

Report of the 53rd Colloquium on the Law of Outer Space

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Contributed by Rapporteurs Ms. Matxalen Sánchez-Aranzamendi (Austria), Prof. Dr. Irmgard Marboe (Austria), Mr. Michael Mineiro (Canada), Ms. Kristina Reinhardt (Cologne), and Prof. Dr. Mark J. Sundahl (USA)

Compiled and edited by Mark J. Sundahl

E.7.1: Nandasiri Jasentuliyana Keynote Lecture on Space Law & Young Scholars Session

*Chairs: Prof. Dr. Vladimir Kopal and
Ms. Tanja Masson-Zwaan*

Rapporteur: Prof. Dr. Mark J. Sundahl

A total of twelve papers were presented in this well attended opening session of the 53rd Colloquium on the Law of Outer Space. The session began with three papers on the history of space law delivered by Dr. Stephen Doyle, Prof. Vladimir Kopal, and Prof. Dr. Stephan Hobe. Nine papers on a variety of topics were then delivered by young scholars. Six young scholars also presented posters which were the subject of a walk-through at the end of the day as part of a champagne reception celebrating the 50th anniversary of the International Institute of Space Law.

In the first paper of the session, entitled "A Concise History of Space Law," Dr. Stephen E. Doyle presented a compressed, but vivid overview of the history of space law. He began with an explanation of the sources of space law and then described what he perceived to be the four eras of the development of space law: (1) the development of fundamental concepts, (2) the

establishment of basic principles, (3) the development of rules and regulations for spaceflight, and (4) the development of rules and regulations for extraterrestrial human settlements. Dr. Doyle then described the early literature on space law, starting with the seminal work of Emile Laude and Vladimir Mandl. He next explained the establishment of UNCOPUOS, the adoption of the early UN resolutions regarding space law, the entry into force of the space treaties and the adoption of the UN declarations of principles. In the final part of his talk, Dr. Doyle addressed the emergence of international organizations for space-based telecommunications and described how national legislation governing space activity has grown since the USSR enacted the first national legislation in 1946. Dr. Doyle concluded his presentation by emphasizing how the future of space law will be marked by international collaboration.

Prof. Vladimir Kopal next presented his paper entitled "The Life and Work of Professor Vladimir Mandl—A Pioneer of Space Law." This presentation provided a colorful account of the life of one of the first space lawyers. Prof. Kopal explained how Prof. Mandl's engineering background and interest in legal issues related to industry and

aviation gave rise to his famous monograph which was published in 1932. Prof. Kopal explained how the brief monograph enshrined certain basic concepts that profoundly influenced the later development of space law.

Prof. Dr. Stephan Hobe delivered the next paper entitled “Vladimir Mandl and Alex Meyer: Two Pioneers of Space Law,” which explored early space law scholarship in German. He began by explaining the importance of Mandl’s understanding that space law should be treated as a *lex specialis* and how several of Mandl’s concepts foreshadowed the principles of modern space law and even addressed issues that still lay in the future, such as laws applicable to space colonization. Prof. Hobe then described the work of Prof. Alex Meyer, who reestablished the Institute for Air Law at the University of Cologne, and explained how Prof. Meyer was a pivotal figure in the field by recognizing, as did Mandl, that space law was a distinct area of law. Prof. Hobe then briefly discussed the Prince of Hannover’s dissertation on Air Law and Outer Space, which examined the use of legal analogy in the development of space law. Prof. Hobe concluded by emphasizing how each of these early scholars paved the way for the development of space law.

The first paper by a young scholar was delivered by Philip De Man, whose paper “The Commercial Exploitation of Outer Space and Celestial Bodies—A Functional Solution to the Natural Resource Challenge” received this year’s Isabella H. Ph. Diederiks-Verschuur Award and Prize for Best Paper by a Young Author. In his paper, Mr. De Man proposed a novel approach

to the law regulating the use of natural resources on celestial bodies. Rather than subjecting natural resources to the non-appropriation doctrine under Article II of the Outer Space Treaty, Mr. De Man proposed that since the category of natural resources is principally defined by its potential as a source of economic value after transformation by human activity, such resources should be governed by a uniform regime determined by the basic principle of free and undisturbed use of outer space by all States. Following his talk, Prof. Ram Jakhu asked a question which sparked discussion about whether the principle of freedom of use should trump Art. IX of the Outer Space Treaty.

Mariam Yuzbashyan delivered the next paper entitled “Potential Uniform International Legal Framework for Regulation of Private Space Activities,” in which she explored the nature of the private law applicable to outer space activities and made recommendations for the future development of private law. She began with a description of the Convention for International Interests in Mobile Equipment, which she noted was the first space treaty dealing with issues of private law, and then examined other sources of private space law, such as national export controls. She concluded by identifying the need for the elaboration of private law in the face of the continued expansion of commercial space activity and, in particular, recommended the development of special conflict of laws rules.

Joshua Easterson’s paper, “You Can Lead an Astronaut to Water...: Prospects for Legal Use and Water Rights on the Moon and Other Celestial Bodies,” provided a creative perspective

on the problem of water rights on celestial bodies. He began by analyzing the application of the space treaties to the use of water on celestial bodies and then turned to possible analogies found in the Convention on the Law of the Sea, the Antarctic Treaty System, and the International Whaling Commission and International Water Treaty. Mr. Easterson ultimately proposed that the best model for management of water on celestial bodies might be the ITU's method of managing orbital slots.

Following Mr. Easterson's talk, Prof. Joanne Gabrynowicz commented on the distinction between the concepts of "province of all mankind" and "common heritage of mankind" and how the application of such concepts to celestial bodies will alter the ability of parties to use natural resources in space.

The next paper, "The Current Status and Recent Developments of the Non-Discriminatory Principle in the 1986 UN Principles on Remote Sensing," delivered by Masatoshi Fukunaga, examined how states have historically applied the UN Principles on Remote Sensing and how the interpretation of the principles has evolved. He concluded that the non-discrimination principle with respect to the dissemination of sensed data is broadly observed, but that the interpretation of the non-discriminatory principle has changed in that it is no longer centered on the interests of the sensed-state, but centered on common interests, such as the needs of developing countries.

Eduard van Asten delivered the eighth paper of the session, entitled "Legal pluralism in Outer Space." In his paper, Mr. van Asten explored the provocative

concept of developing a body of laws to govern space activity through the process of legal pluralism—an approach to law-making that does not rely on the state as the regulating body, but instead allows a community of people from different legal cultures to recognize unwritten legal norms that evolve organically and autonomously.

Matxalen Sanchez Aranzamendi gave the next paper, entitled "Space and Lisbon: A New Type of Competence to Shape the Regulatory Framework for Commercial Space Activities," in which she examined the likely result of the new competency regarding space activity created in the European Union's Lisbon Treaty. She came to the favorable conclusion that the Lisbon Treaty strikes the right balance by, on the one hand, preventing the EU from imposing a harmonized space legislation on all member states, while on the other hand allowing the EU to establish a broad space policy that will foster a the proper regulatory environment for a robust industry of downstream space-based applications and services.

Michael Mineiro then delivered a paper on U.S. export control policy. In his paper, entitled "Beyond the Looking Glass: The Application of Public Choice Theory to U.S. Commercial Communication Satellite Export Controls," Mr. Mineiro explored the application of public choice theory to the U.S. International Traffic in Arms Regulations in connection with the apparent reluctance of Congress to amend ITAR to ease the regulatory burden on communications companies. Under public choice theory, there is a natural bias among legislators in support

of an industry that has a need for reform when there is no significant public opposition. However, Mr. Mineiro explains that despite the presence of these factors ITAR has not been reformed, which can best be explained by the fact that ITAR reform is not a high priority for Congress at this time.

Michael Chatzipanagiotis next delivered a talk on "Forum Selection Clauses in Suborbital Space Tourism Contracts and EC Law." This paper identified a legal ambiguity under EC law regarding whether contracts providing for space tourism services would be characterized as consumer contracts by the courts. Mr. Chatzipanagiotis explained that EC law imposes special requirements regarding forum selection clauses in consumer contracts and that suborbital tourism operators should observe the consumer law requirements—or else face the possibility of violating the law if their agreements are deemed to be consumer contracts.

The last paper in this session was presented by Guillermo Duberti who spoke about "Re-thinking Responsibility in the Law of Outer Space." The particular issue taken up in the paper was whether state members of an international organization are subject to liability for damage caused by the organization. Mr. Duberti asserted that state members would be liable under the Liability Convention, and that such liability is proper from a policy perspective due to the high risks of space ventures. However, he also recommended that the Convention be amended in order to clarify when members of an international organization are liable, particularly if the

members are not parties to the Liability Convention.

The six posters presented at the Young Scholars Session covered a variety of issues in space law. Joyeeta Chatterjee presented a poster on the topic of liability in the age of private space use entitled "Reflections on the Concepts of 'Liability' and 'Responsibility' in a Privatised Atmosphere." Diana Viggiano's poster addressed concerns regarding the environment and the preservation of historic sites in space in her paper "One Man's Space Junk is Another Man's Archaeological Treasure: The Potential for Conflict and Compromise in the Emerging Fields of Environmental and Historic Preservation Law in Outer Space." Utsav Mukherjee explored how to revise the Moon Agreement in order to encourage private enterprise in his poster "Recalibrating the Moon Treaty to the Domain of Development." Henna Niemi's poster addressed the regulation of satellites in connection with privacy concerns in a poster entitled "The Legal Framework of Satellite Tracking, in Particular its Problems Related to Privacy." Michael Dodge addressed another aspect of satellite regulation in his poster "The GPS Galileo GNSS Agreement, Implications for Peaceful International Relations: An Analysis of Articles 4(2), 12, and 16 of the Agreement on the Promotion, Provision, and Use of Galileo and GPS Satellite-Based Navigation Systems." Finally, Cynthia Jimenez presented a poster concerning the "Legal Aspects of Regional Space Cooperation in Latin America, Asia and Africa."

E.7.2: 30 Years of the Moon Agreement: Perspectives

Chairs: Prof. Dr. Mahulena Hofmann and Prof. Dr. José Monserrat, Filho
Rapporteur: Mr. Michael Mineiro

The first paper in this session was presented by Professor Yan Ling with the title: "Is Selling Land on the Moon Allowed in China?" This paper examined a Chinese domestic court proceeding brought by the Beijing Administration for Industry and Commerce (BAIC) against a Chinese company that sold lunar property deeds. This paper analysed the reasoning of the BAIC's decision, treaty obligations to prohibit national appropriation of outer space, including the Moon and other celestial bodies and the legal lacuna in Chinese national law for fulfillment of the this treaty obligation.

Professor Liu Shouping was the next speaker, presenting a paper entitled: "Some Considerations on Establishing an International Regime on Exploration and Use of the Natural Resources of the Moon and other Celestial Bodies." Professor Shouping analyzed the positive legal instruments and associated legal theories on the establishment of an international regime for the exploration and use of the nature resources of the moon and other celestial bodies. Completing his presentation was a proposal for a new model for an international regime governing the exploration and use of celestial body natural resources.

Professor Jonathan Galloway presented the third paper: "Establishing a Natural Resources Regime on the Moon." In his presentation Professor Galloway

examined three particular models for a legal regime: a capitalist regime, a socialist regime, and a public-private partnership regime. Professor Galloway voiced support for a regime that incorporates a combination of market-based and egalitarian principles.

The fourth paper was presented by Daisuke Saisho, on behalf of his co-authors Fuki Taniguchi & Masahiko Sato, and is entitled: "A Consideration on an International Regime of the Moon Agreement." This presentation focused on the Common Heritage of Mankind provision in the Moon Agreement. A comparative analysis with the Law of the Sea and the Antarctica Treaty provision was undertaken. Recommendations were made on how to improve the CHM provisions of the Moon Agreement to better facilitate political support for its adoption.

Professor Mahulena Hofmann presented the fifth paper, entitled: "Moon Agreement as a Tool of Planetary Protection." Professor Hofmann's presentation discussed a recent IAA student on *The Protection of the Environment of Celestial Bodies* in which a critical legal issue raised was the extent to which the Moon Agreement is capable to influence present practices of planetary protection. Considerable interest was raised in the audience with regards to the legal meaning of the terms due diligence and due regard in international public law and international space law as is relevant to planetary protection measures.

The sixth paper was presented by Professor Edythe Weeks & Ms. Melissa Force: "Tidying up the Moon Treaty Prior to Construction." Their

presentation focused on the failure of the Moon Agreement to receive significant international ratification, focusing on the CHM and International Regime clause of Article 11. Amendments to the Moon Treaty were proposed, including rewording Article 11 to reflect a "benefit sharing and use" approach as opposed to "wealth sharing" approach.

The papers of Professor Maureen Williams ("The Moon Agreement in Current Scenarios") and Dr. Luis F. Arganaras ("The Moon Agreement: Reality or Illusion?") were both given a brief summary presentation in absentia by personal representatives.

The Session was well attended by both IISL and non-IISL members. It is estimated attendance ranged from fifty to seventy-five persons throughout the session. The session was concluded at 17:30 (local time).

E.7.3: Legal Aspects of Space Security

Chairs: Prof. Dr. Kai-Uwe Schrogl and Dr. Ranjana Kaul

Rapporteur: Ms. Kristina Reinhardt

Session 3 was held on September 29, 2010. The session chairpersons were Prof. Kai-Uwe Schrogl and Dr. Ranjana Kaul. Seven papers were presented.

The first paper was presented by Prof. Henry Hertzfeld with the title "Fault Liability for 3rd Party Damage in Space: Is Article IV (1) B of the Liability Convention useful today?" It addressed taking a new approach to 3rd party liability for in-space accidents, as e.g. legal conditions for defining fault are

undefined in the Treaties, and the standard of care is unclear. The article suggests taking a new look at Article IV, and the possibility of a revision which would establish strict liability for third party in-space injury.

After the presentation, Dr. Peter van Fenema asked for clarification in which situations exactly fault liability should be changed to absolute liability, which sparked a discussion about Cosmos 954, the amendment of the Liability Convention and the matter of space debris.

The next paper by Mr. Stefan A. Kaiser was presented by Dr. Martha Mejia-Kaiser, entitled "Space Security and Space Safety; Two Concepts to be distinguished." It described the distinction between space security and space safety, similar to what is used in aviation. Therefore space security should cover aspects of space weaponization, while space safety might address the mitigation of space debris. Mr. Kaiser gave the example of the 2007 Chinese anti-satellite test which shows how space weapons and the creation of space debris are linked.

The next paper "The Clausewitz Nebulae: The Legitimacy of Military Activities in Outer Space During Armed Conflicts and Environmental Considerations" was presented by Prof. Michel Bourbonniere. It dealt with the question of perspective and reviewed the legitimacy concerning both military activities in outer space and the use of force in outer space during an international armed conflict.

Prof. Yasuaki Hashimoto then presented his paper "The Use of the Right of Self

Defense in Outer Space—The Japanese Perspective." After giving an introduction to the past Japanese Space Utilization Policy, Prof. Hashimoto came to the present non-military and non-aggressive stance, and ended with a description of the Japanese right of self defense.

Prof. Hashimoto's presentation sparked questions from the audience and led to a discussion about how far Japan's right to self-defense actually goes.

Next, Prof. Fabio Tronchetti presented his paper "Developing a European-Chinese /Russian Approach to the Issue of Non-Weaponization of Outer Space: A Feasible Goal?" It dealt with examining the possibility of developing a common European-Chinese/Russian approach to the non-weaponization of outer space.

The next paper "Preliminary Considerations on the European Preparatory Programme on Space Situational Awareness" was presented by Mr. Marco Ferrazzani and dealt with the status of the European preparatory program on SSA (Space Situational Awareness), which is to carry out an assessment of domains, such as Space Debris, Space Weather and Near Earth Objects, along with technical and governance options to be addressed in detail during the first period of the program from 2009 to 2012.

The last presentation was given by Mr. P.J. Blount and dealt with "International Cooperation: The Key to Space Security." It explored the historical motivations for the use of international cooperation as the keystone in maintaining space security, described

how mandates have become crucial in the geopolitical landscape that now characterizes space activities, and ended in a discussion of national space law and policies and how States are using these principles to increase space security whilst maintaining their own national security objectives.

At the conclusion of the session, Prof. Schrogl invited the participants to a short discussion of three issues:

(1) Why is space security a legal issue?

(2) The legitimate use of force in outer space must be thoroughly investigated and discussed. It might be a matter of contention. Furthermore the issue of self-defense and questions related to that must be dealt with. Other issues are conflicts not only between States, but also terrorist attacks, for example against space objects or space assets. When will States actually start to act on self-defense? Where is the legal basis of this?

(3) What legal approaches or which kind of instruments do we have to use or develop in order to maintain or achieve safety and security in outer space? And what kind of transparency and confidence-building measures could be applied?

Answers to these questions were given by Prof. Joanne Gabrynowicz, namely that space security is a legal issue as law brings predictability and order to an otherwise dynamic and unstable reality. She stressed that this is why there is law in space—to bring predictability and stability to that activity.

Prof. Ram Jakhu gave the answer that law is there to maintain order, otherwise there would be no need for law. He also

pointed out that the UN Charter acts as a legal security.

Prof. Steven Freeland answered that space is technology driven. Historically, law is reactive, rather than proactive. He stressed that the reason we need law is because technology is racing ahead, and the law is behind and trying to catch up.

Prof. Bourbonniere's opinion was that law is an order, built to maintain competing human interests. He asked, rhetorically, whether there should be an international law of conflict, pointing out that national security is very fundamental to the UN Charter, as it is a collective security agreement. If you want to change the law, you are not just changing space law, but also the UN Charter. He concluded that this should not happen, and that stability must be maintained.

Prof. Schrogl's conclusion was that decision-makers must understand why there is space law, and be provided with rationales for the need of space law. He pointed out that space security is one of the areas where it is most evident.

Regarding the approach to take to space security, Prof. Frans von der Dunk responded that contrary to the opinion that we have outrun the relevance of soft law and that we should go for hard law, his opinion is that especially in the field of space security one should follow the soft law approach. He stated that particularly with respect to security matters, we are talking about such a fundamental interest of the concerned state parties, that they will always be very careful to bind themselves to legal obligations of which

they cannot see the full effects. This is the area governed by soft law, such as guidelines, resolutions, principles or political statements. Soft law can be very helpful as it gives a direction without a binding effect at the early stage. It allows them to see if it works and allows them to compare with other states. Then, in some point of time it is possible to see a change of soft law into treaties. One example is space debris, where an already steady development can be seen. That is why one should not give up on the guidelines and resolutions.

In summary, the session provided a good opportunity to conduct a general reflection on the role of space law to maintain space for peaceful purposes and was comprised of both captivating discussions and thoughtful papers on relevant issues. Attendance exceeded 70 individuals.

E.7.4: The Current Status of the Rule of Law with Regard to Space Activities

Chairs: Prof. Dr. Stephan Hobe and Peter Jankowitsch
Rapporteur: Prof. Irmgard Marboe

The papers presented in this session covered a wide range of normative instruments related to recent developments in outer space activities, and so did the discussion. At the outset, Alvaro Fabricio dos Santos reported about a bilateral agreement signed between Brazil and the United States of America about the return of a space object found on Brazilian territory in 2008. The agreement was signed on 5 March 2009 and followed by the return of the object in a ceremony at the

premises of the Brazilian National Institute for Space Research (INEP) in São José dos Campos, SP, on the same date. Mr. Dos Santos' presentation instigated a discussion about the adequacy of the Rescue and Return Agreement of 1968 (ARRA), if the two states—unlike in this particular case—would not be in agreement about the amount of compensation or about other issues. In particular, the lack of methods of evaluating the amount to be paid by the launching state, the absence of time limits and the nonexistence of dispute settlement mechanisms, such as a claims commission, were pointed out. The discussion also showed that the situation would be even more problematic, if the objects found were hazardous and would, for example, contain toxic or radioactive material. Mr. Dos Santos suggested to discuss these issues in the UN Committee for the Peaceful use of Outer Space which could propose solutions to be incorporated as amendments to the ARRA or—more realistically—in a UN General Assembly Resolution.

Prof. José Monserrat Filho led the discussion to some fundamental issues regarding the remarkable lack of “hard law” in the area of space law in the last decades. While recognizing the usefulness of “soft law,” he expressed his concern about the apparent unwillingness of states to agree on new binding norms for the regulation of outer space affairs. According to Prof. Monserrat, there are urgent topics which would require new binding international instruments, such as the security and safety of space activities, including the military uses of outer space, the placing of new weapons in earth orbit, the rapid growth of space debris numbers, as well

as a more comprehensive regulation of remote sensing activities and the increasing necessity for a global system of space traffic management. With regard to commercial activities, the UNIDROIT Draft Protocol on Space Assets shows that in order to satisfy commercial and financial needs, legal guarantees are particularly needed. The discussion centred on the difference between *Alternative A* and *Alternative B* of draft article XXII (in its current version), the latter of which according to Prof. Filho represented a “soft law” variant which would not adequately protect the creditor's right in case of insolvency.

After Prof. Setsuko Aoki's presentation which presented some interesting examples of state practice in the registration of space objects, a lively discussion took place. Prof. Armel Kerrest (France) supported Prof. Aoki's observation that jurisdiction and control of a space object was not always exercised by the registering state and that, on the other hand, states exercised jurisdiction and control of a space object without registering it. He underlined the problem that according to the definition of the “launching state” in the Registration and in the Liability Conventions there can be up to four launching states but only one—the one which has registered the space object—can exercise jurisdiction and control according to Article VIII of the Outer Space Treaty. The other launching states continue to be jointly and severally liable according to Article V, para 1, of the Liability Convention but cannot control it. Prof. Kerrest pointed out that a solution to this important problem can be found by using the agreements referred to in Article V, para

2, of the Liability Convention according to which the participants of a joint launching may apportion among themselves the financial obligations in respect of which they are jointly and severally liable. He called the participants' attention to a paper he had prepared and circulated earlier in the room exactly on this topic. Prof. Frans von der Dunk expressed his reservations with regard to the practice of the Netherlands to establish two sub-registries in its national registry, distinguishing between space objects of which the Netherlands is a launching state and space objects on which it has jurisdiction and control. According to him, a state is either a launching state or it is not a launching state. If it exercises jurisdiction and control over a space object it can not deny liability. Mario Hucteau explains the French practice to inform the Secretary General about the nationality of customers of launches from French territory. The nationality—according to French legislation—is determined by the place of a company's headquarters. It is, however, unclear if this notification has any legal effect. Additionally, he regretted the fact that so far there was no practice regarding pre-registration.

Prof. Mark Sundahl's observations on the impact of private activities on the development of the international law of outer space provoked a number of questions and interventions. Prof. von der Dunk referred to the effect of private activities on the evolution of customary international law. He asked if Prof. Sundahl thought that the fact that many private operators sold flights to 100km as "outer space flights" could become customary international law for the delimitation of airspace and outer space.

Prof. Sundahl answered this question in the negative. However, Prof. Armel Kerrest pointed out that state action as a reaction to private space activities could be important for the development of customary international law. Sa'id Mosteshar noted that in practice the difference between space activities and aviation is not clearly drawn. Both in the US and the UK space launches are not licensed by the space agencies but by the civil aviation authorities.

Mr. José Humberto Castro Villalobos discussed the different categories of norms applicable to outer space activities. He observed the important difference between binding norms and non-binding norms and their corresponding effects. As regards non-binding norms, he underlined the different levels of acceptance of the resolutions in the UN General Assembly and noted that these differences also had an effect as to the legal value of these documents.

The presentation of Dr. Atsuyo Ito in which she emphasized the need to improve the protection of victims taking part in space activities was followed by a lively discussion. Not only damage incurred by space debris needed an appropriate remedy but also violations of human rights should be adequately protected. The discussion centred on the issue of criminal jurisdiction in outer space. The ISS was taken as an example where the jurisdiction of the nationality of the perpetrator is determining. Discussants were not in agreement if, for example, in a space hotel personal jurisdiction as in the ISS should apply or rather the state of registry's jurisdiction. Prof. Steven Freeland added the eventuality of a

hotel on the Moon which would perhaps not be registered by any state. Dr. Ito replied that registration should take place but noted the lack of a legal basis for this.

Prof. Toshio Kosuge emphasized in his presentation the urgent need for binding instruments for the regulation of space debris. The discussion which followed focused on the important role of space agencies in this respect and the necessity of further coordination and cooperation between the space agencies and the states. Both would benefit from an enhanced sharing of experience and competence.

The provocative ideas of Mr. James Rendleman on non-cooperative space debris mitigation instigated reflections on the legality of removing satellites without the consent of the operator. Possibilities under international law include an authorization by the UN Security Council or a judgment by the International Court of Justice. Otherwise, Article VIII and Article IX of the Outer Space Treaty or the so-called "Lotus principle" could serve as a legal basis.

The paper by Dr. Leslie I. Tennen on an environmental "code of conduct" was presented by Prof. Setsuko Aoki and was received with interest by the audience.

E.7.5: Recent Developments in Space Law

Chairs: Dr. Sylvia Ospina and Prof. Dr. Frans von der Dunk
Rapporteur: Ms. Matxalen Sánchez Aranzamendi

A total of 12 papers were presented in a variety of topics among which the presentation of the developments of various national space policies and legislation can be highlighted.

The session was opened with the paper by Prof. Carl Christol on the agenda for the WRC 2011. In the absence of the author and attending his request Frans von der Dunk took the floor to summarise the main ideas of the paper which deals with the role of the ITU, the ITU Council and the World Radio Conferences. Some of the agenda items of the WRC-11 provided by the author were highlighted such as spectrum requirements for UAV, long term sustainability of spectrum or frequency allocations for safety systems for ships and ports.

The radio spectrum topic received further attention from the second speaker of the session Ms. Maria Buzdugan who dealt with the importance of having appropriate international regulations and enforcement procedures for frequency allocation. She illustrated her theses with the ProtoStar case and focused on the current ITU assignment mechanisms. She highlighted the lack of effective enforcement mechanisms and proposed a set of possible actions such as the simplification of the existing Radio Regulation procedures or the introduction of due diligence milestones. Upon the opening of the discussion Prof. Steven Freeland commented on the cause of the ProtoStar bankruptcy. It was pointed out that the bankruptcy was due to delays which made ProtoStar lose the assigned orbital slot.

With the third presentation the session switched to the evolution of satellite organisations from “ISOS” to “GSCS.” Ms. Sylvia Ospina focused on the concepts of “Common Heritage,” lifeline services and global connectivity after the privatisation of the main intergovernmental satellite organisations. She provided recommendations on potential future approaches such as the renegotiation of the concept of “Common Heritage.”

The session moved on to the first paper on developments in national legislation. Prof. Frans von der Dunk spoke on the current regulatory challenges represented by the business opportunities for space tourism in Curaçao. Frans von der Dunk did not only elaborate on the jurisdiction and responsibility of the Kingdom of the Netherlands in such a business scenario but he also analysed the possibility of Curaçao developing its own space legislation. The possibility of licensing space activities under US law was also explored and in doing so the speaker incorporated innovative concepts of space law such as the application of “dry leases” and “wet leases” which are well known in air services together with the possibility of applying different legislation for licensing different flights and ground services. The presentation triggered questions from the audience such as whether the activities of Virgin Galactic would be subject to US law since the company is registered in Delaware. A second question inquired about the choice of Curaçao instead of Surinam as a launch site, which was answered with the explanation that Curaçao already has the infrastructure able to support space tourism activities

as well as a clientele that could also feed space tourism.

Ms. Diane Howard followed next presenting a paper on behalf of Prof. Ram Jakhu on safety and liability aspects of solar power satellites (SPS). The presentation aimed at identifying safety and liability risks of SPS against the current legal regime. After thoroughly introducing concepts on the growing global energy demand and explaining the technical developments of SPS, the presentation went on to identify the two main areas of risk of SPS; environment and radiofrequencies, together with the risks which are common to all space activities. Ms. Howard tackled the applicability of the international legal regimes from the Space Treaties and ITU regulations to the launch, assembly and operation of SPS as well as the impact on human health by electric transmissions. After presenting options for risk allocation through insurance and PPP mechanisms, the speaker concluded with a call for decision makers to commence international efforts to address issues related to SPS.

Next Mr. Rik Hansen from Leuven University presented on behalf of Stephan Hobe the study conducted jointly by the Universities of Prague, Cologne and Leuven on procurement of space activities in Europe. The study looks for a “third way” in procuring space activities in Europe. Mr. Rik Hansen’s the presentation aimed at exposing some of the findings in the research towards that “third” way. Findings of the market analysis and the stakeholder consultation were presented as well as a set of tools identified in support of new procurement

mechanisms together with recommendations on the adaptation of the existing procurement rules. The presentation concluded with the recommendation for combining different tools and creating new procurement rules. At the end, the observation from the audience that the analysis seemed focused on EC rules was replied to by Jan Mey who pointed out that the proposed tools have been analysed under both ESA and EC procurement rules.

Catherine Doldirina then spoke about how the EU legal regime for remote sensing data facilitates the development of applications. She elaborated on the inadequacy of protecting earth observation (EO) data through copyrights and the potential of the EU database directive to provide appropriate protection to EO ownership. She went on with considerations over the ESA data policy and elaborated on the effects of data policies and regulations. She concluded with considerations regarding EU space competence stating that the key of this competence is in the elaboration of a legal setting that will enable EO markets. Questions from the floor referred to jurisprudence on copyrighting EO data in Germany and the interest in having a specific EO data copyright in the EU to which the speaker assented as necessary.

Prof. Lesley Jane Smith presented what she defined as “a paper for non-lawyers” that described the advances in the different technological areas of satellites. During her presentation Prof. Smith offered a recapitulation of the relevant elements contained in international law that must be taken into

account by all satellite developers that plan on launching. She emphasised the fact that more and more technological institutes develop satellites while lacking all knowledge of the obligations attached to launching. The presentation was followed by a substantive discussion where the need to bridge the gap between the technical development and the legal world was highlighted. In Smith’s opinion the Treaties contain all necessary tools but jurists need to be aware of the technical advances to be able to adjust the legal practice appropriately. It was also convened that governments must take an active role in the dialogue between both sides. The concept of Launching State when launching from a different state was also singled out as an issue that needs to be adequately communicated to private develops pers. It was also added that efforts must be made by governments to accept private procurement as real procurement.

Prof. Steven Freeland took the floor to speak about the most recent developments in the Australian space law landscape. Against a successful historical background and a later shift towards a more military-focused space policy Prof. Freeland presented the latest movements towards a renovated space policy in Australia together with a Defence White Paper that confers space a key role in terms of non-dependence and international relations with the U.S. as well as in the Asian region. The adequacy of the existing law was analysed together with the recommendation that the law will need further development to cover the different aspects of the new Australian Space Policy.

Another development in national space law was provided by Prof. Haifeng Zhao who offered an overview of the Chinese developments in the area of space debris mitigation. In his presentation Prof. Zhao enumerated the initiatives China has taken in the area of space debris, he highlighted the applicable legal instruments and pointed out that there is no binding rule on space debris in China. He also identified the existing problems and the way forward in the field of space debris. The presentation elicited comments from the audience asking for examples of any Chinese satellite that has been put to the graveyard orbit as well as the question of how China prevents space debris, particularly in light of the recent Chinese A-Sat test. Although the first question met no answer, Haifeng Zhao replied to the second explaining that A-sat was not a space debris issue but one related to national interest.

Philippe Clerc next took the floor to provide an overview of the consequences of the French Space Operations Act on CNES 'mission as a space agency (FSOA). Given the recent adoption of the law the presentation was received with expectation. The main issue addressed was the avoidance of any conflict of interest between the new mission of CNES to authorise and control private activities and its commitments towards private companies. Mr. Clerc explained the CNES mission and legal personality as well as the main features of the FSOA. On the issue of conflicts of interests he highlighted the separation of activities within CNES between FSOA and non FSOA activities and the transfer of CNES' stock participations in private companies to an independent

French Public Body. The presentation received a question from the audience on whether the act covered international liability for its private commercial sector which was answered in affirmatively.

The last presentation of the session was delivered by Paul Larsen on the Liability Convention and US National Law. The presentation responded to allegations that the liability regime set by the US Commercial Space Launch Act was not consistent with the Liability Convention. Therefore, he elaborated on the rationale of the liability regime set by the Liability Convention and went on to provide an overview of the characteristics of the applicable liability regimes in the US elaborating on the limitation of liability in the US and the rationale to maintain such limitation. Discussion was triggered by the presentation on how the Liability Convention relates to world trade services and the need to extend the current US regime to 2012.

The session closed with a last question from the floor returning to the topic of space tourism in Curaçao with a question on whether applicability of air law had been considered in Curaçao. The answer given was that Sweden has dealt with such flights under air law, but that EASA's jurisdiction does not reach Curaçao.