

Report of the 55th Colloquium on the Law of Outer Space

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Session 1: Nandasiri Jasentuliyana Keynote Lecture on Space Law & 4th Young Scholars Session

Chairs: Asst. Prof. Tanja Masson-Zwaan and Prof. Dr. Elisabeth Back Implomeni

Rapporteur: Dr. Olavo de O. Bittencourt Neto

A total of eight papers were presented in this session of the 55th Colloquium on the Law of Outer Space. The session opened with the keynote lecture delivered by Prof. Sergio Marchisio, presenting a comprehensive study of the draft International Code of Conduct for Outer Space Activities prepared by the European Union, discussing its relationship with the UN outer space treaties. Prof. Marchisio emphasized the soft law nature of such instrument, which, even though not legally binding, represents a political commitment of the highest order, capable of assisting international conventions. Indeed, as affirmed, the importance of the International Code of Conduct must not be underestimated, since it addresses relevant legal concerns demanding pragmatic solutions, as well as complements international regulation regarding space activities.

Christopher Johnson presented the first paper after the keynote lecture, co-authored by [Ms. Joyeeta Chatterjee](#), [Ms. Aleksandra Puscinska](#) and [Mr. Olusoji Nester John](#), introducing proposals envisioned by the Space Generation Advisory Council to emerging space-capable nations, in

relation to their national space legislations. Guidelines were introduced, based on far reaching studies concluded by their Space Law Working Group, which covered considerations of existing national examples as well as political and economic issues.

Dr. Diego Zannoni presented the following paper, advocating the existence of an international duty to provide early warning in relation natural disasters, as far as space activities are concerned. Acknowledging the importance of data collected by space technologies in such dramatic circumstances, Dr. Zannoni offered a detailed observation of current international legal provisions applicable in that regard, devoting special attention to the regulation of remote sensing activities.

The next paper was presented by [Divyanshu Agrawal](#), with introduction by co-author [Mr. Shashank Reddy](#), discussing the obligation of States to undertake appropriate measures to prevent contamination of the environment of the Earth and outer space, based on the interpretation of Article IX of the Outer Space Treaty, conducted in accordance to provisions of the Vienna Convention on the Law of Treaties of 1969.

Next, Mariam Yuzbashyan's paper, on the interaction between diverse sources of law applicable to legal challenges represented by commercial space activities, was summarized by Prof. Mark J. Sundahl.

Dr. Olavo de O. Bittencourt Neto then introduced his paper, offering a legal alternative of compromise for delimitation of the frontier between airspace and outer space. Dr. Bittencourt suggested the provision, by an international instrument, of a delimitation at 100 km of altitude above mean sea level, but contemplating regulation of passage rights for space objects during launchings and reentries, as long as those space activities are peaceful, conducted in accordance with international law, and respecting the sovereign interests of the applicable territorial States. This paper won the 2012 Diederiks-Verschuur Award.

Rik Hansen presented the next paper, also discussing the legal boundary of airspace and outer space, but adopting a perspective focused on three case studies of conflicts of laws that are dependent, in one way or another, on such question: military use of outer space, commercial use of outer space and space tourism, and industrial exploitation of outer space. Mr. Hansen, currently conducting a larger PhD project in that regard, favored an inductive approach based on the fundamental criterion of orbitality.

The final paper of this session was presented by Sandra Teichert, examining the impact of Germany's recent space policy and this nation's progress towards a national legislation, in regards to space activities. Ms. Teichert, after recognizing the fact that Germany is one of Europe's leading space faring nations, indicated topics that should be addressed by the future national space legislation, including liability, especially in relation to private activities.

Fascinating questions were presented from the audience, opening a lively debate in relation to the topics covered in this session. Important perspectives were offered regarding definition and delimitation of outer space, national space legislation and interpretation of

the UN space treaties. Distinguished scholars joined in the discussions, including Drs. Lubos Perek, Peter P. C. Haanappel, Frans von der Dunk, Mark Sundahl, Joanne Irene Gabrynowicz, Vladimir Kopal, Larry Martinez, Stephan Hobe and Matthew Schaefer. The speakers took the opportunity to provide additional clarification, as far as their papers were concerned, contributing to an excellent and fruitful exchange of ideas. Concluding remarks were made by Tanja Masson-Zwaan and Elisabeth Back Impallomeni, congratulating all participants for a successful session.

Session 2: The Interaction between International Private Law and Space Law and its Impact on Commercial Space Activities

Chairs: Mr. Martin Stanford and Prof. Paul Larsen
Rapporteur: Ms. Olga S. Stelmakh

A total of 10 papers were presented at the second IISL session on "The Interaction between International Private Law and Space Law and its Impact on Commercial Space Activities". The presentations covered a range of issues related to the Space Assets Protocol to the Cape Town Convention as well as a series of legal problems occurring from interaction between private and public space law.

Prof. Larsen opened the Session, giving a brief introduction of the topic .

The first paper entitled "The Unidroit Protocol to the Cape Town Convention on Matters specific to Space Assets" was presented by Martin Stanford from UNIDROIT, Rome. He introduced the Convention/Protocol structure of the Cape Town Convention and its key features and recounted the development of the Protocol, in particular the way in which it brought together representatives of Governments of nations at all levels of development and leading representatives of the commercial

space, financial and insurance communities. He also provided an overview of the key features of the Protocol - in the process explaining the principal topics discussed at the diplomatic Conference, explained the next steps to be taken in respect of the Protocol and, finally, essayed a number of preliminary conclusions, referring notably to the benefits that it is hoped the Protocol may bring.

Prof. Sergio Marchisio from the Sapienza University of Rome presented the next paper entitled "Space Assets Protocol and Compliance with international and domestic law". In his presentation he clarified the meaning of an optional character of the regime set out by the Protocol for private parties and the public law (international and domestic) limits within which the regime will operate. Particular emphasis in consideration of the Protocol has been done on the issue of its compliance with international and domestic law, highlighting its two-fold character: on the one side, the compliance with international treaties already in force and, on the other, the compliance with some internal legislation considered of peremptory nature and therefore not suitable for modifications through the Protocol. With regard to those UN outer space treaties already in force, it has been noted that the issue of consistency with Protocol was raised more by academicians rather than by States participating in the negotiating process. Of significant interest for the audience were remarks made by speaker concerning the notions of "internal transactions" and "jurisdiction" contemplated within the Protocol.

Following this presentation, the floor was opened for an interim discussion to the attendees. The first question concerned the enumeration of states-signatories of the Protocol. The second one was focused on the nature of the "imposed" legal regime under the Protocol. Taking this question Prof. Marchisio noted that suggested regime is not a mandatory system; instead it is

open for acceptance by states that are free to decide which system fits best for them. He also noted that this legal instrument was primarily conceived for the benefits of operators and financing institutions.

The next presentation entitled "The Space Protocol to the Cape Town Convention and the UN Space Law Treaties" was delivered by Prof. Paul Larsen of Georgetown University Law Center. He identified the points of intersection and problem areas between the Space Protocol and the space law treaties, focusing on the context in which the Space Protocol is intended to function. Apart from an in-depth examination of the intersections arising between a newly adopted legal instrument and major existing space law acts, discussion included consideration of the ITU legal instruments. It was underlined that these are the treaty instruments specifically mentioned by the Space Protocol, the provisions of which supercede any aspects of the Protocol that may conflict with them.

The fourth presentation entitled "Last comments on the text of the Draft Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets" was given by Prof. Gabriella Catalano Sgroso of the University of Rome. The speaker argued that the Protocol, which is complementary to the Cape Town Convention, establishes clear, global trade-driven rules governing space asset transactions, sets up and operates an International Registry in which international interests and associated rights on space assets are registered and establishes a Supervisory Authority, thereby achieving, as efficiently as possible, another key target, i.e. enhancing transparency and winning financiers' trust. However in order to encourage States to deposit their instruments of ratification, it might be more useful to make minor amendments to the

documents through proposals put forth by Contracting States, as is currently happening.

The last two presentations generated a number of questions and comments; however the most remarkable one was the request to render a legal opinion regarding the possible conflict among the multitude of jurisdictions and therefore the need for clarity with regard to the choice of applicable law.

Prof. Mark Sundahl from Cleveland State University presented the next paper entitled "How the Rescue and Return Agreement Can Protect (and Harm) the Interests of a Creditor under the Cape Town Convention". In his presentation he examined how the operation of the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Space could benefit a creditor who holds an international interest in a space object under the Cape Town Convention and explored the scenarios in which the operation of respective agreement could harm. He argued that although the Convention occupies a field of law that is not addressed by the existing space treaties, it is felt to be a promising expansion of space law into the realm of private transactions. In the speaker's opinion the occurring intersections should be taken into consideration by the practitioners and judges who apply the Convention. He concluded that existing space law can work to promote the interests of the creditor under the Cape Town Convention and, in at least one scenario, can be potentially adverse to a creditor's interests.

Prof. Dr. Lesley Jane Smith from Leuphana University spoke next on the topic of "Collisions in space: perspectives on the law applicable to damage arising from space objects". She took a closer look at the liability regimes for damage from outer space activities at international and national level, including third party liability, also in relation to GNSS activities. She

offered a perspective on the current state of regulation and some reflections on future developments within the law governing liability for space activities.

Presentation of Prof. Smith attracted a lot of practical questions from the audience. While responding to them, she noted that as of today not all states foresee compulsory third part liability insurance even though there are all grounds for the latter to be imposed. In respect to the prerequisites for an appropriate liability regime, attendees inquired the speaker's position as to the role of the SSA and proactive duties of notification by concerned stakeholders.

Dr. Atip Latipulhayat from the Indonesian Centre for Air and Space Law then delivered the paper on "Privatization of Space Law: Negotiating of Commercial and Benefit-Sharing Issues in the Utilization of Outer Space". He emphasized that the privatization and commercialization of outer space that has taken place intensively in the last two decades has also been followed by privatizing space law – directing space law to be more responsive to private and commercial issues. However privatization of space leaves the question about the role of the state after privatization and the form of space regulation when states are no longer the sole actor in outer space activities. His considerations led him to the conclusion that the orientation and form of privatization of space law should be within the basic spirit of the utilization of outer space: for the common interest of all mankind.

Masatoshi Nakano from the Japan Aerospace Exploration Agency presented the next paper, co-authored by Seiko Morikawa, entitled "Corporate Governance and the Commercialization of Space Transportation". Their paper elaborated on the strong effect of public policy on space transportation. Mr. Nakano argued that Corporate Governance in space transportation business includes the relationship with public policy especially in terms of

sustaining space transportation, therefore a different approach is taken by each country to fulfil that objective. He argued that with private company as main players in the space transportation business, due consideration for issues of corporate governance is inevitable, like in any other private companies. It was concluded that balancing corporate governance requirements imposed on private companies with public policy is essential for the space transportation business.

The next paper was "Towards a new international space liability regime alongside the liability convention 1971" co-authored by Hamid Kazemi, Dr. Hadi Mahmoudi and Dr. Ali Akbar Golroo. Presented by Dr. Ali Akbar Golroo from the Aerospace Research Institute of Iran, the paper analyzed the interaction of public and private international space law focusing on liability in order to justify a need for elaboration of a new international space liability regime alongside the Liability Convention. It was emphasized that the current legal regime established under the Liability Convention is not in a capacity to cover private international law provisions governing liability of individuals and private entities. To complete respective gaps it was suggested to initiate a new treaty on private international space law modeled on private international air law. In their opinion while it is unlikely to occur in the near future the new liability regime for space activities should be designed similar to existing liability frameworks in private international air law in order to reflect the nature of the space industry and to reduce the emphasis being placed on States to be liable for the activities of private operators.

Phetole Sekhula of the South African Council for Space Affairs delivered final paper on "The Legal and Policy Considerations in Implementing the Space Assets Protocol: Lessons From the Aircraft Equipment Protocol in South Africa". The presentation was

based on the argument that the Aircraft Protocol enjoys wide acceptance because of the commercial benefits in the form of discounts on premium rates enjoyed by debtor airlines. He noted that there is no such benefit expressly provided for in the Space Protocol, yet there is a complementary benefit provided to creditors in the form of the provisions relating to debtor's rights. Deriving from this assumption he argued that there is a need to develop an analogous benefit framework under the Space Protocol. For this purpose South Africa introduced Resolution 4, approved at the Berlin Diplomatic Conference, given its experience in the implementation of the Aircraft Protocol. He closed his presentation with the recommendation to UNIDROIT to clarify the benefits accruing from of the Space Assets Protocol.

After this presentation a question was raised about the difference between pre-Berlin and post-Berlin attitude concerning the Space Assets Protocol. It was noted that once adopted, the legal instrument, even though of optional nature, will become a standard.

The paper of Prof. Dr. Souichirou Kozuka from the Gakushuin University on "The Use of Security under the PFI/PPP Project and the Meaning of the Space Assets Protocol to the Cape Town Convention" explored the importance that security interests have under PFI and PPP schemes and considered how useful the Space Assets Protocol can be within such a scheme. He stated that the adoption by the Diplomatic Conference of the resolution calling for banks to consider favourable treatment of space financing under the Space Assets Protocol may reflect the expectation that the latter can bring about an institutionalised treatment similar to the Cape Town discount under the Aircraft Protocol. Prof. Kozuka advocated that arrangements will need to be made with the participation of relevant industry and government representatives with expertise in space financing, before

treatment equivalent to the Cape Town discount under the Space Assets Protocol comes true. He noted that it is the first instrument on the globe that enables creation of non-possessory security interests in spacecraft, however there are still many issues requiring further attention of space law experts.

In closing, Prof. Larsen observed that the session had provided a unique forum for exchange of ideas on the matter at hand led a lively discussion.

Session 3: The International Legal Regulation of Outer Space within the Scope of Public International Law

Chairs: Prof. Stephan Hobe and Prof. Steven Freeland

Rapporteur: Ms. Elena Carpanelli

The session focused on the existing interrelationships between public international law and space law, and more specifically, on the issue of why, when and how public international law principles should apply to outer space.

A total of 8 papers were presented in the session, covering a wide range of topics and analysing the subject matter under several different perspectives.

Prof. Stephan Hobe welcomed the decision to make the interrelationship between space law and public international law a topic of the 55th Colloquium on the Law of Outer Space. Prof. Hobe also stressed how previous discussion had already highlighted the multifaceted dimension of such an interrelationship (e.g. relations between law of the outer space and international humanitarian law, human rights law, international environmental law...).

Prof. Freeland then highlighted how the study of the relation between space law and public international law constitutes a topic that should increasingly be thought of. In particular, Prof. Freeland pointed at the difficulties and

challenges relating to the application of public international law to the regulation of outer space. Indeed, the circumstance that public international law has mostly developed terrestrially on the basis of States' sovereignty could represent an obstacle to the direct application of its principles to the regulation of outer space as recognized in Art. III of the Outer Space Treaty. Prof. Freeland also identified the existing tension between, on the one hand, the need not to conclude that no law exists if there is a legal lacuna and, on the other hand, the need not to use the existing legal lacunae as a justification to find the law at all costs. In other words, while several public international law principles effectively apply to part of the legal vacuum in the regulation of outer space, this could not be translated into an indiscriminate attempt to find the law before it actually exists, even re-writing the space treaties for this purpose. On the contrary, the identification of the applicable law should be done through the rules of law.

The first presentation, titled "A Roadmap for a Sustainable Space Legal Regime" was made by Prof. Henry R. Hertzfeld. The presentation revolved around the current shortcomings of the legal regime governing outer space liability, especially on-orbit liability. Prof. Hertzfeld highlighted how, due to the developments in outer space, issues have arisen, inter alia, with respect to the lack of a clear definition of damage caused by a space object, to the absence of an effective procedure for dispute resolution, to the problems related to insurance coverage. Prof. Hertzfeld envisaged the possibility of drafting a new Protocol / space treaty, not conflicting with the 1972 Liability Convention's provisions, able to clarify and solve some of the above-mentioned current and future issues (e.g. by elaborating a new definition of space object). To serve this purpose, the principles already applying to other fields of international law could be

relied on (e.g. as far as dispute resolutions are concerned, useful inputs could come from the binding arbitration schemes already existing within the WTO, ICSID, and UNCLOS regimes).

Prof. Hertzfeld's presentation generated several questions and comments. Concerning the new definition of space object he had proposed, Prof. Frans von der Dunk asked whether and why he had decided not to include "any object intended to be launched in space". On the same topic, it was underlined that, from a scientific point of view, both a definition of space object as "anything that goes to orbit" and specific technical standards concerning maneuvering parameters already exist. The clear conclusion was that there is a current need for clarifying and legally specifying the notion of space object and that more discussion and thought on this topic should follow.

Prof. Joanne I. Gabrynowicz also took the floor by stressing that Art. XI of the 1972 Liability Convention does not exclude arbitration for disputes settlement. Prof. Hertzfeld replied that, although this is true, currently, there is no effective binding arbitration system in place for space liability disputes.

The second speaker was Prof. Matthew Schaefer, who delivered his paper titled "Analogues between Space Law and Law of the Sea / International Maritime Law: Can Space Law Usefully Borrow or Adapt Rules from those Other Area of Public International Law?". His presentation explored whether the space law regime could borrow models and principles from the Law of the Sea and international maritime law and concluded that these branches of international law provide some analogues that, if properly adapted, could apply and serve to the development of new space legal rules on space debris mitigation. More specifically, Prof. Schaefer identified how space law attempts to combat the proliferation of space debris could benefit from comparisons and lessons

derived from the duties of the flag State over vessels as developed in the Law of the Sea and the principles of liability salvage set under international maritime law.

Following the presentation, Prof. Melissa K. Force asked whether the application to space debris of the principles of liability salvage presumes consent. Prof. Schaefer replied that there is the need for distinguishing among different situations: in some instances, for example, space debris could be of unknown origin and therefore no consent issue would arise.

Prof. Vladimir Kopal then warned on the risks inherent to making analogies, although recognizing that common elements exist and lessons can be learnt from other fields of international law.

Richard Burks presented the third paper of the session, co-authored by Dr. Christina Carmen, titled "Critical Legal Issues Associated with Current and Future Space-faring Endeavors". Mr. Burks provided a general overview of the critical legal issues that have arisen as a consequence of the increasing participation of Nations in the use and exploration of outer space: liability and responsibility issues relating to space debris; ownership rights and allowable usage of extra-terrestrial material; the protection of national assets in space. After a brief but exhaustive analysis of the aforesaid legal issues, Mr. Burks concluded that a solution could be forged only through international debate and that multilateral partnership and agreements should be executed to ensure that outer space continues to be used for peaceful purposes.

At the end of his presentation, the speaker was questioned on the means through which revision of the existing space legislation should be undertaken. Mr. Burks suggested non-binding guidelines as the most feasible way to adapt the existing legal regime to new

developments and issues emerged in recent years.

As Prof. Hobe stressed, the presentation poses the challenging question of the better approach to be taken in dealing with these new legal issues: should revision be pursued considering any single issue in general or by distinguishing among the different branches of law involved?

Jingjing Nie was the next speaker. She presented her paper, co-authored by Prof. Yang Hui, titled "Revisit the Concept of International Custom in International Space Law". The presentation analysed the role of customary international law in the development of the regulation of outer space. Taking into account that space activities have developed only from the second-half of the past century, involving for decades only few actors, and, therefore, States' practice in space lacks of consistency, uniformity and generality, Ms. Nie investigated whether some of the rules and principles relating to the use and exploration of outer space, embodied in UN resolutions, bilateral and multilateral agreements, national legislation and other international instruments, could anyway be regarded as "instant custom" of binding nature. At the end of her analysis, Ms. Nie also questioned how and by whom existing custom should be detected. Considering that new space-faring Nations increasingly involved in space should have a clear view of the legal rules applicable to them and given the shortcoming that would arise out of appointing Courts as the sole bodies competent to establish existing customs, the speaker came to envision a possible role for OOSA.

The speaker was then asked by the audience to comment on the role of China and other emerging Countries in the formation of international custom relating to the use and exploration of outer space.

Prof. Fabio Tronchetti then presented his paper on "The applicability of Rules of International Humanitarian Law to Military Conflicts in Outer Space: Legal Certainty or Time for a Change?". In his presentation Prof. Tronchetti, taking note of the increasing integration of space-based assets into warfare and the risk that outer space becomes a theatre of war, analysed the legal regime applicable to armed conflicts in outer space. Given the lack of specific international norms governing armed conflicts in outer space, Prof. Tronchetti examined whether and to what extent international humanitarian law could apply. The speaker concluded that, notwithstanding Art. III of the Outer Space Treaty, several international humanitarian law principles, such as discrimination and proportionality of armed attacks, could hardly apply, by their own nature, to military conflicts in outer space. Therefore, Prof. Tronchetti envisaged the development of a *jus bello spatialis* based on the adaption of international humanitarian law principles to armed conflicts in outer space. Pursuant to Prof. Tronchetti's proposal, these new specific sets of rules could be established either by means of a new binding Protocol annexed to the Geneva Conventions of 1949 or by means of a non-binding code of conduct, to be incorporated in domestic legislations.

The presentation was followed by questions and lively debate, interrupted only for time constraints.

Prof. Ram S. Jakhu next presented his paper "The Relationship Between the United Nations Space Treaties and the Vienna Convention on the Law of Treaties", co-authored by Prof. Steven Freeland. The presentation outlined the complex interplay between the United Nations Space Treaties and the 1969 Vienna Convention on the Law of Treaties. The analysis focused on ascertaining the relevance in the regulation of outer space of general principles of international treaties law, such as the ones concerning

interpretation, fulfillment of international obligations in good faith, obligations of signatory parties, effects for third parties, relevance of *ius cogens* norms and fundamental change of circumstances. The authors concluded that, although the complexity of the topic hardly allows straightforward answers, there is no doubt that a relationship exists between the space treaties and the principles embodied in the Vienna Convention on the Law of Treaties (both as such and as embodying customary rules). Such relationship should be taken into account by present and future space lawyers and, from a broader perspective, perfectly shows how space law is part of public international law.

The presentation stimulated the audience's comments. Dr. Martha Mejia Kaiser, among others, stressed the dual character of the non-appropriation principle in the law of outer space: as customary norm and *ius cogens* norm. In general, the audience seemed to agree on the complexity and challenging nature of this field of research, still not thoroughly investigated.

The seventh paper, titled "The Standard of Due Diligence in Operating a Space Object" was presented by Prof. Setsuko Aoki. Prof. Aoki displayed the outcomes of her analysis on the notion of "fault" in the operation of space objects, undertaken with the ultimate scope of clarifying one of the most controversial aspects of the current outer space liability regime. The speaker, after a thorough examination of both the outer space legal regime and international law principles, and also relying on practical examples, outlined that the fault-based liability embodied in Art. III of the 1972 Liability Convention deviates from the traditional international theory on liability. Indeed, according to the outer space legal regime, a launching State, even if acting without any fault, is still liable for acts of private entities under its responsibility, in contrast with

customary law principles on trans-boundary damages. Taking into account that the proper understanding of fault liability in outer space is a prerequisite in order to assess the required standards of conduct for space operators, Prof. Aoki concluded that recent development of international law and practice seemed to indicate that the outer space liability sets a unique liability regime for both damages on the surface and to other space objects: a liability regime disconnected from any breach of legal duties by the operators, whether governmental or non-governmental.

At the end of her presentation, Prof. Aoki was asked by Prof. Lesley Jane Smith to briefly enlighten the audience on whether space awareness already constitutes a general standard in Japan. It was also observed that Japan is the State that best complies with space debris mitigation guidelines.

The last paper was delivered by Ksenia Shestakova on the topic "The Dichotomy Between the Duty to Provide Information and Security Concerns of the State". In her presentation, Ms. Shestakova stressed how Art. XI of the Outer Space Treaty and the related duty to disclose information are hindered by the provision that such a disclosure should be undertaken "to the greatest extent feasible and practicable". According to the speaker, this self-judgment clause allows States not to fulfill their obligation to disclose information every time they have military or economic concerns. In order to better assess the application and limits of the exception embodied in Art. XI of the Outer Space Treaty, Ms. Shestakova addressed self-judgment clauses existing in other branches of public international law, as well as their interpretation given by international Courts. Ms. Shestakova concluded that, even in light of general international law principles and practice related to self-judgments clauses, when lack of disclosure hinders the wellbeing of other States, Art. XI should be interpreted and applied in good faith by

finding the right balance between the interests of the States involved.

The presentation led to questions and clarifications on the roles of commercial entities and on the notion of space-derived data.

The floor was then opened to general discussion.

The possibility that norms are identified before they actually exist was again recognized as both a risk and a temptation, as well as one of the most challenging and topical issues when addressing the relationship existing between public international law and international space law.

Prof. Haanappel intervened stressing that customary international law operates in space law as many other elements and principles of public international law. He warned against the indiscriminate application of the doctrine of instant customary law to space law, although not excluding the possibility to apply it. Prof. Hobe suggested that such an application was probably more understandable in the past, when written space law was still missing.

Dr. Martha Mejia Kaiser took the floor by stressing the role that the international community has in creating custom and the consequent necessity to undertake thorough case-by-case analysis of States' practice related to the exploration and use of outer space.

Finally, Prof. Irmgard Marboe warmly welcomed the references made during the session to areas of international law –such as the ICSID principles – from which a lot can still be learned.

In sum, the speakers enlightened an enthusiastic and attentive audience on the possible relations between international law of outer space and public international law, demonstrating, as Prof. Hobe underlined, that “space

law is part of international law: this is easy to say but difficult in practice”.

Bearing in mind Prof. Freeland's concluding remark - “a conference is good if you walk away with questions” – there is no doubt that the session was a true success.

Session 4: Legal Evidence From Outer Space

Chairs: Dr. Marco Ferrazzani and Mr. Ray Purdy

Rapporteur: Dr. Michael Chatzipanagiotis

The session began with an introduction of the co-chair Ray Purdy. Mr. Purdy observed that satellite data as evidence are used on the one hand to guide the decisions of policymakers, on the other hand to establish a fact in a legal dispute. In particular, satellite data are used to check compliance with specific legislation, to show the temporal evolution of a situation and to monitor situations at places where physical access is difficult. However, the use of such data faces certain challenges, such as lack of technical knowledge on their use as evidence, problems of availability and reliability, as well as privacy concerns.

Alvaro Fabricio dos Santos from the Advocacy General of the Brazilian Union analyzed the use of satellite data by the Brazilian Government in its efforts to prevent and control the deforestation of the Amazon region. Such data were provided in the framework of special projects of the Brazilian National Institute for Space Research. They were used as evidence in trials regarding illegal deforestation and contributed to the effective mitigation of the problem.

Ray Purdy summarized the paper of Prof. Maureen Williams on the validity of space evidence in international legal proceedings. The paper identified as major problems the authentication of

the data and the issues connected therewith, and proposed the establishment of international standards, most preferably in the framework of the PCA Optional Rules for Arbitration of Disputes relating to Outer Space Activities.

The presentation of Prof. Carlo Golda and Dr. Stefano Lupo concerned privacy problems arising out of the use of satellite imagery in piracy cases. First, it was underlined that satellite images can play a significant role in the prevention and prosecution of piracy. However, the judicial use of such data could interfere with the sovereign rights of the sensed State. Moreover, the application of the UN International Covenant on Civil and Political Rights and the European Convention of Human Rights may reveal privacy and confidentiality problems. Prof. Golda and Dr. Lupo proposed the creation of a global centralized system to manage and guarantee the reliability of satellite data. Such system could be useful not only in public international law but also in the private maritime insurance sector.

The presentation of Sarah Moens, lawyer in Belgium, focused on the use of satellite data in criminal proceedings concerning oil discharges at sea. Ms Moens observed that satellite data are the most effective way to monitor compliance with the International Convention on the Prevention of Pollution from ship (MARPOL). Nonetheless, using such data faces two challenges: availability of the data to the interested States and reliability of the information. Special mention was made to EU efforts to make available relative satellite data to all Member States. Another problem is the inexistence of international rules on the definition of proof, the necessary amount of evidence to prove illegal oil discharges and the requirements of admissibility of such evidence in courts.

Dr. Annette Froehlich, from the European Space Policy Institute

examined "The impact of satellite data used by High International Courts like the ICJ (International Court of Justice) and ITLOS (International Tribunal for the law of the Sea). Dr. Froehlich analyzed the cases, in which satellite data were produced before the ICJ and the ITLOS. The ICJ used such data mainly concerning cases of territorial disputes, including claims on harmful environmental impacts caused by State activities. Furthermore, satellite images were used to facilitate the implementation of the ICJ judgments. Before the ITLOS satellite data have been used to facilitate delimitation of the territorial sea.

Prof. Maria del Carmen Muñoz-Rodríguez, University of Jaén, Spain, presented the approach of Spanish courts to legal evidence from outer space. Dr. Muñoz-Rodríguez presented the main applications of remote sensing in Spain, which are the domains of agriculture and agricultural insurance as well as the management of forest and water resources. Subsequently, she analyzed the attitude of Spanish courts towards satellite data, which evolved from reluctance to accept them to full recognition of their usefulness as legal evidence. Nevertheless, Spanish courts usually require an expert report to evaluate such data, while an additional problem is the lack of national rules to regulate the conditions of their reliability.

The paper of Mohamed Mustaque, advocate in India, was summarized by Dr. Ranjana Kaul and concerned the evidential value of space data in India. The paper addressed the admissibility of space data before Indian courts and proposed amendments in existing legislation to secure their reliability.

In sum, all presentations underlined the increasing importance of satellite data as evidence in both national and international disputes.

Session 5: Recent Developments in Space Law

Chairs: Ms. Corinne Jorgenson and Dr. Ranjana Kaul

Rapporteur: Ms. Maria Pozza

Dr. Milton “Skip” Smith started the session and presented on the “Legal Issues presented by hosted payloads”, co-authored with Stephen Smith. Dr. Smith discussed the increasing importance of hosted payloads and the necessity of clear contracts in relation to primary payloads. Some of the legal issues addressed in connection with the hosted payload contract included risk assessment and management, and the complexities surrounding insurance including the risk a hosted payload might cause to a primary payload. While claims of this sort would be dealt with on a ‘case by case’ basis, Smith further observed that the level of complexity surrounding such contracts would eventually require more systematic attention given the growing number of interested parties utilising space through the hosted payload route. Issues of third party liability, waivers and difficulties surrounding the sale of the hosted payload after launch, were also discussed.

Dr. Li Shouping followed with “The New Development of China’s Space Policy” and presented a detailed analysis of the 2011 Chinese White Paper on Space Policy. Dr. Li also discussed developments made by China since including the significance of international cooperation for China’s status in space. Topics covered included the Shenzhou rockets, the future of China’s human space flight plans, and GPS systems. Dr. Li noted that the white paper neglected to comprehensively describe China’s future space activities, commercial industry and interests in space.

Prof. Irmgard Marboe presented on the “Culmination of Efforts in the Area of National Space Legislation in 2012”. Marboe focused on the work of the

United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS), Sofia rules and the developments in national space legislation (NSL). Recounting the 2007 general exchange of Information on national legalisation relevant to the peaceful exploration and use of outer space, Prof. Marboe discussed the working group established in 2008 with particular reference to the finalised report which was presented to the UN COPUOS Legal Committee in 2012. The report outlined a national space legislation framework, which is available to all states. This report can be found under reference A/AC.105/C.2/101. Prof. Marboe further noted that this is a living instrument subject to periodic updates.

Prof. Frans von der Dunk then presented on “Another Addition to the national space legislation: The Austrian Outer space Act, adopted 6 December 2011”. It was felt by the Session’s Chairs that von der Dunk’s paper was well suited to follow Marboe’s paper. Focusing on the Austrian NSL as it reflects international space law and key concepts pertaining to outer space, Dr. von der Dunk described the issues of licensing, private corporations and launches in Austria. Dr. Von der Dunk discussed licensing obligations with specific attention to operation and control of space objects as well as launch facilities and to the stringent requirement under Austrian law that any licensing obligation issue must have an Austrian connection: the application of the law of licensing requirement needs to show that the licence was carried out in Austria, from an Austrian vessel or place or by an Austrian national.

Prof. Paul Dempsey presented on “The Emergence of National Space Law Legislation” and focused on the importance of national space law (NSL) within Canada. Prof. Dempsey referred to Prof. Marboe and Dr. von der Dunk’s papers in relation to the importance of international space law and liability exposure issues for Canada. Prof.

Dempsey discussed difficulties in international space law facing space faring states which adopt an NSL from differing view points and that any NSL would be dependent upon that state's position in space. Prof. Dempsey emphasised the growing importance of soft law in outer space, and compared aspects of Canadian NSL with Australian and Swedish NSL.

Dr. Jose Monserrat presented on "Space Law in the light of Bobbio's theory of Legal Ordering". Dr. Monserrat discussed the way in which the carrying out of socially desirable acts sits at the forefront of Bobbio's theory. He discussed the significance of cooperative efforts in the application of this theory to space, and discussed the significance of its configuration as a potential system of norms, as well as its possible utility as the basis of an outer space legal order in relation to the five major space treaties. Dr. Monserrat concluded that Bobbio's theory might help in the ordering of space law and offer increased clarity through its theoretical paradigm.

Elina Morozova presented her report on the "World Radio Communication Conference 2012: Results affecting intergovernmental satellite organisations". Ms. Morozova's report explained the importance of International Telecommunications Union (ITU) administration and problems relating to intergovernmental satellite organisations. Ms. Morozova described that whilst the radio regulations clearly define the procedure of appointing a notifying administration acting on behalf of a group administration, the issue of replacing a nullifying administration as raised in the ASA case 2006-2007 (which concerned the Venezuelan satellite network) is problematic. Hence the issue of administration sees broad application yet is finite especially in relation to the ITU. Ms. Morozova discussed a new rule drafted at the World Radio Communication Conference concerning the radio communication sector and

that ITU member administrations are likely to see increased changes.

Neta Palkovitz discussed the "Orbiting Under the Radar: Nano-Satellites, International Obligations and National space Laws", co-authored with Tanja Masson-Zwaan. Explaining that nano satellites are cost effective, lightweight and small, the benefits of nano satellites or Cubesats, are potentially vast. The programme QB50 funded by the European Union is set to launch 50 Cubesats in the near future. Palkovitz noted that the system was potentially flawed given their non-maneuvrability and their potential contribution to space debris notwithstanding their low Earth orbit. Palkovitz, advocated for the use of Cubesats and noted that the international law pertaining to outer space needed to take into account new developments and technology.

A synopsis of Prof. Francis Lyall's paper on "The Radiocommunication assembly (RA-12) and the World Radio Conference (WRC-12), Geneva, January/February 2012: Progress(?)" was presented by Dr. Frans von der Dunk.

Olga Volynskaya presented on "Space insurance Law- A new step to space commercialisation in the Russian federation". Ms. Volynskaya presented a draft space insurance law, which she argued to be timely in light of the lack of space insurance law available in Russia. Ms. Volynskaya noted that Russia needed stability in this area in relation to the rise in the use of outer space. Ms. Volynskaya further commented that space insurance law could help to mitigate the problem of unplanned payments, offer guaranteed compensation for damage, stipulate uniform clauses and increase stability in future Russian endeavours in outer space.

Dr. Martha Mejia-Kaiser followed with "ESA's Choice of Futures: Envisat Removal or first liability Case". Dr. Mejia-Kaiser argued that since the 2002

launch by ESA, the Envisat has been orbiting the planet as a potential hazard, given its size, on board fuel and high risk of contact with some other space debris, which might cause an explosion. Contact was lost with Envisat in February 2011. Dr. Mejia-Kaiser offered a recommendation as to how to manage this problem. Dr. Mejia-Kaiser advocated physical removal as the most effective solution. Regarding costs, Dr. Mejia-Kaiser argued that these costs would be minimal in comparison to the cost of the launch of Envisat. Dr. Mejia-Kaiser stated that the continued orbiting of Envisat may prove problematic in relation to the EU code of conduct with reference to its stated aim of the reduction of space debris.

Dr. Lubos Perek presented on the "Actual Situation in the Geostationary Orbit" (GEO) detailing space activities in the GEO. Dr. Perek stated that the GEO as of 2011 held 408 active satellites and of these 280 are controlled by longitude and by inclination in comparison to 130, which are controlled by longitude only. Dr. Perek discussed the statistics relating to the use of the GEO and that the GEO is dominated by two major players: the United Nations and the International Telecommunications Union (ITU). Dr. Perek discussed ITU space networks and GEO satellites, and the difficult question as to whether an actual contract is in existence between the network operator and the owner of a satellite in GEO.

François Cahuzac presented the "Implementation of the French space operation act of launchers and contribution to the control of risks". Mr. Cahuzac discussed the recognition of the UN CSG treaty and the technical regulations and operation from CSG. Mr. Cahuzac analysed in depth the origin of requirements for launch regulations. Further analysis was presented by Mr. François Cahuzac on the role of satellite operators and

inspectors. Mr. Cahuzac discussed VEGA as a case study.

Dr. Mahulena Hofmann presented the last paper in the session, titled "Draft UNGA Resolution on Substantiality of Space Environment". Dr. Hofmann presented results of research conducted by the international astronomical society (IAS) with reference to binding laws in outer space and the problem of space activities, discussed as a central concern to both the UN and COPUOS. Dr. Hoffman discussed that the due diligence provision within international law should be the crux of any future international space law instrument. Dr. Hofmann also discussed aspects of soft law, as well as planetary protection as conditions for licensing space objects according to NSL, concluding that a soft law approach may be the most productive.