

REPORT OF THE IISL SPACE LAW COLLOQUIUM IN FUKUOKA, JAPAN, OCTOBER 2005

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SESSION 1- LEGAL ISSUES RELATED TO NEW DEVELOPMENTS IN SPACE APPLICATIONS: NAVIGATION, REMOTE SENSING AND GIS

*Chairmen: Prof. Setsuko Aoki (Japan)
and Prof. Jonathan Galloway (USA);
Rapporteur: Dr. Martha Mejia-Kaiser
(Mexico)*

1. The first paper presented was “Global Earth Observation for Compliance of International Environmental Agreements” by Ms. Masami Onoda (Japan). Ms. Onoda listed the most important treaties on environment and pointed out that the implementation of international obligations in this area is addressed together with the gathering and distribution of remote sensing data. She stated that protection of the “global commons” such as the high seas, the ozone layer and the global climate, demands global responsibilities, because injured States can not identify the State which violates its obligations. She mentioned that, at present, it is necessary to find a balance between public (data as a public good) and private interests (data as a commercial product). She also recommended that national and regional interests should be integrated into a global one, while maintaining a balance among the interests of all parties.

2. Mr. Mukund Rao and Mr. Sridhara Murthi (India) presented the paper “Legal Issues Relating to Convergence of Imaging, Positioning and Spatial Databases”. The authors stated that the divide between the free access of the civilian sector and the restricted defense requirements have vanished. As a result, States’ outlooks for the dissemination and use of satellite remote sensing images have had to adjust to these technological and market-driven developments. The authors were of the opinion that the integration of remote sensing images, the positioning reference and the spatial databases are powerful tools that will reach dimensions not imagined before. They commented that legal regimes for protecting and managing compilations are needed. Issues like the ownership of digital data, protection of privacy, access rights to compiled data and information liability were addressed.

3. The paper “Regulatory Framework for the Distribution of Remote Sensing Satellite Data: Germany’s Draft Legislation on Safeguarding Security Interests” was submitted by Dr. Michael Gerhard and Dr. Bernhard Schmidt-Tedd (Germany). The authors presented an overview of the upcoming German legislation for the operation of “advanced” remote sensing satellite systems and the distribution of their data. The draft legislation, which may be

approved by the parliament in mid-2006, was prepared with the aim to protect Germany's national security and foreign policy interests, through the granting of licenses. If a space remote sensing satellite system qualifies as "advanced", there is the need to apply for three licenses: one for the operation of the satellite system, one for the general distribution of data and one for a specific transactions of data.

4. Mr. Álvaro Dos Santos (Brazil) presented the paper "Policy for Commercializing CBERS Data", depicting the Brazilian-Chinese cooperation in the experimental operation and data distribution of the remote sensing satellite CBERS-2. He referred to the '2004 Protocol' signed between these two States and to the "CBERS Data Policy". Through this Policy, China and Brazil agree to have free access to data generated by the satellite. Through agreements, other States may be given direct access to the downlinks of this satellite, subject to reimbursement on a per-minute basis. The author mentioned that the Brazilian Ministry of Science and Technology has decided to distribute these data free of charge to Brazilians during an initial period of two years, but both parties have agreed not to distribute such data to foreign States or persons. The author made reference to the Brazilian position in COPUOS on remote sensing. Brazil had proposed a general convention, but this proposal has now been withdrawn.

5. The paper "The Search for New Institutional Models of International Remote Sensing Activities" was prepared by Dr. Mahulena Hofmann (Czech Rep.) and Mr. Clemens Feinäugle (Germany). The authors

consider that the commercial access to satellite remote sensing technology requires rethinking legal models for an international organization. Although there is no political will for the establishment of an international regime on remote sensing activities, they commented that international practice has been developing its own rules, channels and structures. The authors addressed several international organizations (FAO, WMO, UNESCO) as models for a remote sensing international organization, but also suggested to consider an international network without rigid structure (GEOSS). They concluded that it is important to coordinate the various observation systems in order to ensure consistency and inter-operability.

6. The next paper was presented by Ms. Atsuyo Ito (Japan), entitled "Legal Aspects of Implementing the World Heritage Convention Using Remote Sensing Data". Ms. Ito referred to UNESCO's 'Convention Concerning the Protection of World Cultural and Natural Heritage', which is to safeguard sites with outstanding universal value. The Convention covers cultural, natural or mixed sites already on the World Heritage List. The Convention also contemplates the identification of potential sites. The author referred to the ESA-UNESCO "Open Initiative", which aims to monitor heritage sites through remote sensing satellites. She pointed out that World Heritage Convention, as a drawback, leaves it up to each individual State to take measures for protecting the sites in its territory. She mentioned that the "Open Initiative" takes the approach of requesting a State's prior consent before teleobservation of its territory. Ms. Ito advanced the idea of collecting

images in an inventory of cultural and natural heritage sites, to be managed by the World Heritage Committee. She recommended that protection of heritage sites should be the “common concern of humanity”, as already stated in the Convention on Climate Change.

7. In the paper “The UN Principles on Remote Sensing Today”, Dr. Maureen Williams (Argentina) presented a summary of the discussions in several international gatherings on remote sensing activities. The participants of the Conference of the ILA, of the last three years of the IISL Colloquia, of the Argentina/Brazil Meeting on Ciencia en Tecnología and of other meetings, all agreed that the UN Principles on Remote Sensing have been superseded by current technological developments, by the way in which the data is being distributed and by new areas of application not foreseen.

8. The last paper was co-authored by Prof. Anatoly Kapustin and Prof. Gennady Zhukov (Russian Federation) on the “Problem of Coordination of the Use of National GNSS Systems”. In this paper the authors proposed the creation of a consortium to coordinate the civil use of national GNSS systems for civil aviation, maritime and land traffic management. They addressed ICAO’s work in this field and referred to the “Charter of Rights and Obligations of States Relating to GNSS Services”, which has no binding force. They held that the proposed consortium could provide and operate the system by itself or monitor and control the service provider. Finally, the authors recommended the inclusion of a new item in the COPUOS agenda: “Legal Principles on GNSS Use for Peaceful Purposes”.

Notes on the discussion:

a) On the question of Germany’s national legislation on remote sensing satellite data:

- *Dr. Schmidt-Tedd* clarified that the foundation of Germany’s regulation was Art. VI of the OST, and was also meant to complement export control legislation.

b) On the issue of an international organization on remote sensing:

- *Dr. Hofmann* was asked how an international organization might be structured: she responded that she and her co-author didn’t have any clear idea, but mentioned several organizations as examples. About the Intelsat or the Inmarsat models, *Dr. Galloway* noted that those were historical examples, because they have changed through privatization with Inmarsat’s shares being traded on the London stock exchange. *Dr. Hofmann* replied that they only considered theoretical alternatives, but that they were aware of the problems arising from privatization.

- *Dr. Jakhu* referred to the fact that in COPUOS some States were blocking decisions. In his view, consensus is a tool, but the goal is to promote the rule of law. He mentioned that since 1979 no new treaty has been adopted and resolutions have often been bypassed. He suggested that we also look at other fora in which international agreement might be achieved.

- *Dr. Hobe* proposed an examination as to why the international community is reluctant to create hard law for space activities and asked if the existing

unbinding resolutions provide sufficient legal certainty, for example in the area of private investments.

- *Ms. Onoda* responded that there is more consensus in respect to environmental principles, and that it may be more important to concentrate on this area, rather than discuss an international agreement on remote sensing activities, thus avoiding the practical problems stemming from consensus mechanisms of COPUOS.

c) On implementing the World Heritage Convention using Remote Sensing Data:

- *Dr. Martha Mejía* made reference to the systematic robbing of archeological sites in Russia, using remote sensing images. She was of the opinion that the ESA-UNESCO Open Initiative, which introduces 'prior consent' for teleobservation is a step back in the freedom of remote sensing activities. She considered that images should be taken without prior consent, in order to point fingers where poaching is taking place, rather than asking permission of the State where an archeological site is located.

- *Dr. Jakhu* commented that in analyzing the use of remote sensing techniques to protect the World Heritage Convention, one should not argue that the Convention is in accordance with the UN Principles, because there is no 'prior consent' requirement in the UN Remote Sensing Principles.

- Answering *Dr. Galloway's* question about World Heritage Sites in international territories, outside the sovereignty of States, *Ms. Ito* recalled that at present there is no such site. *Dr.*

von der Dunk did wonder how "world" should be defined, and commented that there is discussion about the protection of historical sites like the steps of the first astronaut on the Moon. He wondered if such sites could be covered by this Convention. *Ms. Ito* answered that a new international instrument might be required to regulate that aspect.

SESSION 2 - LEGAL ASPECTS OF EXPANDING HUMAN PRESENCE BEYOND LOW EARTH ORBIT

Chairmen: Prof. Elisabeth Back Impallomeni (Italy) and Prof. Mamoru Koga (Japan); Rapporteur: Prof. Setsuko Aoki (Japan)

In this Session eleven papers were registered, eight papers submitted by the authors, three papers withdrawn and two papers summarized due to the absence of the authors.

1. The first paper presented was "The Sky Is The Limit - But Where Does It End?" authored by *Dr. Frans von der Dunk* (The Netherlands). In this paper *Dr. von der Dunk* reminded us of the fact that recent events including *Spaceship One* brought the question of the delimitation of outer space and airspace back on the table and pointed out the growing necessity to reconsider the establishing of a boundary between airspace and outer space in order to provide a stable and predictable legal framework for the development of private space flights as well as for national activities of reusable space objects. *Dr. von der Dunk* proposed to establish this boundary at an altitude of 100 km since this limit already has been recognized by almost

consistent state practice and also by domestic legislation. It was upheld by the author that priority has to be given to this problem to better deal with today's necessities. However, he stated, any future limit should remain flexible.

2. Mr. Ricky J. Lee and Ms. Felicity K. Eylward (Australia) authored the paper "Article II of the Outer Space Treaty and Human Presence on Celestial Bodies: Prohibition of State Sovereignty, Exclusive Property Rights, or Both?" The authors analyzed in detail the relevant international agreements, *inter alia*, Article II of the Outer Space Treaty, Article 11 of the Moon Agreement and Article 137 of the Law of the Sea Convention, and they concluded that Article II of the OST itself may prohibit the exercise of sovereign rights or national appropriation through private use or occupation of celestial bodies, and arguably it was not until the entering into force of the Moon Agreement that the creation of property rights on celestial bodies came to be prohibited. However, since a significant number of commentators are of the opinion that Article II prohibits the creation of property rights and no contrary state practice could be found, Mr. Lee stated that it might be prudent to consider that Article II stipulates the prohibition of property rights. Considering the recent private activities such as selling the soil of the Moon and Mars, the authors were of the opinion that further clarification of the issue had to be achieved before space mining and other ventures would become economically feasible.

3. The third paper, "Between Concord and Rivalry - requirements for and political feasibility of modifications of

planetary operations legal regime" was submitted by Mr. Jakub Ryzenko (Poland), who presented the paper orally, and Ms. Anna Burzykowska (Poland). The authors stated that the development of technological capabilities would necessitate a detailed legal regime taking into consideration prior legal regimes in other common areas such as the High Seas, Antarctica and the Deep Sea Bed. Since renewed interest in the exploration and exploitation of the Moon and other celestial bodies has recently become evident among space faring states, the authors maintained that a multilateral legal regime should be established to strike a balance between a safe business environment and the principle of space exploitation for the common interest. The authors were of the view that lessons learned by the Deep Sea Bed Authority in connection with the 1982 Law of the Sea Convention should be carefully studied to accomplish an appropriate multilateral agreement of how to share benefits and results of space activities. It was concluded that a multilateral legal regime would be politically feasible provided that economic justification and legal soundness were also satisfied. For that goal, the authors stated, the following would be key issues: (1) a successful evolutionary approach; (2) the clear and acceptable definition of Common Heritage of Mankind; (3) the reasonableness in the "benefit sharing" to non-space faring states and (4) the participation of space faring states in the decision making process for such a regime.

4. The next paper, submitted by Prof. Paul B. Larsen (USA), "Application of the Precautionary Principle to Lunar

Activities" was summarized due to his absence. The author insisted that, taking special note of the fragility of the lunar environment, the "precautionary principle" applicable to Antarctica should also be applied to the multifaceted activities on the Moon. With respect to the legal basis for the precautionary approach to the Moon, it was maintained that such an approach could be drawn from the Outer Space Treaty (OST), *inter alia*, from Article I (common interest principle) and from Article IX (avoidance of harmful contamination with due regard to the interests of other states), although the volume of human activities on the Moon at present and in the near and mid-term future could not be envisioned when the OST was adopted. To preserve and to facilitate scientific investigation of the Moon, which is the important purpose stipulated in Article I of the OST, the author was of the view that precautionary measures had to be taken in order to not deteriorate the lunar environment.

5. Mr. Kallun Willock (Australia) presented a paper on "Human Colonisation / Exploration beyond Low-Earth Orbit: space: safety imperatives at conflict with the provisions of the Outer Space Treaty and other such instruments". This paper began by stating that the prospect of human settlements beyond the low earth orbit would open the question whether existing international space law could provide appropriate safeguards to explorers and settlers from asteroids or comets. In the following, Mr. Willock studied the legal permissibility in regard to applying nuclear weapons as a defensive system to protect human settlers from asteroids and

comets. In case human life is threatened in outer space, Mr. Willock questioned if the deployment of defensive systems of nuclear weapons would be permissible although it was categorically prohibited in Article IV of the Outer Space Treaty. He concluded that since human life was of supreme importance, any action to save it might be construed as a true peaceful use of outer space.

6. The paper "Nuclear Power Sources and Future Space Exploration" was presented by Mr. Steven Mirmina (USA). It was stated in his paper that using Nuclear Power Sources (NPS) was a prerequisite for planetary exploration and exploitation of the Moon and Mars since such activities required tremendous amounts of energy. However, the fear of NPS being a threat to the safety of human life and the environment both on Earth and in outer space is widely shared. First, the author explained in some detail the level of safety with respect to different types of NPS as well as the current practice of some states using NPS. After reassuring that the US use of NPS (RTG-type) belonged to the safe category without nuclear fission, the author outlined the existing international law related to the use of NPS. Analysing present international space law, nuclear law and environmental law and also the relevant US legislation, he concluded that the US practices had been strictly observing law and soft law applicable to the use of NPS. Finally, the author proposed an international technically-based safety framework by which the safe use of NPS could be ascertained worldwide without politicizing the issue.

7. Dr. Douglas A. Vakoch (USA) presented the paper "Expanding

Human Presence beyond the Solar System through Active SETI: on the Prerequisites for Legal Relations with Extraterrestrial Intelligence". Dr. Vakoch stated that the expansion of human presence beyond low-earth orbits would increase the possibility of detecting any kind of extraterrestrial intelligence (SETI). Dr. Vakoch maintained the importance of "active SETI", or to transmit from *Earth de novo*, prior to detecting intelligence of other worlds, instead of traditional "passive SETI", in which humankind would detect the signals from other planets. Since no proof was found if essentially the same legal and policy considerations could apply between the two, according to Dr. Vakoch, the central problem was the achievement of communications between the two entities: human beings and SETI. The author stressed the importance of obtaining guidance from entities other than the SETI community prior to embark on active SETI programs and gave some examples to take into consideration including how to represent humankind and how to tell the truth to SETI.

8. The last paper was submitted by Dr. Julian Hermida (Canada) and summarized because of his absence. The paper "Crimes in Outer Space. Criminal Law Policy Basis for Long-Term Human Presence beyond Low-Earth Orbit" presented an overview of the *lex ferenda* aspects of a future criminal law system in outer space, when long-term human settlements in low-earth orbits would make it possible. Currently, criminal jurisdiction in outer space, found in the International Space Station Agreement is based on the criminal law of the state of nationality of the alleged

offender. Dr. Hermida predicted that such an approach would be inappropriate in the future, because the mode of life and behavioral problems would be completely different from what had been experienced on Earth. Thus, he proposed the criminological approach to construct a new rule for the life there.

Notes on the discussion:

a) On the question of delimitation:

- Prof. Zhukov stated that the difference between a sub-orbital flight and a ballistic missile should be clearly defined in the construction of any legal regime for sub-orbital flights and added that he thought the difference lay in the fact that an object for sub-orbital flights had space velocity, while a missile did not. Dr. von der Dunk confirmed that further analysis was necessary to solve the question of the definition of a sub-orbital flight.

- An interesting point was raised from the floor; since both NASA and the US Air Force had the policy of distinguishing the licensing criteria at an altitude of 100 km, consequently a flight higher than 100 km was especially planned and conducted to be highlighted and advertised as a space flight. From those facts, it was stated, it was a bit premature to say that 100 km should be the demarcation line. Dr. von der Dunk responded that he constructed his reasoning taking into consideration several aspects, including the one raised from the floor.

b) On the question of the prohibition of sovereignty and property rights on the Moon:

- *Prof. Dempsey* wondered how exclusive property rights could be used on the Moon either by states or private persons under the prohibition of the exercise of state sovereignty.

- *Prof. Hobe* was of the view that it did not seem appropriate to use Article 11 (2) and (3) of the Moon Agreement to interpret the Outer Space Treaty (OST).

- It was stated from the floor that property rights on the surface or sub-surface of the Moon did not have to be considered so seriously if the setting up of a hotel on the Moon or mining natural resources from its soil were planned, since Article I of the OST guaranteed the freedom of activities in outer space. *Mr. Lee* responded that Article I of the OST did not provide for unlimited freedom, but provided for the obligation to carry out the exploration and use of outer space for the benefit and in the interest of all countries and added that as a result any provision with respect to exclusive property rights on celestial bodies had to be carefully construed.

c) On the question of using nuclear weapons as a defensive system to protect human settlers in space:

- *Prof. Dempsey* commented that it was almost impossible to distinguish between "nuclear defense systems" and "nuclear offense systems" and that allowing the former in the name of protecting human life was dangerous because it would accelerate an arms race in outer space.

- *Prof. Back Impallomeni* pointed out that two different terms were found in this paper, "colonisation" and "settlement", and asked which term *Mr. Willock* had really in mind. She

underlined the importance of the selection of the proper term, because "colonisation" would amount to a breach of Article II of the Outer Space Treaty (OST), which prohibits national appropriation of outer space including celestial bodies. *Mr. Willock* responded that he meant "settlement".

- It was commented from the floor that it seemed highly doubtful that using nuclear devices to protect human life would be regarded as a use of a weapon of mass destruction as prohibited by Article IV of the OST.

d) On the desirability of establishing a multilateral legal regime to regulate space exploitation:

- *Dr. Perek* stated that some 100 kg of minerals were already extracted from the sub-surface of the Moon and that only small portions thereof were for pure scientific research. Residual parts were used to make a block on which experiments were conducted for not purely scientific, but military and economic purposes. *Dr. Perek* expressed his concern that the principle of collecting and removing minerals from celestial bodies only for purposes of scientific research began to be slightly corrupted and warned that the making of creeping boundaries and creeping national jurisdiction was gradually proceeding. *Mr. Ryzenko* shared *Dr. Perek's* concerns.

- *Prof. Kozuka* asked whether such a multilateral legal regime should be established by Treaty or as soft-law, and *Mr. Ryzenko* replied that it should definitely be a legally binding Treaty. In response to a question as to how *Mr. Ryzenko* assessed the on-going efforts

by other fora such as COSPAR, COPUOS and UNIDROIT in regard of constructing such a legal regime, he stated that deficiencies of these efforts led him to propose a new multilateral legal regime.

- *Prof. Koga* pointed out that the mistake made by member states in the course of establishing the Deep Sea Bed Authority within the Law of the Sea Convention was that those which lacked economic background discussed the international regime of economic implications. Prof. Koga underlined that a good lesson learned from the experience of the Deep Sea Bed Authority was the importance to provide a safe business environment and incentives for various participants to establish an effective multilateral legal regime promoting economic activities.

e) Concerning Nuclear Power Sources:

- *Prof. Aoki* asked how an appropriate scientific assessment could be guaranteed in setting up a technically based framework, since scientific neutrality was not so easily assured. According to her, one example was the International Panel of Climate Change (IPCC), the assessment of which is sometimes regarded rather politicized. *Mr. Mirmina* responded that careful selection of expert groups and appropriate fora to discuss the matter would solve such doubt and referred to the upcoming "2006 Joint Technical Workshop on NPS" between the Scientific and Technical Subcommittee (STSC) and the International Atomic Energy Agency (IAEA).

SESSION 3 - OTHER LEGAL MATTERS I, INCLUDING LEGAL ASPECTS OF SUB-ORBITAL FLIGHTS

Chairmen: Prof. Dr. Stephan Hobe (Germany) and Mr. Masahiko Sato (Japan); Rapporteur Prof. Yasuaki Hashimoto (Japan)

Chairman Prof. Hobe pointed out that this session's topic, 'Other Legal Matters I' showed that nowadays, other legal matters are becoming a core issue of international space law, because this theme covers all kinds of new developments, business ventures, etc, which are so numerous that they cannot be covered in one single session!

1. The first paper was "The impact of Space tourism on the International Law of Outer Space" by Mr. Steven Freeland (Australia). The present situation of emerging low cost space tourism is his motivation for writing this paper. The author discussed and showed some points to be considered about matters like tourist status, property rights for instance for space hotels, liability, etc.

2. The second paper was "Lessons from "The Little Prince" on Space Flight" by Dr. Sylvia Ospina (USA). Private enterprises' access to outer space inspired Dr. Ospina to prepare this paper. She emphasized the importance of sharing the spirit of frontiers, learning from the Little Prince lessons.

3. "Developing a Legal Regime for Space tourism: Pioneering a Legal Framework for Space Commercialisation" was presented by Dr. Yun Zhao (Hong Kong). Dr. Zhao discussed the difference between space

travel and air transportation, and applicable air laws and space laws. This includes very old questions like the demarcation between air space and outer space. Dr. Zhao analysed several matters, including liability, insurance, criminal jurisdiction, registration, licensing, and the status of Astronauts, and indicated the tendency of expanding aviation law concepts to outer space activities.

4. Mr. Stefan Kaiser (Germany) and Dr. Martha Mejia-Kaiser (Mexico) co-authored the paper on "Space Passenger Liability". The paper compares air transport and space transport liability, and discusses the applicability of national rules like the US Commercial Space Launch Act of 2004 in case of overseas business. During the *discussion*, Dr. Mejia-Kaiser pointed out that hybrid vehicles might present a liability problem in case of accident.

5. The next paper was "Liability Arising from Article VI and Other Provisions of the Outer Space Treaty: Status, Domestic Law and Private Operators", presented by Mr. Ricky Lee (Australia). His main theme was the liability provision of Article VI of the 1967 Outer Space Treaty. The author summarised several national space legislations, like those of Norway, Russia and the USA. He concluded that while several states have enacted domestic laws, the coverage of liability varies widely, and some do not cover Article VI properly. During the *discussion*, he mentioned as an example a recent US domestic law amendment which does not cover the state's responsibility under international space law. He also pointed out that some of the provisions of the international space

treaties, like Articles VI and VII of the Liability Convention, might not properly cover some cases, like for instance the in-orbit transfer of ownership, because the new owner (country) may not be bound by these provisions.

Also during the *discussion*, an important suggestion was brought up regarding the confusion that often surrounds the meaning of the words 'responsibility' and 'liability' in English. The French text of the Outer Space Treaty has no distinction between those two words, they only use "responsabilité". Although IISL meetings are always held in English, consideration of other official languages may be helpful.

6. The paper "Consumer Protection and the Limitation of Liability in the National Regulation of the Space Tourism Industry – Lessons from EU Law" was presented by Ms. Zeldine O'Brien (Ireland). This paper was this year's winner of the Isabella H.Ph. Diederiks-Verschoor Award for best paper by a young author. Ms. O'Brien analysed the protection of newcomers like tourists from the viewpoint of a consumer protection concept, learning from EU laws and regulations. Such EU laws and regulations protect the rights of customers. The author offered possibilities of application of those laws. This interesting analysis and approach might provide ideas to be considered in the present and near future. During the *discussion*, the question of the applicability of EU laws and regulations to outer space was raised, because Outer Space is not within EU jurisdiction, and this idea thus raised the question of extraterritorial application of EU laws.

7. Dr. Leslie Tennen and Dr. Patricia Sterns (USA) co-authored the paper

“Private Enterprise and the Resources of Outer Space”. They described the present situation where newcomers from the private sector become involved with outer space activities. They attempted to identify principles which can be applied to this sector, using non-space precedents like the Law of the Sea and the World Trade Organization system as examples.

8. The next paper was “Corporation and Space Law” by Prof. Jose Monserrat-Filho (Brazil). The author summarised the principles of space law in relation with the present situation of space industry. After this analysis, the author touched upon the increasing pressure from private industry and identified some basic and unavoidable rules of ‘Jus Cogens’ which are needed as an essential basis.

9. Then, the paper entitled “Space Commercialisation: Addressing Intellectual Property Issues” was presented by Ms. Sagee Sasikumar (India). The author analysed the present legal system and its applicability to private activities, especially in the field of intellectual property rights, and pointed out the lack of adequate regulations.

10. The next paper was “Regulation of Space Activities in Canada” by Prof. Ram Jakhu (Canada). This paper reviewed the long history of Canadian space law. The author touched upon the necessity/need of space use by Canada because of its huge size and extensive national borders that need to be guarded. The author also introduced Canadian domestic space law in all its aspects and levels (general, civil, military, national, local, provincial). During the *discussion*,

the question of protection of remote sensing data was raised. The author responded that data processed on earth was not treated as a space activity, but regulated by Canadian property-related laws. There was also some concern about disclosure of remote sensing data on the internet, like Google Watch. Some participants supported the concern from security and natural resource viewpoints and held that the releasing of data from outer space on the internet should be properly regulated. Others, however, including Prof. Hashimoto, disagreed, because the disclosure takes place under proper control of supervising countries like the USA and the suppliers accept free use of the data. Moreover, from the security viewpoint, those data have limited value because they are several years old.

11. The paper “Is a “fair return” admissible on space activities funded by the EC/EU?” was prepared by Dr. Luis Castillo Arganaras (Argentina). The author explained the constitutional reform that took place in 1994 in Argentina. Under this reform, Treaties have higher status than domestic laws and regulations. The author discussed some investment treaties under this new scheme.

12. The last paper in this session was “The Main Contents of the New Space Exploitation Promotion Act in Korea” presented by Prof. Dr. Doo Hwan Kim (Korea). The Author first gave a brief history and current situation of Korean space activities including building its own launching site. Then, the author introduced the new domestic law for space exploitation promotion, and lastly proposed establishing a Korean Space Agency.

SESSION 4 - OTHER LEGAL MATTERS II, INCLUDING LEGAL ASPECTS OF PROPERTY RIGHTS ON THE MOON

Chairmen: Prof. Gabriella Catalano Sgrosso (Italy) and Prof. Kasuhiro Nakatani (Japan); Rapporteur Ms. Mokoto Uchitomi (Japan).

The papers presented in this session could be classified in four groups:

a) Safeguarding Humanitarian Rights:

1. Mr. Sethu Nandakumar (India) explored the concept of “common heritage of mankind in the Moon Treaty in the paper: “Common heritage of Mankind”- property rights in the wake of commercial use of the moon and other celestial bodies”.

2. Prof. Gabriella Catalano Sgrosso (Italy), in her paper: “Emergency for natural Disasters – Prevention and Management”, insisted that we should make use of the space system in order to prevent and manage emergencies, such as natural disasters, on the basis of international cooperation.

3. Mr. Mehmood Pracha (India) underlined the importance of the concept of “common heritage of mankind” as safeguard for developing countries in the paper: “Legal aspects of Expanding Human Presence beyond Low Earth Orbit - Safeguards for Underdeveloped Countries”.

4. Dr. Liara Covert (Canada) proposed to set up a new treaty in her paper entitled “Progress toward an Asteroid Deflection Treaty”.

b) Commercial activities:

5. In his paper “UN General Assembly Resolution ‘Application of the concept of the ‘Launching State’”, Dr. Kai-Uwe Schrogl (Germany) reported the successful output by the UNCOPUOS Working Group concerning the concept of the “launching State”, which resulted in UNGA Assembly Resolution 59/115 of Dec. 2004.

6. Dr. Bernhard Schmidt-Tedd and Dr. Michael Gerhard (Germany), expressed doubts about the up-to-dateness of the registration of space objects regime and the new situation in their paper “How to adapt the present regime for registration of space objects to new developments in space applications?”.

c) Export control:

7. Ms Yuri Takaya-Umehara (Japan) pointed out the necessity of space arms control making use of the Registration Convention, and proposed several amendments in her paper “Enforcing the verification mechanism of the registry for space control”.

8. Ms. Amal Rakibi (France), raised the problem of export control of space related dual technologies and highlighted conflicts between related domestic laws and international laws in her paper “Export Control and Dual Use of Space Technologies”.

9. Ms Macha Ejova (Russia) explained the legal basis of Euro-Russian space cooperation and related export control practices in her paper “The Euro-Russian cooperation in space and Export Controls: policies and practices”.

d) Expanding law in outer space:

10. The paper "Private Rules for the Commercial activities in Space: Lex Ferenda" by Prof. Souichirou Kozuka (Japan) proposed the application of private law rules for commercial space activities.

11. The next paper, by Mr. Declan O'Donnell (USA), proposed a common law approach for recent space activities in his paper "Astro Law as Common Law Extended into the Outer Space Territory".

12. In the last paper in this session, Prof. Stephan Hobe explained the development of the Project 2001 Plus and announced the upcoming Project 2006 in his paper: "Project 2001 Plus: Global and European Challenges for Air and Space Law at the Edge of the 21st Century".

Short *discussions* followed the presentations of the papers and the sharp remarks by Prof. Kopal, Prof. Perek and many eminent participants made the session lively and interesting.

SESSION 5 - CONVERGENCE AND PRIVATISATION IN TELECOMMUNICATIONS: INSTITUTIONAL AND OTHER RESPONSES

Chairmen: Prof. Francis Lyall (Scotland, UK) and Prof. Toshio Kosuge (Japan); Rapporteur Sethu Nandakumar Menon (India)

1. The first paper presented was "Privatisation of Telecommunication in

the developing world: A lesson learned, or a burden imposed?" by Mr. Atip Latipulhayat (Australia). The paper discussed the privatisation of the telecommunication sector in developing countries, with specific reference to Indonesia. The author explained the traditional telecommunication regime in Indonesia and its reform which began in the 1980's. The author gave various reasons which supported the reforms. For instance, inclusion of telecommunications into the WTO gave strength to regulation reform in the developing countries. The main object of the reform was to change government control from direct to in-direct control. The author was critical of the reason for reform and mentioned specific economic problems and international commitments. He was also critical of the alleged benefits that derived from privatisation of the telecommunication sector.

2. The second paper was "Convergence of telecommunication services and the problems of their regulation" by Prof. Rosa Maria Ramirez de Arellano (Mexico). The author highlighted the changes that occurred in the telecommunication sector and the impact of commercialisation on the regulation of telecommunication. She referred to the WTO and several rounds of negotiation with respect to telecommunications. Convergence in telecommunication services has existed for a long time, and the author explained the reasons and what has been happening with regards to convergence in telecommunication services. The author explained the differences in meaning of 'basic services' and 'non-basic services', and provided insight into the regulatory reforms that occurred in Mexico and

several other countries. The paper concludes with eight specific points that need to be considered by countries when changing their telecommunication regulation.

3. The paper "Regulation of Access to Limited Resources in Telecommunication Sector in Europe" was prepared by Dr. Lesley Jane Smith and Ms. Kate Levy (Germany). The authors examined the struggle to ensure fair competition in regulating access to the limited resources in the telecommunication sector in Europe. The paper explained in great detail the purpose, structure and working process of the '2002 telecommunication package' of the EU. This package was intended to increase harmonisation between member states. The Authors described the three-tiered management hierarchy of the radio spectrum, consisting of the European Commission, the Radio Spectrum Committee and the National Regulatory Authorities, interlinked by the duty to consult and cooperate.

4. Prof. Toshio Kosuge (Japan) presented the paper, "Asian Broadband plan and its implication for bridging Digital Divide Within the framework of WSIS and international cooperation". Prof. Kosuge explained Japan's effort to implement the Asian Broadband plan to bridge the digital divide in the Asia Pacific countries. Tests have already begun in Japan, Singapore and China for this project. Japan and the Asia Pacific region will benefit from further advancement of information and communication technology through the building of 'Space infrastructure' using communication satellites. The author explained the different projects pursued

by Japan in this effort. Prof. Kosuge concluded that humankind will benefit from the implementation of these concepts and there is a need for an action plan to overcome international barriers.

5. The next paper was presented by Prof. Francis Lyall (Scotland, UK), entitled "Deriving more 'Common Benefit' from Space Telecommunication". Prof. Lyall wondered whether the benefit from space telecommunication could be further improved in the interest of developing countries through existing or new mechanisms within the ITU. The author made the point that the user should require to pay for the use of the 'limited natural resources' from which they make their profit, and the income from such payment should be used for the general benefit. The paper proposed that such a fee could be a one-off payment or an annual payment, or alternatively the 'fee' could be based on bids through an auction process. The author proposed that the administration of such a system should be done by the ITU as it already maintains a register and knows how to operate such a system. The author further pointed out that in appropriate cases, these fees could be returned as subsidy from maintaining uneconomic services or for fostering developmental programmes.

6. The last paper in this session was by Prof. Carl Q. Christol on "Remote Sensing in the War against Terrorism". The paper explained the utilities of a remote sensing satellite system in the war against terrorism. The author explained that techniques employed in remote sensing have instilled caution into the plans of terrorists and have reduced their evil efforts. The paper explained the role of the Geospatial-

Intelligence Agency in collecting data and protecting the wellbeing of mass movements of human beings (e.g. the 2005 Super Bowl). Prof. Christol also described the dangers of excessive restriction on the availability of sensitive information.

REPORT OF THE GENERAL DISCUSSION

Chairman: Dr. Jasentuliyana (President IISL); Rapporteur: Dr. Martha Mejia-Kaiser (Mexico)

a) On the status of the UN Remote Sensing Principles:

- *Dr. Galloway* referred to some participants in the first session who had stressed that the UN Principles on Remote Sensing were outdated in view of today's applications. He proposed that the IISL draft a "white paper" in order to propose a balance between the various competing interests, such as business and national security. *Dr. Jasentuliyana* agreed and requested *Dr. Galloway* to prepare an outline to be presented to the IISL Board in March 2006. He also suggested to create a group for the drafting of this white paper.

b) On the reliability of remote sensing data, national security, and liability for distribution of remote sensing data:

- *Dr. Mejia* asked *Dr. Schmidt-Tedd* if "9/11" triggered the drafting of the German legislation for licensing the distribution of remote sensing data by private companies. *Dr. Schmidt-Tedd* replied that the legislation was drafted because of the forthcoming launch of a partially privately financed German remote sensing satellite with high

resolution. *Dr. Mejia* expressed doubts about the enforcement of this legislation, because remote sensing images with high resolution are already internationally available through the internet. She was of the opinion that the German legislation would only put obstacles to distributors in German territory. *Dr. Schmidt-Tedd* answered that the aim of this legislation was not to limit the distribution of data. He referred to Spot which also operates under some restrictions set by the defense ministry. He commented that the distribution of remote sensing satellite data in Germany would be no more restrictive to the industry than in other countries with similar systems.

- On the same issue, *Dr. Jasentuliyana* referred to "Google Earth", an internet site with a large collection of good quality images of the Earth. He asked how the German legislation would be enforced and how the source of information could be identified in order to apply the regulation. *Dr. Schmidt-Tedd* commented that he was aware that people have access to such information, but mentioned that for the Government it is necessary to protect security interests. He said that sensitive satellite images in "Google Watch" (e.g. of sensitive sites such as the White House) are not up-to-date but several days old. This would be of importance in times of crisis. The German legislation has been drafted to interfere as little as possible with the market, but to concentrate on very special aspects of control.

c) On export control:

- *Dr. Jasentuliyana* commented that it is important to know whether export control encourages or discourages space

activities. *Dr. van Fenema* held that export control does not discourage space activities but affects international cooperation in space activities. He remarked that after an accident in the aviation sector, failures and information are shared by airlines and aircraft manufacturers. Conversely, in the space launch sector, investigations after a launch failure in one country are not shared, because of export control constraints. He was of the opinion that if we want to have safer space endeavors, we need to cooperate in sharing such investigation results.

d) On the trend of COPUOS resolutions to interpret existing space law treaties, rather than to revise and amend them:

- *Dr. Hobe* commented that the ILA was collecting evidence of State practice in several space related areas, for example registration of space objects, in order to see to what extent existing space law suits the needs of States and customers. He regretted that only soft law was created, rather than hard law.

- *Dr. Von der Dunk* pointed out that we should not underestimate existing space legislation, for example on registration. In his opinion the fact that there is an additional resolution calling for information on space objects was more useful than trying to make it a binding rule. He informed that there are several countries who submit information to the UN website about their space objects, although they have not signed the Registration Convention. He underlined that the ultimate goal is to have as much information as possible on space objects, in order to determine responsibility or liability.

- *Dr. van Fenema* referred to the Space Traffic Management session (IAA-IISL Scientific-Legal Roundtable) where the issue on the registration was brought up. He stressed that it was important to know what was moving in outer space, as precisely as possible, in order to guarantee safe space activities. He asked if we should create a more practice-oriented technical database from different national or international sources, including from the scientific community or ITU. *Dr. Van Fenema* was of the opinion that the Registration Convention has eroded, at least for present purposes.

- *Dr. Perek* commented that when the Registration Convention was drafted, only two countries were placing objects in outer space. He noted that at present the launching of objects is undertaken by several countries and approximately 25% of the launched space objects are not registered, including satellites of international organizations like Intelsat and Inmarsat. He underlined that it is compulsory to register cars, airplanes and ships, but pointed out that there was no interest of the international community to register space objects. He wondered whether the international community prefers to wait until someone places an object into space that is capable of executing terrorist acts. He stressed that the Registration Convention requires changes in order to contain significant scientific-technical data. Although there are other sources containing satellite parameters, he was of the opinion that the UN should be the most authoritative source of information.

e) On Space Traffic Management:

- *Dr. Schrogl* presented a report on the Space Traffic Management session, the IAA-IISL Scientific-Legal Roundtable (see elsewhere in these Proceedings).

- *Dr. van Fenema* reported that in this session participants had the feeling that any sense of urgency was lacking. Insurance specialists had indicated that the only means of getting a sense of urgency seems to be the occurrence of an accident.

- *Dr. Schrogl* mentioned the procedures of ITU to constantly revise and update their radio regulations. He regretted that COPUOS is a conservative and slow forum, reluctant to adopt new mechanisms and innovative legislation. He regretted that there are several international organizations elaborating regulations on different aspects of space activities, and these discussions are completely disconnected from COPUOS.

- *Dr. Jasentuliyana* recalled that in the past, COPUOS created general principles on international space law, but since we are going into an era which requires more technical guidance, like managing space debris, standards and recommended practices are needed, as in ICAO and other organizations. *Dr. Jasentuliyana* mentioned that COPUOS at present is not well-equipped to deal with this kind of regulations; the number of delegates at COPUOS is too large to deal with detailed technical issues. He regretted that the quality of the representation of States had diminished as compared to what it was at the time of the drafting of the space treaties. With COPUOS having become an inefficient international law maker, he concluded that other international organizations are

taking over this regulatory role and they should be encouraged.

f) On the exploitation of space resources and property rights in space:

- *Ms. Takaya* reported that during the IAF Youth Forum, issues of property rights on celestial bodies and exploitation of space resources had been addressed, but there was no specialist to answer the various questions raised by students and young researchers. *Dr. Jasentuliyana* encouraged *Ms. Takaya* to organize a session on space law and policy at next year's Forum, with contributions by IISL members.