presentation and wished the working group good luck. The event was followed by drinks.