

Report of the IISL-ECSL Symposium: Legal Models for Exploration, Exploitation and Utilization of Space Resources 50 Years after the Adoption of the Outer Space Treaty

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On the first day of the 56th Session of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), the afternoon session was reserved for the joint Symposium of the International Institute of Space Law (IISL) and European Centre for Space Law (ECSL). Following some words of welcome by **Ms. Laura Jamschon Mac Garry**, the ad hoc Chair of the Legal Subcommittee, **Prof. Dr. Kai-Uwe Schrogl**, the President of the IISL and **Prof. Sergio Marchisio**, Chairman of the ECSL opened the event. This year's Symposium was devoted to the topic of space mining, which is regarded as a highly promising area of space activities with potentially huge economic benefits and examined legal matters raised in the course of the debates on the implementation of the legal instruments governing space activities.

The Symposium began with a presentation by **Dr. Fabio Tronchetti** from Beihang University on "*Current international legal framework applicability to space resource activities*". First and foremost, Dr. Tronchetti pointed out that provisions and principles contained in Articles I, II and VI of OST do not reflect the status of space resources clearly. Dr. Tronchetti referred to the first

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school of thought which mainly supports the idea that the prohibition expressed in Article II of OST extends to appropriation of space resources, and the second school of thought which supports the opposite idea. Pointing out the right to use space resources enshrined in Article I OST, Dr. Tronchetti additionally showed his support of such right by making an analogy with the high seas regime, where the international community reached an agreement on the legality of utilisation of resources. Apart from the explicit wording in the OST, the drafting history of this treaty does not clearly exclude commercial utilization and already two States have officially recognised the legality of space mining and adopted national legislation related to that. Under the 1979 Moon Agreement, there is an obligation to establish an international regime to facilitate and manage the exploitation of space resources. Dr. Tronchetti concluded that the international recognition of the legality of commercial space resources utilization and the establishment of basic principles related to it could on the one hand contribute to a clear and predictable legal framework, and on the other hand assure the legality of domestic space resources utilisation laws vis-à-vis international space law.

The next speaker, **Mr. Rick Tumlinson**, Chairman of the Board of Deep Space Industries as well as Founder of the New Worlds Institute presented "*The perspectives from the industry in relation to national regulation of space resource activities*". The common goal of the international space community including the commercial industry is to create a better future for later generations. To achieve this goal, respective policies and regulations to assure the certainty of such activities, the right of citizens to use space resources and the right to own and create properties in space must be established. Mr Tumlinson stipulated, however, that these regulations should not be too complicated as these would then hamper the development of the industry. Therefore, rather than within the international community, there should be more legislative developments within national governments and institutions to create the ability to understand space mining activities for themselves. Such national legislations may work as a model for the international community to develop a better international law regime governing space mining. Mr. Tumlinson believed that a common understanding about the peaceful uses of outer space will create a better future.

As the next speaker, **Mr. Takeshi Hakamada**, Founder and CEO of ispace technologies, inc. presented "*A Japanese NewSpace perspective*". He argued that the emergence of new technologies on earth has been beneficial for mankind, and application of such technologies in space resource development can also be expected to bring benefits. In this context, sustainability in space becomes relevant, and there are three issues to be solved in order to achieve sustainable space resource utilization: governance, technology and finance.

Governance raises questions such as the regulation of the activities, possible international consensus and environmental issues. With regard to technologies, the question is whether technologies developed on earth can also be used in space. Finally, financing space resource development will be a major challenge as well. Mr. Hakamada identified three requirements in this context: i) space mining activities shall comply with international obligations, ii) such activities shall be carried out through a multilateral mechanism, and iii) any technology involved shall be accessible for all States. To conclude, he presented recent progress in Japan and explained that Japanese national space policy commits to encourage the utilization of space resources. He also elaborated on the contributions made by ispace to address the concerns regarding the sustainability in outer space.

Following Mr. Hakamada's presentation, **Prof. Joanne Gabrynowicz**, Director of the IISL and Em. Editor-in-Chief of the *Journal of Space Law*, provided her insight on "*Title IV of the 2015 U.S. Commercial Space Launch Competitiveness Act*". She explained that the draft "American Space Technology for Exploring Resource Opportunities in Deep Space Act" had failed to proceed in Congress in 2014. Following that, in 2015, the failed part had been incorporated as "Title IV – Space Resource Exploration and Utilization" into the U.S. Commercial Space Launch Competitiveness Act. The newly added Title IV defines 'asteroid resource', provides the scope of 'space resource' and the applicability, by providing a definition of 'U.S. Citizen'. Further, this title provides obligations imposed on the U.S. President and confirms the right of U.S. citizens to possess, own, transport, use and sell asteroid resources or space resources obtained, in accordance with any applicable law. Further, it disclaims extraterritorial sovereignty of outer space in space resource and mining activities. In 2016, the White House Office of Science and Technology Policy published a report on "Authorizing Private On-Orbit Missions". This report elaborated on the process of authorization by following the model of the FAA's Payload Review process, in which the evaluation of potential projects is conducted by a case by case basis. A normal Payload Review cannot authorise on-orbit operations because the FAA nor any other Federal entity of the U.S. currently has jurisdiction to do so. Prof. Gabrynowicz concluded that possibly new legislation is required for this matter. In March 2017, a hearing was held by the Space Subcommittee of the Committee on Science, Space and Technology. In this hearing, no consensus was reached on how the U.S. government should proceed concerning the space mining issue, which indicates that years of discussions have not yet resulted in definite answers to all questions.

The next speaker was **Prof. Dr. Mahulena Hofmann**, holder of the SES Chair in Satellite Communications and Media Law at the University of Luxembourg and IISL Director, presenting "*Considerations about*

Luxembourg's draft law on the exploration and use of space resources". At the beginning of 2016, Luxembourg became involved with asteroid mining through Deep Space Industries, and the government decided to prepare draft legislations on space resources and general space activities. The draft law on the exploration and use of space resources guarantees full compliance with the Outer Space Treaty. Articles 2-14 of the draft law entail authorization and supervision provisions reflected in Article VI of the Outer Space Treaty. According to Prof. Hofmann, authorization is important in order to ensure that parties conducting these activities have enough knowledge to carry out the relevant missions. By authorization, States may for instance examine the financial capability of the parties to cover risks that may occur. Authorization can also make sure that parties are in compliance with relevant regulations regarding environmental protection. Prof. Hofmann stipulated that, as Article 1 of the draft law provides, Luxembourg does not intend to allow the appropriation of outer space, only the utilization of space resources.

The next speaker was **Prof. Jose Monserrat, Filho**, Vice President of the Brazilian Association of Air and Space Law and Honorary Director of the IISL. He discussed the topic "*Developing countries and the exploitation of space resources*". Referring to the 'Clause of Common Benefit', provided in Articles I and IX of the Outer Space Treaty, exploitation of natural resources must be governed by international law. These activities fall under international jurisdiction, and space resource exploitation conducted only by private companies and further activities done by private companies or individual States may cause inequality and poverty. Prof. Monserrat strongly argued that there is a need for a true international cooperation including participation of developing countries in order to achieve equal economic, social and cultural development, and that it is important to create a balance between investing and non-investing States. When negotiating, legitimate interests of developing countries should be taken into due consideration. Despite all the provisions supporting participation of developing countries, Prof. Monserrat suggested to amend the OST, which does not currently refer to space resources utilization, mining activities, and monetary activities in outer space. An updated Treaty may define the term 'exploration and use' of outer space and celestial bodies, and fill other gaps that the existing OST has. By explicitly incorporating the non-appropriation principle in its Article II, the OST does not approve any regime supporting any private claim to ownership of a part of outer space. In short, there is no legal basis for States and private companies to freely explore natural space resources with industrial and commercial ends. There is a need to develop a special regulation for these activities to ensure that outer space remains the province of all mankind, according to Prof. Monserrat.

The next presentation was given jointly by **Prof. Stephan Hobe** of the University of Cologne and member of the boards of both the IISL and ECSL, with **Mr. Phillip de Man** of the University of Leuven. Prof. Hobe focused on “*The national appropriation of outer space and its resources*”, presenting the relation between exploration, exploitation and utilization of natural resources of outer space and the ban on national appropriation of outer space. Referring to Article II of OST, Prof. Hobe put forward that an unclear provision could never be an explicit prohibition as it does not in an explicit way formulate a prohibition on certain uses. The permission to exploit space resources must be read in conjunction with Article I OST regarding the conditions of this freedom, as well as Article 11 paragraphs 4, 5 and 7 of the Moon Agreement. Further comparing legal regimes, in the legal regime of Antarctica and in the regime established under Article 11, Annex 11 of UNCLOS, differentiated principles are in place to entitle states to exploit resources. When referring to Article 11 paragraph 5 of the Moon Agreement, Prof. Hobe strongly supported that the international community must come up with an agreement on the conditions for the exploitation of the resources. Final remarks were made by suggesting the international community to come up with an agreement on the conditions of such exploitation which arguably should be an agreement addressing the entire international community, and not by unilateral national legislation. **Dr. Philip de Man** covered the topic of state jurisdiction regarding space mining. As to legislative jurisdiction, Dr. de Man has illustrated two different approaches and their respective effect, namely the *restrictive* approach and the *permissive* approach. Further, Dr. de Man argued that territory cannot be a basis for exercising jurisdiction in Outer Space. As regards personal jurisdiction, he suggested that States cannot determine what other States’ nationals may or may not do. However, the Preamble of the OST, which says that States should cooperate internationally in developing the legal aspects of the exploration and use of Outer Space, seems to preclude any approach that would allow States to regulate simply because there are no international rules yet regarding that specific activity. Dr. de Man argued that the enactment of national laws on space resources utilization is not in line with the first provision of the first article of the OST, which states that outer space has to be explored and used for the benefit of all countries, and cannot satisfy the interest-balancing that is required for the exploitation of global commons.

The final presentation of the Symposium was given by **Prof. Tanja Masson-Zwaan** of the International Institute of Air and Space Law, Leiden University, offering an insight into the work of the Hague Space Resources Governance Working Group. This working group was established in October 2015 and plans to complete its assignment at the end of 2017. It was set up to assess, on a global scale, the need for a regulatory framework for space resource activities, and essentially, to work on and to define “Building Blocks”, to

encourage States to engage in negotiating an international agreement or a non-legally binding instrument to solve current issues regarding space mining. The founding Consortium partner is the International Institute of Air and Space Law at Leiden University, cooperating with other partners, namely, the Catholic University of Santos (Brazil), the Centre for Resources, Energy and Environmental Law, University of Melbourne (Australia), the Indonesian Centre for Air and Space Law, Padjajaran University (Indonesia), the Secure World Foundation (USA), and the University of Cape Town (South Africa). The Management consists of a Chair, two Vice Chairs, Members and Observers. The Secretariat, consisting of the Executive Secretary and Assistant Secretary, is embedded in the International Institute of Air and Space Law. Currently the Working Group has 22 Members and 38 Observers. While referring to publications, the Statement of the Netherlands at the 55th Session of UNCOPUOS LSC 2016 and the 1st “Status Report” presented at the 67th IAC in Guadalajara, Mexico were mentioned. Prof. Masson-Zwaan announced that the next meeting will take place in April 2018, and after another meeting in the fall, a second “status report” will be presented at the IISL Colloquium at the 68th IAC in Adelaide, with details about the Building Blocks and discussions on the appropriate forum.

Following the presentations, **Prof. Sergio Marchisio** invited delegates and participants of the Symposium to actively provide questions and opinions. **Ms. Laura Jamschon Mac Garry**, ad hoc Chair of the Legal Subcommittee thanked all the panellists for their interesting and resourceful presentations and closed the symposium. The output of this symposium will certainly contribute to following discussions of the Legal Subcommittee. The presentations delivered during the symposium were made available on the website of UNOOSA at: www.unoosa.org/oosa/en/ourwork/copuos/lsc/2017/symposium.html.