

Report of the 52nd Colloquium on the Law of Outer Space

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E.8.1: Nandasiri Jasentuliyana Keynote Lecture on Space Law & 1st Young Scholars Session

Chairmen: T. Masson Zwaan, S. Hobe
Rapporteur: J. Hong

A total of 7 papers were presented, ranging over a variety of subjects and regions. Immediately after each presentation the attendants asked questions for deeper discussions regarding the presentations.

The first presentation was the inaugural **Nandasiri Jasentuliyana Lecture**, given by **H.E Judge V.S. Vereschetin**, former Judge at the International Court of Justice. The title of his lecture was "The Law of Outer Space in the General Legal Field (Commonality and Particularities)". He focused in particular on some fundamental elements of space law, including features similar to and distinctive from other legal disciplines, with an emphasis on some topical space policy issues concerning international cooperation and military uses of outer space. While we are witnessing the development of space policies mainly at the national level, however, he concluded that the future evolution of space law, the 'Golden Age of Space' is only just beginning and there should be an acknowledgement and confidence in the continuing need for strengthening and improving the

legal framework of space and space-related activities.

Thereafter, the newly established '1st Young scholars Session' invited 6 young scholars to present a paper on "Space Law- Future Challenges and Potential Solutions". The over-all quality of the papers was very high.

"Potential Contribution of Japan to the Code of Conduct for Outer Space Activities", by Yukiko Kodachi, addressed issues of the Japan's potential contributions to the confidence-building measures (CBM) proposed by the European Union (EU). She pointed out that discussions in the government will help Japan to promote secure space activities and concluded that the continuation of such discussions will lead to a stronger cooperation based on the confidence-building initiated by the EU.

Then, Megan Ansdell presented "Non – Lawyers' Perspectives on the Manfred Lachs Space Law Moot Court Competition: Recommendations to Promote Space Law Education". The authors of the paper provided interesting viewpoints including recommendations for enhancing the educational experience, technical accuracy and enforcing the rules. The authors aimed to give an outside viewpoint different

from space lawyers and their objective was well met.

“Responsibility and Liability in International Space Law as a Matter of Sequence and Succession”, by Jason R. Bonin, analyzed the responsibility and liability of various states undertaking space activities and addressed issues of interpretation and application of sequence of treaties. The author made several recommendations based on both a legal and teaching of law perspective.

“The Development of International Law on Remote Sensing Activities with the Emphasis on International Cooperation”, by Masatoshi Fukunaga pointed out the importance of international cooperation on the matter of remote sensing and its benefit for mankind based on a brief note on methods and future benefits of such cooperation.

The importance of cooperation was also addressed by Mr. David Kuan-Wei Chen, who presented a paper “Space Cooperation in the Asia-Pacific: The Story (or Stories) of APSCO and APRSAF”, co-authored by Stephanie Wan. He analyzed the objectives and rationale behind APSCO and APRSAF and examined whether there is a duplication of objectives and efforts in the region. Further mentioning whether a non-legally binding forum or an institutionalized space organization is best for the space cooperation efforts of the Asia Pacific region in the future, the author concluded since China and Japan’s purposes for both organizations are similar, it is probable that the region will have one common and coherent method of cooperation which will benefit the region’s economic development as whole.

The last speaker of the morning session was Ms. Jingjing Nie, who discussed “Regulation of Space Debris: On the

way towards International Cooperation”. She pointed out the lack of provisions on space debris in international space treaties and the obstacles to form a new treaty on space. She concluded that national standards of individual state will promote the update of international guidelines and through such measures; states may reach agreement on which international customs can be produced.

In brief, the session was fruitful as young scholars under the age of 35 shared their viewpoints with prominent space law scholars and with the space law community. Also the inaugural Nandasiri Jasentuliyana Lecture by H.E. Judge V.S. Vereshchetin reminded the bright future of space law and space activities which set the tone of the entire morning session as very hopeful. Unfortunately, there was little time left at the end of the session for any in-depth discussion of the many issues that were presented, yet the session was very successful.

E.8.2: Peace in Space: Transparency and Confidence Building Measures

Chairmen: K.U. Schrogl, A. Kapustin
Rapporteur: J. Bonin

A total of 13 papers were presented during this session. The papers were presented to an audience of 45 to 55 persons. Notably, the size of the audience gradually increased during the session.

Throughout papers and presentations were of good or excellent quality. In terms of content, the papers spanned a broad range of geographic (and geopolitical) issues from various perspectives. Generally, three general and interrelated themes appeared to resonate throughout the session: hard versus soft law (in particular codes of conduct); weaponization versus demilitarization; and the adequacies and

inadequacies of the existing law. In relation to the last theme, two sub-categories were generally present, namely, the value of the *corpus juris spatialis* to deal with the novelties of the 'asymmetric' world as well as the desirability in applying traditional perceptions of defensive measures in space conflict.

A number of papers were presented in relation to the question of whether soft law mechanisms were adequate to deal with modern exigencies in space law. Of particular merit in this regard was Ms. Yuri Takaya-Umehara's paper, "TCBMS over the Military Uses of Outer Space". Ms. Takaya-Umehara noted the ability of soft law mechanisms to deal with questions of peace in space only if both *availability* and *accessibility* to data are ensured. Moreover, she expressed her belief that soft law monitoring mechanisms could supply new means of inducing compliance. Ricky Lee's paper, "Creating Enforcement Mechanisms for the 1976 Registration Convention as a Confidence Building Measure for the Military Use of Outer Space", suggested the possibility of increasing *transparency* in outer space activities as a confidence building mechanism by amending the Registration Convention to include enhanced enforcement mechanisms

A number of presenters noted the desirability of soft law mechanisms as intermediate means towards an end result based in hard law. These authors questioned the use of soft law as an end result in itself. Prof. José Monserrat-Filho's paper, "Code of Conduct for Space Activities – Evolution or Regression?" found that the European Union's proposed Code of Conduct (EU CoC) served well as an intermediate step towards a new era, but also presented a form of stagnation. His presentation concluded with the statement that matters must ultimately

be brought back to UNCOPUOS for discussion. On the other hand, he would encourage developing countries to join the EU CoC.

Likewise, "Peace in Space: A Pragmatic Approach", co-authored by Mr. V. Gopala Krishnan, Mr. A. Bhaskaranarayana and Mr. K.R. Sridhara Murthi and presented by Mr. Murthi, noted that mechanisms such as the EU Code of Conduct served as a pragmatic and necessary step forward. However, the authors stated that an end goal should lie in the formulation of a new treaty based on the ideas presented in the EU CoC.

Prof. Anatoly Y. Kapustin's paper, "The Place of TCBMs in the Outer Space Treaty", placed the development of CBMs and TCBMs as one, but not the only, component of an "international legal regime of universal international security".

Additionally, several authors noted the structural barriers in relation to achieving a lasting peace by means of hard law. Dr. Hong Je Cho noted these structural difficulties in his paper, "International Development of Space and Prevention of an Arms Race in Outer Space [PAROS]", particularly between Russia and China and the United States (Prof. Monserrat-Filho had noted a similar structural issue in reaching agreement, and the issue was generally debated numerous times during the sessions). Dr. Cho also noted the necessity of achieving peace in space for his country, and that fears of escalation of aggressive activities might impede such a process. During discussion, he noted the EU CoC could help achieve harmony in this respect.

Such a deadlock brought into question the adequacy of the existing space law mechanisms. The focus in this regard was generally a shift from symmetries of

power to an asymmetric world. Mr. P.J. Blount's paper, "Transparency and Confidence Building Measures: Space Security Law in an Asymmetric World" noted the adequacy of current space law, most notably article IX of the *Outer Space Treaty*. He expressed the opinion that article IX provided means whereby states could request consultations, requiring states to provide some form of notice of ASAT activity, and that the United States had complied with its article IX obligations while China had not. On a broader forum, Mr. Ben Baseley-Walker looked beyond the body of the *corpus* and into whether current international humanitarian law was sufficient to deal with conflict in space. His paper, "Is Current International Humanitarian Law Sufficient to Regulate a Potential Conflict in Outer Space?" noted the need for definitions, particularly in relation to the requirements of necessity and proportionality. His analogy of humanitarian law, however, was questioned by some of the audience.

Two papers presented at the session, Mr. Stefan A. Kaiser's "Space Situational Awareness: Key to a New Space Security Architecture" and Mr. James Rendleman's "Lawful Response to Attacks on Spacecraft and Their Support Systems" looked at how space situational awareness (SSA) informs our understanding of legitimate legal means of adjusting to conflict in space. Mr. Kaiser expressed the opinion that development of SSA may act as (or similar to) a soft law deterrence mechanism with regard to military actions in space, while Mr. Rendleman noted that traditional perceptions of defensive measures may well be inadequate in light of "collisional cascading", advocating a four-point, "full-scale" program in the light of this problem.

During the presentation the opinion was expressed that demilitarization was now a non-question. Several of the papers addressed this issue in detail. Prof. Carl Q. Christol addressed the need to de-weaponize outer space in "Missile Launches, Militarization, Weaponization: Security in Space", noting specifically the developments in North Korea and Iran. Both Prof. Christol's and Dr. Sylvia Ospina's papers were presented in their absence by Ms. Catherine Doldirina. Dr. Ospina's paper, "Let there Be Peace in Space, and on Earth" noted two areas of aggressive acts: warehousing of slots and the destruction of satellites. This definition went beyond those presented in the other papers, and offers a critical evaluation of the term 'aggression'.

Finally, Ms. Lalin Kuvodhikulungsri presented a paper co-authored with Dr. Valnora Leister, "Outer Space of the People, by the People for the People". The paper discusses movements from a state-based model of international law to one of participation by both individuals and NGOs. She notes developments in four areas of law, human rights, international development law, environmental law, and democracy and global governance, questioning if and when such new approaches will be applied to space law.

To summarize, during the session two issues were particularly debated on the floor. First was the issue of change in United States policy. Several (rather different) opinions were voiced in this regard, but was generally seen as a crucial impediment to reach a hard law agreement. Second was whether soft law mechanisms such as the EU CoC were truly adequate for current developments and exigencies in outer space. This issue has run throughout the conference sessions of the second day.

E.8.3: Third Party Liability Issues in Commercial Space Activities

Chairmen: T. Kosuge, Doo Hwan Kim
Rapporteur: M. Mejia-Kaiser

In this session 10 papers were presented related to third party liability. Immediately after each presentation the attendants asked questions, mostly for clarification of the presentations.

Several papers were inspired by the Iridium-Cosmos collision, which drastically increased the threat of collisions with orbital debris. One of these papers was "Too-Close Encounters of the Third-Party Kind" by Prof. Frans von der Dunk. He examined the application of the Liability Convention to the Iridium-Cosmos collision and addressed three interrelated issues that complicate the application of this convention, such as the concepts 'launching State', 'fault' and 'space debris'. Although in the present case the involved states refrained from lodging damage claims, he concluded that it is doubtful if the Liability Convention will stand the test for the next orbital collisions among operational space objects.

Prof. Doo Hwan Kim also addressed space debris as an enemy of mankind in his paper "Legal Problems Concerning Space Debris and the Liability Convention". Prof. Kim considered that some articles of the Liability Convention should be amended to include damage to the orbital environment and to better protect surface victims. He referred to ILA's 'Draft for the International Instrument on the Protection of the Environment from Damage Caused by Space Debris' of 1994 and proposed some modifications to adapt it to present needs. He proposed to create an international 'Environmental Monitoring Organization' and a regional organization (Asia-Pacific) to track,

observe, detect and monitor space debris and to prevent and mitigate damage caused by space debris. He also supported establishing an 'International Fund for the Prevention and Mitigation and for Compensation for Damage Caused by Space Debris'.

Prof. Paul Dempsey presented the paper "Liability for Surface Caused by Aerospace Vehicles". He commented that vehicles with the capacity to travel in air space as well as outer space raise the question on the applicable legal regime in case of surface damage. Prof. Dempsey addressed the Outer Space Treaty and the surface victim-oriented Liability Convention, which apply absolute liability in case of surface damage. He then turned to the Montreal Conventions of 2009 relating to surface damage (General Risks Convention and the Unlawful Interference Convention). He criticized that both Montreal Conventions of 2009 limit or exclude liability when the victims contributed or caused the damage by willful misconduct. Instead, comparative fault by victims should be based on negligence and not triggered solely by the difficult standards of willful misconduct.

On the qualification of hybrid vehicles, Stefan Kaiser commented that the registration of the vehicle is a good indicator how States qualify such vehicles (e.g. Space Ship One is registered as a U.S. aircraft by the FAA).

Prof. Dempsey commented that the definition of 'aircraft' was drafted in the 20's and haven't changed since then. He did not think that the registration of a hybrid vehicle as aircraft would preclude applying the Liability Convention.

The paper "Nuclear Liability-Feasible Model for the Space Sector?" was presented by Prof. Lotta Viikari. The

author outlined the high costs and risks of space activities and addressed liability problems (e.g. difficulty to identify the owner of the space object that produced damage, the difficulty to establish causation). She made reference to several international legal instruments in the field of maritime transport, of hazardous substances, of the use of nuclear power, etc. She emphasized the practice to 'socialize the risks' through the establishment of multi-tier systems for compensation and compensation funds. She proposed to apply such a tiered liability system for damage compensation in space activities, so that operators of space objects would need compulsory liability insurance, which could be backed up by its State's supplementary liability and, lastly, by a joint international State fund.

Dr. Martha Mejía-Kaiser presented the paper "Collision Course: 2009 Iridium-Cosmos Crash". She stressed that emerging space situational awareness systems (already initiated in the U.S. through the CFE program) can provide reliable information on satellite conjunctions to satellite owners/operators. Dr. Mejía referred to the concept of negligence, rooted in the failure to use due care. She commented that the information obtained from a future international network of surveillance systems would require to reconsider the 'duty to be informed' and the 'duty to undertake reasonable action' as important elements of due care. Failure to comply with these two elements of due care by operational space objects' owners / operators could then be considered as 'fault' and lead to claims under the Liability Convention. An increased flow of information will increase awareness, enhance the level of 'due care', and thus become another incentive to comply with the mitigation of space debris as to avoid liability.

Prof. Ram Jakhu asked who would be liable in case of satellite collision due to the failure of awareness by a private company. Dr. Mejía answered that failure in the information flow between a private company and its State providing space situational awareness is irrelevant and that States bear the ultimate liability at international level.

Mr. Ustav Mukherjee presented a paper co-authored by Mr. Aravind Mokkaapati: "Determining Liability for Damage Caused Due to Debris in Outer Space: Portal for a New Regime". In this paper the authors addressed the weaknesses of the space treaties in solving disputes arising from damage due to space debris and compensation. They proposed some changes to the current regime, e.g. establishing a timeframe for registering space objects and guidelines for in-orbit transfer of ownership. They also supported to create a space debris convention, which establishes liability and a clear compensation regime based on compulsory liability insurance for each space object.

Upon Mukherjee's presentation, Prof. Dempsey wanted to know, if the Liability Convention applies for creating space debris deliberately to cause damage. Mr. Mukherjee answered that creation of space debris itself is not prohibited under the space law regime. He added that in case of damage to a third party, there may also be liability for failure to undertake preventive measures, but that at present such measures are not yet legally binding.

Prof. Gennady Zhukov could not attend the colloquium, but a summary of his paper was read. His paper "The Problem of Absolute Liability on the Moon" related to future human settlements on the Moon and their protection. He commented that the plans of several countries to return to

the Moon will require a revision of Article III of the Liability Convention.

Human settlements and assets on the Moon's surface will face the risk of physical damage by man-made space objects, for which absolute liability will be more suitable than the present fault-based liability.

Other papers of this session were dedicated to liability for GNSS signal failure. Dr. Lesley Jane Smith presented the paper "Facing Up to Third Party Liability for Space Activities: Some Reflections". The author emphasized that third party liability entails to owe a legal duty of care. In respect to liability arising for damage due to collision with space debris, she commented on the legal duties of satellite operators and States on maintaining satellites in its correct orbital path, in applying safety standards and space debris mitigation measures. Dr. Smith also addressed third party liability arising for damages due to GNSS signal failure. Dr. Smith commented on the future Galileo system that will be owned by the European Community and pointed out that it is necessary to establish a liability regime in case of damage resulting from GNSS malfunctioning.

Prof. Von der Dunk asked Dr. Smith, which legal instruments were the basis for the European Community's liability for the Galileo system - he assumed that it was not based on space law. Dr. Smith answered that her analysis was based on article 288 of the EC Basic Treaty, (on the Community's responsibility) and the regulation of 2004 on provider liability, but in this respect the ultimate liability will be borne by the Community. She commented that since the European Community accepted the legal challenge to be the owner of Galileo, it will be liable under international law, European law or

national law in case of third party liability.

Mr. Mohamed Mustaque (India) presented his paper "Interoperability of GNSS, Legal Issues and Implications under Private International Law". Mr. Mustaque addressed liability arising for damage produced for GNSS signal failure or malfunctioning.

Prof. Souichirou Kozuka elaborated the same topic in more detail in his paper "Third Party Liability Arising from GNSS-Related Services". After analyzing the space law treaties, he found that there is no international regulation addressing liability resulting from GNSS signal failure. He proposed a two-tier liability regime. The first tier would be through an international convention exempting liability for errors of basic positional systems. A second level could establish a liability regime through contracts specially tailored according to the type of valuable-added service that enhance the signal (e.g. air navigation services).

The number of persons attending the session increased from the initially 35 to 50 at the end.

E.8.4: Legal Mechanisms for Encouraging Space Commerce

Chairmen: R. Jakhu, S. Mosteshar
Rapporteur: M. Sundahl

A total of six papers were presented and three papers were summarized in this well attended session. The papers in this session proposed a variety of innovative national and international legal reforms that promise to foster the commercial use of space.

The session opened on a high note with a paper by **Ms. Catherine Doldirina** entitled "A Rightly Balanced Intellectual Property Rights Regime as a Mechanism to Enhance Commercial

Earth Observation Activities.” Ms. Doldirina examined the use of copyright law to protect intellectual property rights to earth observation data. In the end, she concluded that copyright protection is essential for the continuing growth of the remote sensing industry, but that such protections should be balanced in order to allow for the reasonable dissemination of the data as well as for the creation of value-added products based on the data. **Ms. Doldirina’s paper garnered this year’s Isabella H. Ph. Diederiks-Verschoor Award and Prize for Best Paper by a Young Author.**

Prof. Ram Jakhu next summarized Dr. Atsuyo Ito’s paper “The Advent of a New Era of Commercial Space Tourism and Associated Legal Issues”, which examined the application of existing space law to liability issues arising in the context of space tourism. In particular, the paper praised the approach taken by the United States human space flight regulations, while at the same time identifying certain issues that were not fully resolved by these regulations. Ms. Zeldine Niamh O’Brien’s paper entitled “Equity and the Space Tourist” (which was summarized by Sa’id Mosteshar) continued the theme of liability arising from space tourism and focused on the enforceability of liability waivers in light of U.S. case law.

Prof. Setsuko Aoki next explored the importance of legal harmonization in her paper “Conditions for the Harmonization of National Mechanisms to Promote Space Commerce in Asia.” In order to encourage commercialization, Prof. Aoki recommended that all Asian countries ratify the space law treaties, harmonize their approach to registration of space objects, limit the liability of launch providers, and harmonize their export controls.

The next two papers provided a thorough overview of the Indian regulatory environment applicable to space commerce. Dr. Ranjana Kaul first provided an exhaustive and illuminating explanation of Indian regulations relevant to space commerce and telecommunications in her paper “Legal Mechanisms for Encouraging Space Commerce: The Indian Model.” Dr. Kaul then summarized a paper by Mr. Ketan Mukhija and Dr. Ghanshyam Singh entitled “Positing a Concrete Regulatory Framework for Commercialization of Space: The Indian Perspective”, which described the evolution of the Indian Space Research Organisation and recommended specific legislative approaches to maintaining security in space.

The regional focus of the panel shifted at this point to China as Prof. Li Shouping delivered a paper entitled “China International Space Cooperation in the 30 Years of Reform and Opening”, in which Prof. Li stressed the importance of international cooperation for the development of space commerce and described China’s history of cooperation with other countries. Following the paper, spirited questions were asked by Prof. Vladimir Kopal and Prof. Sang-Myon Rhee regarding the true extent of China’s cooperation and whether a duty to cooperate exists under international law.

Europe was the focus of the next paper, “Procurement in the European Space Sector”, which was authored by Prof. Stephan Hobe and delivered jointly by Prof. Hobe, Ms. Irina Kerner, and Mr. Jan Helge Mey. The paper described the University of Cologne’s Institute of Air and Space Law’s new project to resolve inconsistencies in the procurement policies of the European Space Agency and the European Union. Ms. Kerner described the ESA procurement policy of “geographic

return”, while Mr. Mey explained how the EU has adopted a market-oriented approach to procurement that utilizes competitive bidding. In the question and answer period, Dr. Bernhard Schmidt-Tedd explained that the geographic return approach was preferable because competitive bidding would result in an undesirable concentration of contracts being awarded to a small number of large manufacturers.

Dr. Kai-Uwe Schrogl delivered the final paper, entitled “Political and Economic Impacts of National Space Legislation in Europe”, which was authored by Dr. Schrogl and Ms. Matxalen Sánchez Aranzamendi. This paper described the recent report published by the European Space Policy Institute which analyzes existing national space legislation in Europe and proposes the issuance of legislative guidelines to reduce the differences between national laws as an alternative to harmonization. A number of questions were raised at the end of this talk by Prof. Frans von der Dunk and Prof. Paul Dempsey, among others, regarding, for example, harmonization of satellite communications regulations in Europe and the potential for harmonization by way of bilateral agreements rather than through action at the EU level.

E.8.5: Legal Challenges to Earth Observation Programs with Particular Emphasis on Developing Countries

Chairmen: J. Monserrat-Filho, K.R.S. Murthi

Rapporteur: M. Mejía-Kaiser

Unfortunately, only summaries of two papers were read in this session, which took place immediately after session 3.

The paper of Prof. Saligram Bhatt was titled “Space Law and Science for Sustainable Peace and Biosphere Management through Earth Observation

Satellites, Especially in Developing SAARC Countries”. Prof. Bhatt hoped that the use of satellite remote sensing technology may help to develop seven countries of the Asia and Pacific region. He commented that space technology may help to overcome poverty and ensure sustainable peace in these countries which possess vast natural resources.

Mr. Jairo Becerra authored the second paper “A Legal Strategy for the Application of Earth Observation Programs in Central and South American Countries”. Mr. Becerra commented on the obstacles for the development of Earth Observation (EO) in the Latin-American region and proposed a strategy to solve such obstacles.

E.8.6: Recent Developments in Space Law

Chairmen: F. von der Dunk, R. Lee, H. Zhao

Rapporteur: C. Doldirina

Nine papers were presented in this session, including one that was summarised due to its author’s absence. Some of the papers provoked lively discussions and addressed interesting and viable issues regarding regulation of space activities.

Two papers by Japanese authors – Professor Setsuko Aoki (‘The First Basic Space Plan of Japan: What Will Be Changed?’) and Professor Toshio Kosuge (Harmonisation of International Space Law and National Space Law: Case Study of Japanese Space Law’) dealt with the newly adopted Japanese Basic Space Law.

The paper and the presentation of Professor Aoki highlighted some of the most important rules of the Law, putting special emphasis on its Chapter III that

sets six directions of the development of space activities in Japan that have to be realised within 9 systems and programmes. The practical implementation of these systems and programmes occurs through special action plans. Action Plan No. 3 "Space diplomacy" was described in greater detail within the presentation. It focuses on three distinct areas: contribution to Asia (e.g., Sentinel-Asia); earth environment (GEO); enhancing bilateral relationships. As the result it was stressed that the Japanese space programme and the legal regulations supporting it made a shift from development towards utilisation.

The second paper by Professor Kosuge highlighted that the key to the adoption of the new Law was the promotion of private space activities. The enactment of this law can serve as the example of good practice for other nations. The law reinforces the principle of the Outer Space Treaty of the authorisation and continuous supervision of space activities, application of its provisions being based on the mix of territorial and nationality principles. The liability regime is victim-oriented and based on the principles of the Liability Convention. Furthermore, the issues of registration, rescue, return and preservation of environment are encompassed by the Law. In a lot of issues, and especially that of liability regime, the Law mirrors the US and French regulations.

Another paper on national space legislation was 'Advance in the Implementation of the French Space Law on Space Operations in the Launcher Field' by Mr. François Cahuzac. He explained that above all FSOA regulates the issues of authorisation and control of relevant space operations. After the initiation of its drafting in 2003, the final draft was adopted in June 2008 and came into force through the enacting decrees in

July 2009. The presentation gave an overview of the main concepts used in FSOA (e.g. 'space operation', 'operator'), as well as the jurisdictional bases of application of its provisions. Furthermore, it was mentioned that FSOA lays down rules on technical assessment of space operations that leads to different types of their authorisation. Technical regulations are applied for launch operations, persons, property, protection of earth and space environment. Liability rules are based on the principles of the Liability Convention and the limitation rules are laid down within the Law. The provisions of FSOA should be implemented by December 2010.

All presentations on national space laws and regulations stressed the continuity of their provisions, especially regarding reinforcement of the principles laid down in the Outer Space Treaty.

Three papers dealt with particular aspects of national and partly international space legislation: those of robotics, space elevators and private human spaceflight.

The paper by Professor Paul B. Larsen, 'Legal Regime for Space Elevators' (summary) addressed the application of the Outer Space Treaty, the Liability Convention of the Registration Convention to space elevators. Its analysis focused on the interpretation of Article VI of the Outer Space Treaty, as well as the definition of launch.

In her paper 'Robotic Applications in the Evolution of International Space Law' Ms. Cynthia Jimenez Monroy dealt with the issues of space robotics, and especially with the legal aspects of earth-oriented and space exploration activities carried out by robots. The research identified several possible areas that need regulatory attention: on-orbit services, frequency coordination,

astronauts' safety and planetary protection. The ways to address these issues include adoption of a new space treaty, the amendment of the existing ones, the new interpretation of the existing rules, or a code of conduct. The latter, being the most realistic, could incorporate specific provisions on space robotics.

The very interesting paper by Professor Mark Sundahl, Bigelow Aerospace's Commodity Jurisdiction Request under ITAR and Its Impact on the Future of Private Spaceflight', highlighted some of the 'hot' issues regarding application of the US ITAR rules to private human spaceflight. The presentation started with the acknowledgement that ITARs are potential threat of shifting down commercial spaceflight due to its international clientele. The author explained that some of the crucial categories of ITARs – 'export' and 'defence service' – include both exchange of technical data and training foreign nationals for the purposes of space activities. Such provisions can render access to and participation in such ventures as Bigelow space hotel impossible. In addition, the fact of launching from a foreign (non-NATO) country places another restraint on private space actors. DDTC's responded to Bigelow's request with regard to the possibility of bringing non-US nationals to his space hotel in the future and rendered a decision that the technology used is under ITAR, but passenger experience is non-licensable. Although this DDTC answer is valid for Bigelow only, the author interprets it as the first step to possible liberalisation of private activities regarding human spaceflight.

The paper by Dr. Han-Taek Kim, 'Prospect of 1979 Moon Agreement' is devoted to the 30th anniversary of the adoption of the Moon Treaty and addressed possible reasons of the

failure of its acceptance as a binding mechanism by major space faring nations. The presentation highlighted the main principles of the Moon Agreement. The author stressed that the Moon Agreement is incomplete, in so far as it lays down the distributive principles and constitute powers. The analysis within the paper mentioned possibility of collisions with regard to simultaneous application of the Moon Agreement and the Outer Space Treaty, because they contain different principles applicable to the same scenarios. In the conclusions to the presentation it was stated that the acceptance by South Korea of the Moon Agreement may encourage other Asian states to adhere to it.

Professor Haifeng Zhao presented his paper 'Research of Outer Space Law in China'. He highlighted an increased interest in space law due to primarily three factors: changing role of China in shaping international law, intensified Chinese space activities, and an increase of Chinese law schools and of their financial well-being. The authors observed that there is a tendency of creating specialised space law courses in undergraduate and graduate law programmes. The presentation highlighted some of the existing space law programmes and courses, as well as the teaching methods used and the fundamental research done within the institutions. Paper concludes with some recommendations for further improvement of teaching space law in China and suggests that Chinese space law and teaching are in their 'spring phase'.

Mr. A. C. Charania in his paper 'Assessment of Recent NEO Response Strategies for UN', driven by the fact that collisions of asteroids with planets are constantly being detected, provided for the details of the proposal regarding possible strategies for NEOs made by the Association of Earth Explorers

(panel on asteroid threat mitigation). The proposed approach is for the UN Security Council to coordinate three groups: 'Mission of Authorisation and Oversight', and accountable to it 'Information, Analysis and Warning', and 'Mission Planning and Operations'. The work in the groups, although potentially overlapping in tasks and responsibilities, should help to reach consensus on "earth miss distance". It was stressed by the author and confirmed in the discussion that the proposal is far from being perfect, but can be improved. In conclusion the author recommended that road-mapping and prioritising of set-up steps should be the focus of the discussion of the proposal.

Despite being last in the Colloquium, the session was well-attended – around 40 people were in the room during at least the first hour. As usual, the limited time of the session did not allow for some of the discussions to develop properly, but the interest of the audience to the topics presented was nevertheless shown.