43rd IISL COLLOQUIUM, 2-6 OCTOBER 2000, RIO DE JANEIRO

INTRODUCTION

The 43rd Colloquium on the Law of Outer Space was opened by the President, Dr. N. Jasentuliyana, on 3 October 2000. The colloquium was attended by around 60 participants, and 45 papers were presented. Discussion took place during a separate session and provided an occasion for debate on the most topical current space law issues.

A Dinner for IISL Members and Guests was offered by the Local Organizing Committee on 5 October at the beautiful "Palacio da Cidade". About 130 persons attended, including officials of the IAF and IAA. Dr. Antonio Guerreiro, head of the Division of Special Themes at the Brazilian Ministry of External Relations gave a dinner speech.

The semi finals and finals of the 9th Manfred Lachs Space Law Moot Court Competition (Homeria v. San Marcos) were held on 3 and 5 October; the finals took place at the First Court of Rio de Janeiro. The case was written by Dr. Leslie Tennen. The competition was realized with the help of the Local Organizing Committee, Prof. Monserrat, Filho of the Brazilian Society for Aerospace Law SBDA, the European Centre for Space Law (ECSL), the Association of US Members of the IISL (AUSMIISL) and the Law Faculty of the National University of Singapore. Preliminary competitions were held in Europe, the USA, and Australasia, and the winners of those preliminaries met in the semi finals and final round in Rio. The semi finals were held between Hamline University (USA) (Bryant Tchida and Allen Blair) as Applicant and the National University of Singapore (Valerie Phua and Tan Kok Peng) as Respondent. The semis were judged by F. Lyall, P. Larsen and T. Kosuge. Hamline University (USA) was the winner and moved on to the Finals. The finals opposed Hamline University (USA) as Applicant to the University of Paris XI (France) (Odile Giraud, Oliver Huth & Marie Diop) as Respondent. President Guillaume, Judge Rezek and Judge Vereshchetin of the ICJ judged the finals, which were won by the University of Paris XI. The Law Offices of Sterns and Tennen provided the award for the Best Oralist, won by Allen Blair of the USA, and the new "Eilene M. Galloway Award for Best Brief", consisting of a certificate and a sum of

money, sponsored by Ms. Marcia Smith and Prof. Diederiks-Verschoor was won by the Applicant brief of the University of Paris XI. Prof Gorove had sent specially dedicated copies of the Journal of Space Law which were presented to the 3 Judges. The case and the written briefs will be published in the IISL Proceedings. The finals of the 10th Competition will be held in Toulouse, October 2001, after regional preliminaries to be held in the Spring of 2001 in Europe, the USA, Australasia and hopefully the non-US Americas. The Case Concerning Access To ESI-1 Data (Soliscalor v. Cornucopia) was written by F. von der Dunk and distributed to the universities.
A Distinguished Service Award was presented to Dr. Skip Smith for his work on the moot court.
A total of 6 institutional members and 16 individual members was elected by the Board.

Two new members were elected to the Board of Directors: Dr. Sylvia Ospina (Colombia) and Dr. Frans von der Dunk (The Netherlands) who was also elected as Treasurer. Prof. Böckstiegel (Germany), Dr. He Qizhi (China), Dr. Kopal (Czech Rep., Vice Pres.), Prof. Kosuge (Japan), Mrs. Masson-Zwaan (The Netherlands/Switzerland; Secretary), Dr. Matte (Canada, Vice Pres.), Prof. Monserrat (Brazil), and Dr. Terekhov (Russia/UN) were re-elected for a new term.

SESSION 1: Law and Ethics of Space Activities in the New Millennium
Chairpersons: Dr. José Monserrat, Filho (Brazil) and Prof. Maureen Williams (Argentina/UK)
Rapporteur: Dr. Carlos Rebellon Betancourt (Colombia)
Report by Prof. Williams

Of the 17 papers submitted to Session & of the Rio Colloquium, eight were presented personally by their authors and four were summarised at the Plenary Session, as follows: Dr. Frans von der Dunk referred to a paper by Prof. Juan Faraminan (Spain), entitled “Law and Ethics in Outer Space” Professor Maureen Williams summed up the papers by three assistant professors from the University of Buenos Aires, namely “Reflections on the Interests of Less Developed Countries”, by Sandra Negro, “Law and Ethics of Space Activities in the New Millennium”, by Julio Villano, and “Reflections on Technology, Globalisation and International Space Law”, by Tulio Ortiz Cetrá. Five papers had been

withdrawn out of seventeen that had been originally announced for this Session.

Most of the twelve papers focused on the role of ethical principles in correcting imbalances between industrialised and developing countries and the need for a more equitable access to benefits arising from space activities. One of the features of this Session was that six out of the twelve papers submitted belonged to doctoral or postgraduate students, namely, Liara Covert (Canada), Motoko Uchitomi (Japan), and Luis F. Castillo Arganáras, Sandra Negro, Julio C. Villano and Tulio Ortiz Cetrá from Argentina.

A number of topical questions was addressed at this Session and positions veered between a cautious approach towards the creation of new law and the call for more dramatic changes and solutions. In-between these extreme stances different shades of opinion could be identified. Among the various questions focused upon by the meeting, concern was shown by some authors in connection with access to information obtained by space technologies and the need for the interests of developing countries to be considered within this context. In Sandra Negro's paper this problem was especially highlighted with regard to teleobservation, and the author suggested the creation of an agency entrusted with the management of benefits arising from the commercialisation of these activities. The urgency for more precise rules on space debris was equally highlighted (Uchitomi, Ortiz Cetrá, Negro, Monserrat) and special reference was made by some participants to the ILA International Instrument on Damage caused by Space Debris, adopted at the 66th Conference of the International Law Association (Buenos Aires, 1994). This topic, in the view of most authors, should be taken up without delay by the Legal Subcommittee of COPUOS.
Intellectual property issues were similarly a matter of concern (Faraminan, Williams and Ortiz). The accent was put on discoveries and inventions made on board manned space missions. On this point, reference was made to the International Colloquium on this subject organised by Prof. Böckstiegel in 1992 at the University of Cologne and it was considered timely to resume studies on this subject on the basis of the Cologne experience.

The recurring note of the meeting was the interdisciplinary nature of most topics involved. In this sense Liara Covert, based on her work conducted at Paris University, made reference to ethics and medical studies and, particularly, to the condition of astronauts and decision-making in this field ("Multicultural Issues in Law and Ethics of ISS Astronaut-related Medical Decision-Making"). This approach, regarding astronauts, may equally be found in Julio Villanoís paper who centered his thoughts on the effects, on astronauts, of lengthy space missions. Mokoto Uchitomi, following her research topic at Leyden University, unfolded different aspects of sustainable development and space debris ("Sustainable Development in Outer Space- Applicability of the Concept of Sustainable Development to Space Debris Problem"). Luis Castillo Arganáras paused on a number of precise examples of international cooperation stemming from Argentinaís National Space Programme, such as the agreements between this country and the USA, the UK, Brazil, Germany, ESA and others, which are presently being implemented. Like Marta Gaggero (Uruguay) and Tulio Ortiz Cetrá, this author underlines the importance of the UNGA Resolution 51/122 (1996) on International Cooperation.

Paul Larsen (USA) ("Legal Issues Relating to Civilian and MilItary Dual Uses of GNSS") addressed the highly sensitive topic of the dual ñmilitary and civilian-uses made by GNSS, an outstanding question in todayís world, whilst Marta Gaggero (Uruguay) ("Law and Ethics of Space Activities in the New Millennium") referred to the role of international cooperation in the new international context, as did Tulio Ortiz Cetrá in his paper for this Session. The latter stressed the importance of the globalisation phenomenon and its consequences in a manner consistent with Dr. Monserrat’s presentation.

Kai-Uwe Schrogl (Germany) ("A New Impetus for Space Law Making: The 1999 Reform of UNCOPUOS, how it Works") gave the Session an insight of the 1999 reform in space law-making within the COPUOS and commented on the need for three-year work plans and one-year time limits for single items. Maureen Williams ("Ethics, Space activities and the Law") addressed two questions where ethical principles were called upon to play a part, i.e. intellectual property and dispute settlement. On the latter, she made reference to the 1998 ILA Final Text of a Convention on Dispute Settlement related to Space Activities. Dr. Faraminan, in addition

to intellectual property issues, directed his comments to the ambiguities of the concept ìcommon heritage of mankindî and the need for clarification thereof.

The Session was closed with a presentation by José Monserrat, Filho (Brazil) ("Why and How to Define 'Global Public Interest'") on the ways and means of defining the global public interest in todayís world scenario, where he gave his views on a number of areas such as remote sensing (coinciding in this sense with Sandra Negro's views), telecommunications, launch services and others. The speaker provided the audience with a stimulating account of these questions within the context of globalisation and the growing commercial sides of space activities.

A general conclusion to be drawn from this Session is that both ethics and international cooperation are at the very root of space activities. Given the unrelenting growth of commercial activities in space, these principles will go a long way in redressing inequities and ironing out differences.between industrialised and developing countries.

SESSION 2: State Responsibility and Liability for Non-State Space Activities
Chairperson: Prof. Elisabeth Back Impallomeni (Italy)
Rapporteur: Dr. Sylvia Ospina (Colombia)
Report by Prof. Back Impallomeni & Dr. Ospina

Out of the seven papers annnounced in this Session, four were presented by the authors, one was summarized and two were withdrawn. The topics included: Liability for damages caused by satellites during their controlled or uncontrolled de-orbiting or accidental re-entry (H. Walker); Commercial activities in Outer Space: relationship between States and private enterprises (M. Longo); The Australian Space Activities Act of 1998 (F.von der Dunk); Space Tourism and Permanent Human Settlements in Outer Space (Y. Takaya & R. Lee); Satellite Ownership Transfer and Liability of Launching States (R. Lee). Several of the topics broached during this session followed nicely from some presented during the first IISL Session, particularly potential contributions of the IISL to the UNCOPUOS, and to making of space law.

Heather Walker (USA) presented "State Liability for Private Launch Activities Under the Current Space Treaty Regime and Ways to Limit Exposure". This paper focussed on the Liability Convention of 1972 and the entrance of private actors in space activities, due to which the determination of the potential liability of States for damages caused by satellites during their de-orbiting or their re-entry to Earth becomes of utmost relevance. The author quoted a newspaper release, according to which IRIDIUM, in its intention to remove its constellation of satellites, believes that it needs only the authorization of the Bankruptcy Court. [While the author seems correct in stating that the Liability Convention does not mention when IRIDIUM's liability may end, the Outer Space Treaty (not referred to by the author) states that responsibility of a State does not end even when the space object has reached the end of its useful life]. A complication with regard to multi-national corporations is that the ìLaunching Stateî and the State that procures a launch may be different. Further, few States have licensing regimes that would hold them liable. Ultimately, the question is whether there is any entity that has the authority to make a decision as to de-orbiting these satellites. According to Walker, the decision of a US Bankruptcy Court suffices. Walker also recommends that States have to start thinking of liability at re-entry (Liability Convention) and de-orbiting (Outer Space Treaty and Registration Convention).

The paper by Marialetizia Longo (Italy) ("Inter-Relation between States and Private Enterprises in the Commercial Activities in Outer Space") was summarized by Prof. Catalano Sgrosso. Dr. Longo points out the lack of clear distinction between commercial and non-commercial space activities and underlines the possible conflicts that can arise in the field of responsibiity. The author contemplates the opportunity to introduce the concept of preventive liability in order to provide damage prevention instead of damage remedy. She sees in the preventive liability an incentive for improvement of quality of commercial space operations. As an answer to the legal and economic problems rising from commercial space activities the author proposes the regulation by bilateral or multilateral specific agreeements in regard to intellectual property, related patents, limits of compensation and sharing of responsibility.

"Launching From "Down Under": The New Australian Space Activities Act of 1998" was presented by Frans von der Dunk (The Netherlands). He presented a synopsis of the main provisions of the most recent national legislation, *i.e.* the Australian Space Activities Act of 1998. The Australian law is a valuable contribution to the (small) body of national legislation on space activities. He also presents in his paper a discussion on jurisdiction and proffers that there are three types of jurisdiction in regard to space activities: (i) personal jurisdiction, (ii) territorial jurisdiction and (iii) quasi-territorial jurisdiction. The underlying question is, which is the "appropriate State" to authorize and supervise activities undertaken by non-governmental entities. This is an issue, which will become more important with the increasing participation of the private sector in space activities. One conclusion is that the term ìlaunching Stateî offers several alternative interpretations, with emphasis placed on launching, rather than on State. Another conclusion is the need to draft a law specifically on ìlaunching Stateî, to include the growing number of ìlaunching Statesî.

The paper on "Space Tourism and Permanent Settlement in Space: The Legal and Regulatory Issues" (by Yuri Takaya, Japan and Ricky Lee, Australia) was presented by Ms. Takaya. The authors note that research in Japan has shown an increasing interest in the possibility of tourism in outer space, leading to the creation of two ìairlinesî to accommodate potential clients. Thus, there is interest in promoting space tourism, but its feasibility may still be a few years away, as results from several research projects in the U.S. and Japan. However, for this to become reality many aspects have to be considered. First, the applicability of Space Law to Tourism. In this concern the author examines the five Space Treaties individually proposing favorable interpretation. As to the Permanent Human Settlements Ms. Takaya rightly points out that there is no basis to protect any property rights related to them. Any installation for the purpose of permanent settlement remains accessible to anyone capable. For this and other reasons it appears appropriate to prepare adequate regulation of this future space activity in due time.

Ricky Lee (Australia) presented his paper on the "Effect of Satellite Ownership Transfers on the Liability of the Launching State", which addressed the issues of ìLaunching Stateî, corporate ownership and

liability issues, particularly in regard to the transfer of ownership (and control) of spacecraft, when a spacecraft is sold to another operator. What used to be theoretical questions are now of great relevance and call for solutions. Dr. Lee concludes that there are many gaps to be filled in commercial space law, and that current laws do not allow for easy transfers of satellites, let alone of “Launching State” liability. He proposes that the liability for damage caused by satellites should no longer be dependent on the "launching State". Instead, in the author's opinion, there should be a truly fault-based system, where the life of a satellite would be divided into different laibility phases: launch, functional operation and retirement.

SESSION 3: The Interrelation Between Public International Law and Private International Law in the Regulation of Space Activities.
Chairmen: Prof. Dr.Karl-Heinz Böckstiegel (Germany) and Dr. Rosa Maria Ramirez de Arellano (Mexico)
Rapporteur: Dr. Valnora Leister (Brazil)
Report by Dr. Ramirez and Dr. Leister

Of the 14 papers registered for this session, 11 were presented, 2 were summarized and 1 was withdrawn. The 11 papers presented focused on different questions generated by the conflict between national and international legislation in regulating space activities as well as by the lack of legislation to protect inventions driven by the discoveries or technological applications and their treatment or copyright protection. Existing national legislations have several restrictions for the development of national space activities, mainly in the developing countries in which we clearly find a limitation for the development of those activities. Additionally, space commercialization and the more frequent participation of private corporations in space activities imply on the one hand a search for recovering their investment, and on the other, establishing some exclusivity rights on the space activities in which they participate.

From the abovementioned aspects, the papers suggest the necessity of modifying the pertinent space treaties and above all, searching for the harmonization of national and international legislation in order to facilitate the development of space activities and the participation and access to most of the developing countries in this arena.

Valnora Leister (Brazil) and Mark C. Frazier (USA) in their paper entitled: “The Role of National and International Law in the Regulation of Space Activities” examine the interaction of national and international law in the regulation of activities taking place in outer space. The paper indicates areas where national regulations do not conform to the obligations undertaken under the outer space treaties and suggests some measures to bring harmony between the national and international principles, such as international auditing, arbitration and monitoring by a group of high qualified technicians to assure that military activities are not taking place in national launching facilities.

Maria Helena Fonseca de Souza Rolim (Brazil) in her paper on “The Impact of the International Space Station program on the Brazilian Legal System” analyzes the interrelation between Public International Law and Private International Law vis-á-vis the Brazilian Program for International Space Station and its impact on the Brazilian Legal System. She describes how the impact of the Brazilian International Space Station Program on the Brazilian legal system enhances the pressure of facts on Law. That is, the impact of new technologies on the traditional structures of Law, both international and national Law.

Patrick A. Salin (Canada) in his paper entitled: “Legal Consequences of the increasing reliance of Space Nations on Private Enterprises in the Exploitation of Low Orbiting- Leo- Resources” analyses the legal consequences of the gradual appropriation of the utilization of LEO Outer Space resources by private enterprises. First, he comments the way in which activities are affected by the consequences of deregulation and budget constrains.In the second part of his paper, he outlines several probable consequences of such a huge shift in terms of legal and political issues. He illustrates the accelerating privatization trend while, at the same time, he underlines deficit in the slow considerations of the specificity of outer space.

Gabriella Catalano Sgrosso (Italy) in her paper “Applicable jurisdiction conflicts in the International Space Station” states that the partial commercialization of the ISS is a necessity felt by several Partner States. Private companies want a profit with the attribution of exclusive and

protected rights of intellectual property even if limited in time and space. The paper intends to verify if this financial necessity may not be in conflict with the rules dictated by the Outer Space Treaty and if the eventual conflict between national rules for the protection of intellectual property could be solved on a more general international level, specially by the “Space Station Procedures for the Protection of User Intellectual Property”, currently being discussed by partner states.

Jürgen A. Heilbock (Germany) (“Rights of privileges in frequency spectrum”) presents a reference in respect to the changes that some services such as telegraphy or telephony have had, from their consideration as monopolies up to the possibility that through a concession, its owner not only has the privilege in the frequency spectrum in use but also has the property rights. Changes that have arisen in the last 10 years in different countries have been motivated mainly by the auctions or radiospectrum frequencies in which the concessionaries have paid considerable amounts of money, therefore creditors are interested in getting a guarantee that they will recover their investment. In some countries if exclusivity rights for the usage of the frequency are not given, there is an option that the concession of the frequency allow several services applications. The paper suggests that the existing regulatory authorities have to create a new form of a frequency registry, which allows interested third parties to gather information about a specific frequency and its users.

Sylvia Ospina (Colombia) (“Revisiting the Registration Convention: A proposal to Meet the Need to Know 'Whatís up there'") says that many of the satellite operators are not familiar with the Convention of Registration of Objects Launched into Outer Space (1976), so they do not observe its content, therefore she proposes a few steps and measures that can be taken to insure compliance with the Registration Convention, as well as other principles of space law incorporated in the various treaties and resolutions.

William A. Gaubatz, Leslie Tennen and Patricia Sterns (USA) presented a paper entitled: “International Rule Planning for Governing Space Transportation” in which they consider that space transportation is a fundamental infrastructure for all spacefaring nations. Consequently, international planning for its governants should begin now during the

formative stages of the Spaceways development and operations to assure functional safety, and for the protection of the public they will serve. The paper identifies and examines the primary areas that will need to be studied for the international rule planning for governing space transportation. A proposal is made for the creation of an International Spaceways Forum working group as a mean to address those specific issues.

Claire Jolly (France) presented "Reusable Launch Vehicles Regulations: First Step Towards an International Framework" and discusses the main reasons why an international framework for Reusable Launch Vehicles regulations should be discussed. It offers some suggestions on how an international regulatory framework could be started as reusable technologies start emerging. She added that technological developments are taking place and national space policies are slowly being adapted. But, as for Aviation Law or the Law of the Sea, sooner or later, an international framework for aerospace operations will need to be created.

In his "Proposal for a Multilateral Treaty Regarding Jurisdiction and Real Property Rights", Wayne N. White, Jr. (USA) discusses, in general terms, the need for a multilateral treaty regarding jurisdiction and real property rights in outer space, and proposes a language for such treaty. Part of his proposal is regarding jurisdiction that would expand upon Article VIII of the 1967 Outer Space Treaty and states that the provisions relating to real property rights would implement his proposal for limited real property rights in the absence of territorial sovereignty.

Bertrand de Montluc (France) addresses a "Space Strategy for Europe" and says that if we take into account the changes that the space activities have had after the end of the cold war, we find a necessity to establish more synergy between the European Union- EU and the European Space Agency- ESA and creating a joint group for elaborating strategy guidelines which should be assessed at the end of 2000, both by the ESA Council and the EU Council. All of it in order to work effectively on a regular basis in partnership between EU and ESA as it is being done, for instance, in the Galileo program to define an European doctrine for future application of space programs for the world wide context.

Paul B. Larsen (USA) in his paper on "Financing of Space Assets: UNIDROIT Convention's International Registry of Financial Interests in Space Property", focussed on the possibility of creating a special Protocol which would do the same for space property, and examined if UNIDROIT could co-sponsor such a Protocol with COPUOS or some other international agency. In addition, the author analyzes how the proposed UNIDROIT Convention on Secured Interests in Movable Property can best be shaped to resolve problems and improve financing for international business involving space assets.

Lastly, the papers by Bradford Smith ("New Initiatives in Intellectual Property Law for Space Activities") and Kenneth Weidaw ("Space Development Partnerships: A New Way to Finance Future Projects") were summarized by Tanja Masson-Zwaan.

SESSION 4: Other Legal Matters
Chairpersons: Dr. Sylvia Ospina (Colombia) and Dr. Leslie Tennen (USA).
Rapporteur: Maria Helena Fonseca de Souza Rolim (Brazil).
Report by Dr. Ospina.

Of 17 registered papers, 14 were presented during this session, on topics ranging from dual use of space technology and missile defense systems; the need for definitions of space debris; space debris as “space objects”, to the launching of human ashes on the “Celestis” satellite (1 paper was withdrawn, 1 was summarized and 1 is forthcoming). One underlying theme in many of the presentations is the need to revise and update many of the definitions provided in the space-related treaties, in particular the Liability Convention and the Registration Convention, to include liability for the creation of space debris, as well as indemnification caused by debris of private parties. The amendments need to take into account the private sectorís increasing involvement in space activities, as well as this sectorís responsibility and exposure to liability. A short summary of most of the papers follows, with apologies to the authors if the summary does not reflect what they felt were the most important points they made.
The paper by Maurice Andem (Finland) on the "Implementation of the 1967 Outer Space Treaty in the New Millennium: a Brief Reflection on the Implications of Proposed Missile Defence Systems", tended to be a

philosophical reflection on the implications of proposed missile defense systems, and the need to maintain outer space for peaceful purposes, as provided in the 1967 Outer Space Treaty. His emphasis was on the need to take action, rather than just talk about bringing about peace, an aspiration expressed by a number of actors, of varying ages and religious convictions.

Jonathan Gallowayís (USA) paper ("The Law of Outer Space and U.S. Policy on National Missile Defense") dealt with the USA's policy on national Missile Defense and US international policies and relations. He also provided a political context for the current policy (the US Presidential election). Two alternatives exist: one is to deploy more systems, leading to greater risks of war; the other possibility is to further develop international co-operation, and settle conflicts by negotiations rather than by war.

John Heath (USA), in his paper "Beyond Ballistic Missile Defense: Will A New Generation of Weapons Fit Into the Old", addressed the issue of space-based weapons and their compatibility with future commercial use of outer space. He drew analogies between naval power and commerce as articulated by Admiral Mahan in the 19th century, and current space endeavours. He also suggested that policy makers should re-examine the linkage between "national" and "economic" security, to avoid competition between the industrial (commercial) and military sectors.

Virgiliu Pop (UK), in "Security Implications of Non-Terrestrial Resource Exploitation" analyzed the legality of solar power satellites and peaceful nuclear explosions, taking into account the Outer Space Treaty, and various treaties banning nuclear tests, the deployment of anti-ballistic systems and other weapons in space. He concludes that using solar energy is not necessarily illegal, but that appropriate safeguards need to be in place, especially in regard to dual use technology.

The paper by Yasuaki Hashimoto (Japan) was summarized by Prof. Kosuge. " "Missile Defence Systems and International Law - Environmental Perspective" addressed the need to prevent the destruction of outer space by radioactive contamination as well as from pieces of nuclear warheads. One issue he raised is who is responsible for cleaning up debris, and stated that perhaps it is the responsibility of the whole

world, as outer space is the province of mankind. He concluded that this responsibility might not be acceptable to States that have no means of creating space debris or causing contamination of the outer space environment.

Toshio Kosuge (Japan), in "Legal Implications of Basic Human Needs in Satellite Communication Networks for Rural Areas in the Developing Countries Within the Framework of Space Law" spoke on the “digital divide”, or the increasing gap between countries with access to information and technology, and those without such assets. He concluded that there is great need to improve the infrastructure, to have computers everywhere, as provided in a plan of the International Telecommunication Union (ITU). [This goal sounds like a reiteration of the 1985 Maitland Commission Report, which stated that everyone should be within easy access to a telephone by the end of the 20th century.]

Francis Lyall (UK) ("Re-Thinking the ITU") spoke on the need to “re-think” the ITU to take into account the increasing participation of the private sector, and the need to develop standards and regulations in an expeditious manner. He advocates for the creation of a world (regulatory) authority, or to give the ITU the authority to review decisions taken by national authorities as to licensing of frequency [use] and orbital assignments. He concludes that the ITU is already in the process of reforming itself, seeking to better serve its clientele, which are increasingly private, commercial entities.

Catherine Baudin (ESA, France) in "The European Space Agency and its Enlargement Process" also addressed the issue of agency reform, focussing on the European Space Agencyís enlargement process. The changes are taking place as more States apply for ESA membership, and as ESA enters into agreements with a greater number of entities. This paper provided a clear description of the enlargement process, and of the many steps or stages associated with it, prior to a State becoming an ESA member.

Masahiko Sato (Japan) analyzed the legal and political background and elements regarding co-operation between the US and Japan, particularly in relation to the development of launch vehicles, in his paper entitled

"Analysis of Legal and Political Background Concerning International Cooperation Between Japan and the United States in the Space Development Area". The terms of several agreements (1969, 1976, 1978, 1980) have led Japan to develop much of its own hardware, since only the sale of hardware was allowed, and not the transfer of technology. One result has been the Japanese expansion in the space sector, and development of its space industry.

The paper by José Monserrat, Filho and Valnora Leister (Brazil) discussed the "Brazil-USA Agreement on Alcantara Launching Center", which was reached in April 2000. One of the main purposes of this agreement is to preclude any and all unauthorized transfer of satellite and launch vehicle-related technologies to Brazil in the course of any commercial launch to take place at the Alcantara Spaceport. The terms of the agreement seem to based on politics rather than law or economics. However, Brazil is in a good position to develop its launch capabilities, and in due time, less developed countries will receive the same treatment as the developed ones.

Edward Frankle (NASA, USA) in "International Regulation of Space Debris" addressed the growing concern and work of several international committees on its mitigation. One concern is that the potential for collision increases with the quantity of debris in space. Dr. Frankle noted that there is no definition, nor consistent use in the space treaties of ìspace objectî or of ìspace or orbital debrisî. He states that more knowledge and information are necessary, prior to developing technical standards or drafting binding regulations. He outlined NASA's four "standard practices" for limiting debris. [Dr. Frankle also differentiated between ìorbital debrisî (man-made objects), and ìspace debrisî (ìnaturalî, such as pieces of meteorites). This distinction was challenged, since a definition of space debris that was drafted several years ago is accepted by the majority of the international community.]

Maria de la Mercedes E. de Cocca’s (Argentina) paper on "Liability and Responsibility for Space Debris, Abandoned and Unregistered Space Objects, and for Damages Caused During Rescue Operations" highlighted the need to update the Liability Convention, and include liability for damage caused by space debris, which should be considered ìspace

objectsî. In some respects, Ms. Cocca's arguments were the "other side of the coin" to those made by Dr. Frankle. In addition, Ms. Cocca makes several proposals, including the establishment of a common fund to which States involved in space activities would contribute, to cover damages caused by small particles of (non-manmade?) debris.

Carl Christol (USA) spoke on "Protection against Space Debris", and noted that a definition of space debris was drafted several years ago, and is accepted by the majority of the international community. The definition may be found in the 1994 Buenos Aires International Instrument on Protection of the Environment from Damage caused by Space Debris. Prof. Christol maintains that there is a need for legal rules directly applicable to space debris, and that a sufficient number of States have an interest in mitigating, if not eliminating large and small debris.

Mahulena Hoffman from Germany presented the last paper of the 4th session and discussed the challenge to the legal regime of outer space provided by ìspace cemeteriesî, such as the "Celestis" satellite with human ashes which was orbited in December 1999 ("Space Cemeteries - A Challenge for the Legal Regime of Outer Space"). The fact that human remains may be orbited to the Moon and beyond raises a number of questions as to compliance with the Outer Space Treaty ("space activities for the benefit of mankind"), as well as questions of continued responsibility for an object launched to outer space. Questions of pollution, and increasing space debris and potential collisions are also raised. One suggestion is to place containers with human remains in an orbit for useless (geostationary) satellites, or "graveyard orbit" (no pun intended). Another suggestion is to separate out legal from extra-legal arguments, to either support the expansion of such activities, or at least determine whether they are for the benefit and interest of all countries.

DISCUSSION SESSION

The Chairmen and Rapporteurs of the four sessions first gave a short overview of points raised in the various papers that were interesting for further discussion. These remarks can be found in the session reports above. Below is a reflection of some of the discussion. The notes do not

claim to represent official views by any of the participants in the discussion. Apologies for any remarks not properly recorded.

On space debris:
Dr. Frankle noted that we should not mix up "liability for what" and "liability to whom"; and that a regime for space debris is premature. He recommended not to address this issue until really necessary. We should not start drafting new treaties at this time.

Dr. Perek noted that the US have carried out 3 launches for Celestis and asked Dr. Frankle whether NASA's four "standard practices" would also apply to commercial launches, to which Dr. Frankle replied that yes, via their launch agency they would be bound, the rules apply to both commercial and government launches. Dr. Perek strongly recommended such strict application for Celestis. Regarding Dr. Frankle's distinction between "orbital debris" (manmade) and "space debris" (natural), he noted that the IAA in its position paper on debris had decided that only artificial or manmade objects qualify as space debris, but that this included de-orbiting objects. In his view, it is not necessary to include natural objects in the definition of space debris. Dr. Frankle replied that NASA is mainly worried about "being hit", irrespective of whether it is by something manmade or something natural, and that NASA's definition of debris should be regarded merely as an internal working definition.

Dr. Ospina noted that although Dr. Frankle believed a treaty on space debris is premature, the issue might indeed become pressing sooner than later if the 77 Iridium satellites would de-orbit, or when the Celestis capsules with human remains would disintegrate and somehow cause harm to the space environment. She suggested that Iridium might be requested to study the environmental effect of its de-orbiting satellites, but realized that no-one could oblige them to do that. Dr. Frankle replied that NASA is providing technical support to the government on this matter, but that it would take about 150-200 years for all satellites to de-orbit and that about 200 pieces of debris might re-enter each year which would not greatly change the average per year.

Dr. Gantt called for attention to economic considerations in the discussions on space debris (optical fiber for instance is becoming an

important competitor for satellites), and warned that legal uncertainty would harm commercial involvement.

On IISL's role in COPUOS work:
Ms. Uchitomi reflected on the possibility of IISL contributing to the COPUOS work and was strongly in favour of IISL submitting working papers with its views to the Legal Subcommittee. This was supported by many others and the President mentioned that IISL has created a task force to look at ways for the IISL to contribute to COPUOS' work.

On the Registration Convention:
Regarding Dr. Ospina's paper on the Registration Convention, Dr. Perek agreed that the Convention deserves more attention as it is a very weak instrument but has great potential. We must know when an object is not active anymore and in general he called for more attention to the possibilities of the Convention.

On Treaty updates/amendments:
Prof. Beckman noted that the space treaties do not have any mechanism to keep them up-to-date, contrary to *e.g*. the new environmental law convention. The mechanism provided by this convention, or the UN Convention on the Law of the Sea (UNCLOS) , might be adapted for use in the space treaties. Also their ways of dealing with "flags of convenience" to avoid liability may serve as an example. Thus, space law should look at other, similar regimes for examples.

Dr. Jasentuliyana mentioned that both these issues are now on COPUOS' agenda: to check what other organizations are doing, and to study the connections between the UNCLOS and the Outer Space treaty. He also noted that some "bad" parts of the UNCLOS had been integrated into the Moon Agreement, so some caution should be applied in "copying" other regimes.

Hereafter, the 43rd Colloquium was closed. The President thanked all those who contributed to it and invited all to the 44th Colloquium in Toulouse, France.[*]

Tanja Masson-Zwaan (Editor)[**]
(IISL Secretary/Colloquium Coordinator)

[*] 1-5 October 2001. Information about the Colloquium, session topics and procedure for the submission of abstracts, as well as the Manfred Lachs Space Law Moot Court Competition may be obtained from the IISL Secretary via e-mail (jtmasson@cyberway.com.sg), or from the IAF Website (http://www.iafastro.com)

[**] With many thanks to the Session Chairpersons and Rapporteurs who submitted excellent reports that hardly necessitated any editing:

Prof. Maureen Williams (Argentina) for session 1
Prof. Elisabeth Back Impallomeni (Italy) and Dr. Sylvia Ospina (Colombia) for session 2
Dr. Rosa Maria Ramirez de Arellano (Mexico) and Dr. Valnora Leister (Brazil) for session 3
Dr. Sylvia Ospina (Colombia) for session 4