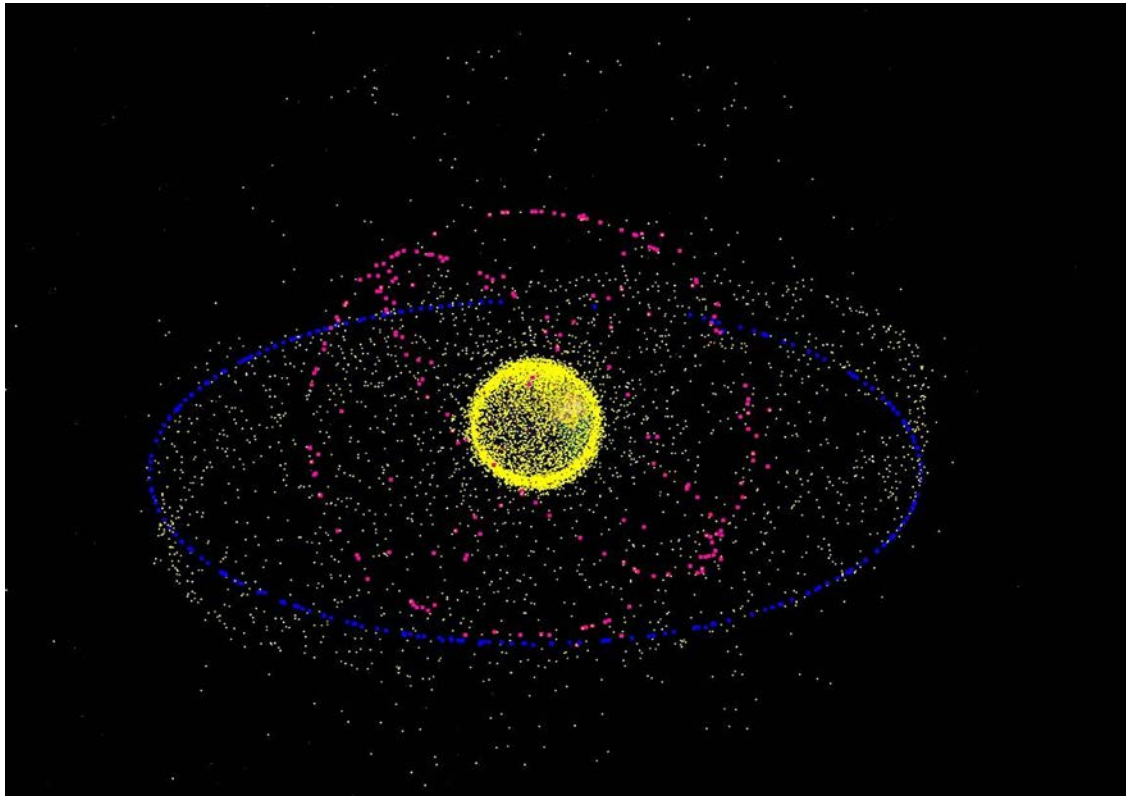


30 IAA / IISL Scientific-Legal Roundtables at International Astronautical Congresses



30 IAA / IISL Scientific-Legal Roundtables

Content

1	Foreword by the Scientific-Legal Liaison Committee Bureau	3
2	Message from the Secretary General of IAA	4
3	Message from the President of IISL	5
4	The IAA/IISL Scientific-Legal Liaison Committee – a look at its foundation and development	6
5	“Voices from different continents”	8
6	30 IAA/IISL Scientific-Legal Roundtables – a chronology	10
7	Building on the past - looking ahead	18

1 Foreword by the Scientific-Legal Liaison Committee Bureau

30 high-flying IAA/IISL Scientific-Legal Roundtables at International Astronautical Congresses

*IAA/IISL Scientific-Legal Liaison Committee:
Chair Prof. Dr. Kai-Uwe Schrogl, European Space Agency (ESA), Vice-President IISL
Co-Chair Dr. Rainer Sandau, IAA, Consultant, Technical Director Satellites and Space Applications
Co-Secretaries Dr. Nicola Rohner-Willsch and Marc Haese, German Aerospace Center (DLR)*



*From left: Kai-Uwe Schrogl
Nicola Rohner-Willsch, Rainer Sandau*

At the 66th IAC 2015 in Jerusalem, Israel, the 30th IAA/IISL Scientific-Legal Roundtable took place. This is certainly an anniversary to celebrate.

30 Roundtables means: 30 topics selected in view of capturing the most important and striking trends, problems or issues in space affairs; 30 times putting together multi-disciplinary panels of distinguished representatives of the communities from all over the world; 30 times investigating jointly, constructively and cordially in the topics in order to bring forward our understanding and our actions; and finally, 30 times catching the interest of now hundreds of participants in the audiences, benefitting from the efforts over the past years.

The IAA/IISL Scientific-Legal Liaison Committee organizes the roundtables with strong and continuous support from IAA and IISL, each contributing experienced chairpersons and speakers. Furthermore, the Secretary General of IAA and the President of IISL demonstrate the significance of this activity by regularly giving the welcome speeches.

We are proud to say, that 30 Scientific Legal Roundtables have triggered a lot of international teamwork and projects in a multidisciplinary and respectful spirit. For this, we thank the far more than a hundred speakers and the sometimes up to 100 person large audiences for their solid interest. We hope that also future IAA/IISL Scientific-Legal Roundtables will bring together space scientists, technology experts, users, social scientists and lawyers from all over the world to discuss and to further our common objective to make everybody benefit from space activities.

2 Message from the Secretary General of IAA



*Dr. Jean-Michel Contant,
Secretary General IAA*

30 IAA/IISL well attended Scientific-Legal Roundtables have been providing a unique forum for continuous interdisciplinary discussion between the scientific space community and the space law community. Created by famous space pioneers such as Vladimir Kopal and Pierre Contensou, they have become an inherent element of the long-term collaboration between the International Academy of Astronautics (IAA) and the International Institute of Space Law (IISL). I am honoured to regularly open these Roundtables together with the President of IISL during the International Astronautical Congress (IAC).

The close interconnection between actors of both disciplines allows for a smooth flow of information as well as for dynamic debates about topics of joint concern. And these Roundtables are more than just an interdisciplinary discussion between experts. They fulfil in a very lively and remarkable way the mission of the IAA to promote the peaceful utilization and exploration of space for scientific purposes by providing a suitable platform and opportunity to discuss with representatives of different nations and cultures with different scientific, economic, societal and political interests. Technical, political, scientific and commercial issues of today's and tomorrow's spaceflight are debated. Thereby, it is a special ambition of the Scientific-Legal Roundtables to bring in line the fast developing space science technologies and the guiding legal and political framework to ensure a stable progress.

We all have the same goal to protect our habitat by being creative in finding technical solutions and by injecting life into international cooperation. Thanks to the IAA/IISL Scientific-Legal Liaison Committee for its continuous engagement.

I wish you all many more fruitful and inspiring Scientific-Legal Roundtables and a continued development of our global cooperation.

3 Message from the President of IISL



*Tanja Masson-Zwaan, President,
International Institute of Space Law, IISL*

The 30th edition of the IAA/IISL Scientific-Legal Roundtable is definitely an occasion to celebrate, but also a good opportunity to look back and take stock, and to look forward. Five years ago, a booklet was published providing an overview of twenty-five Scientific-Legal Roundtables since the first one was held in 1977. Five years later, the steady rhythm of having a high-quality and well-attended Roundtable at each International Astronautical Congress (IAC) has been maintained. Exciting new topics have been addressed, including Space Debris Remediation, Optical Communications, Space and the Polar Regions, Preventing Abuse of Satellite Data, and Universities as Actors in Space. An update of the past five years is of course included in the chronological overview in this new commemorative booklet, but it also contains some new features, such as quotes from participants from around the world with their views about the Roundtables.

As becomes clear from this publication, all of us who are involved in IAA, IISL, and the Scientific-Legal Liaison Committee firmly believe in the need for interdisciplinary work in order to fully realize, in a sustainable manner, the many promises that outer space holds for humankind. We are all proud to contribute to this goal by means of the Roundtables, and intend to continue holding them for as long as needed. Likewise, the IISL will continue to contribute to the preservation of the many excellent papers produced for the Roundtables by including them in a dedicated section of its annual "Proceedings", published by Eleven International Publishing.

On behalf of the IISL, I congratulate the members of the Scientific-Legal Liaison Committee and its Bureau, as well as all speakers, moderators, chairpersons and rapporteurs over the past decades, for succeeding in making the Roundtables such an essential element of each IAC. The publication of this booklet also bears witness to this success, and I hope you will enjoy reading it!

4 The IAA/IISL Scientific-Legal Liaison Committee – a look at its foundation and development

Professor Vladimír Kopal, † 2014

Prof. Vladimír Kopal, former Professor of International Law at the Faculty of Law, West Bohemian University in Pilsen, Czech Republic, was one of the “pioneers” of the strong, still growing bond between the international faculties of law and the engineering sciences. On international level he was a valued General Counsel of the International Astronautical Federation (IAF), Vice-President of the International Institute of Space Law (IISL), and member and Legal Counsel of the International Academy of Astronautics (IAA).



Vladimír Kopal, West Bohemian University Pilsen, Czech Rep.

In the occasion of the 25th IAA/IISL Scientific legal Roundtable in 2010 he contributed the following article.

The establishment of the Scientific-Legal Liaison Committee (SLLC) was initiated by the late John Cobb Cooper, Professor of the Princeton University and founder of the Institute of Air Law, Mc Gill University, which later on became the present Institute of Air and Space Law.

He wanted to create a body, which should explore the space issues of joint interests of scientists, engineers and lawyers. In this endeavour, he was supported by Andrew G. Haley, who was a leading personality, during the 1950s and 1960s in the IAF and also in the newly emerging IAA and IISL. Both of them wanted the new body to consider firstly the issue of delimitation of air-space and outer space.

This was done at two succeeding sessions, but Cooper and Haley died during the second half of the 1960s. The chair of the committee was then entrusted to Professor Edward A. Brun (France) and myself, one representing the scientific part of the body, the other its legal part. When Professor Brun passed away, Pierre Contensou of France succeeded him and later on Jean-Jacques Dordain (the present Director-General of ESA), André Lebeau (France) and Edward R. Finch (USA) became co-chairs of the committee. Judge Manfred Lachs, when he was elected as IISL President, also chaired the SLLC for a certain time. I served as one of the co-chairmen for four decades, last time together with Wendell Mendell (USA).

During the first decade of this century a reconstruction of the committee was effected under the scope of a reconstruction of the IAA. A charter for this body was adapted at Fukuoka, Japan, on 15 October 2005 and approved by the IAA and IISL, and the nearly established committee became a permanent committee of the IAA in accordance with Section VIII para 8.1. of its Bylaws.

In addition to its original task, it should develop those contacts and cooperation between the IAA and IISL as their joint body, initiating and advising on elaboration of studies and position papers and by organising appropriate sessions. And you were appointed as Chairman of the committee.

Since its beginnings up to date, the Scientific-Legal Roundtables have been the main formats of activities of the committee. During the 50 years of its existence, it discussed a large number of significant topics, such as are reported in the overview article beyond.

As a rule, since 1977 the proceedings of the Roundtables have been published in special addenda to the Proceedings of the IISL Colloquia of space law.

5 “Voices from different continents”

Research and development is nurtured by new ideas from all fields of knowledge. Especially in the development of space flight technologies, multi-disciplinarity, international collaboration, political awareness and the knowledge of chances and limits are of particular importance. We asked a couple of speakers from all over the world and of different disciplines how they perceived selected IAA/IISL Scientific-Legal Roundtables.



Sergio Camacho, Regional Centre for Space Science and Technology Education for Latin America and the Caribbean

The link between the space scientific/technical and legal/policy communities is very important and at the same time, not strong enough in many countries. With lower cost and easier access to space, scientific communities across the world aspire to use space to enrich their work or to develop technological know-how. Often, invested efforts are set back due to ignorance of relevant aspects of international treaties and principles. Workshops that bring together scientists and space law experts would go far to remedy this circumstance.

Space activities in Russia are based on three fundamental ‘pillars’ – science and technology, policy, and law. Space technologies are developing fast, space policy is there to guide the process – but it has always been the law to protect this development, ensure its steadiness and stability. For decades Russian space lawyers have acted as mediators between engineers and policy makers to reach acceptable and rational solutions. Due to their efforts national space legislation is well structured and practice-oriented. The crucial and the hardest task for space lawyers is to preserve this balance and maintain the trilateral dialogue for the better future.



Olga Volynskaya, Dr.iur., Chief Internat. Law Counsel, International Coop. and Treaties Dep. Fed. Space Agency (ROSCOSMOS)

NewSpace Commercialization will be a key area where bold decisions will need to be made by state actors at the policy/regulatory/political/technical and organizational levels to create a paradigm shift of how we look at the future of space. In particular on how we address active space debris removal and On-Orbit Servicing, which will create new challenges under current legal regimes in particular with regards to liability



*Lauren Small-Pennefather
Canadian Space Agency (CSA)*



Herman Steyn, Stellenbosch University South Africa

Although some African countries have already started national space agencies, e.g. Algeria, Nigeria and South Africa, the local space industries are still in its infancy. They need to be supported by the established space faring nations e.g. by encouraging more African universities to embark on space science and space engineering academic programs. At the same time sustainability must be ensured. A sustainable way forward to prevent an increase in the space debris problem will be to require that educational satellites must have a maximum initial altitude below 400 km.

The IAA/ IISL Joint Scientific-Legal Roundtables have become a highlight of the IAC week. By bringing together experts from across the space community and ensuring an interdisciplinary approach to the subjects selected, the Roundtable contributes substantially to the discussions on recent developments across the full spectrum of outer space activities. The Roundtable is renowned for its forward-looking approach and for delivering high level insights into relevant subjects from a legal and scientific perspective for the benefit of all communities involved.



*Lesley Jane Smith,
IISL Board and
IAF Honorary
General Counsel*

6 30 IAA/IISL Scientific-Legal Roundtables - a chronology

Dr. Nicola Rohner-Willsch, German Aerospace Center (DLR)

No.	Year	Topic	Place
1	1977	Scientific and Legal Aspects of International Cooperation in Remote Sensing	28. International Astronautical Congress (IAC), Prague, Czech Republic
		<p>Speaker:</p> <ul style="list-style-type: none"> • M.C.M. Bignier, Spacelab Program, European Space Agency, Paris, France; • M. Hirai, National Space Development Agency of Japan, Tokyo, Japan; • J.H. Disher, Office of Space Flight, NASA Hqs., Washington, D.C., USA.; • L. Perek, Outer Space Affairs Division, United Nations, New York, USA.; • V.D. Bordunov, Institute of State and Law, Academy of Sciences, Moscow, USSR; • E. Galloway, Vice-President, International Institute of Space Law, Wash. D.C., USA; • M.A. Ferrer, Institute of Air and Space Law, Univ. of Cordoba, Cordoba, Argentina. <p>In absence of Dr. Bordunov his paper was presented by Professor G.P. Zhukov, USSR. Moreover, two contributions were submitted to the Chair of the Roundtable in writing, the authors of which were not in a position to come and present them. They were:</p> <p>G. Lafferranderie, European Space Agency, Paris, France, and F.B. Andhyarujina, Attorney, Bombay High Court, Bombay, India.</p>	
2	1978	Scientific and Legal Aspects of International Cooperation in Remote Sensing	29. IAC, Dubrovnik, Yugoslavia
		<p>Speaker:</p> <ul style="list-style-type: none"> • Dr. E. M. Ifft, Chief Office of International Program Policy, NASA, USA, presented a paper prepared by him and • Dr. Stephen E. Doyle, Deputy Dir. International Affairs, NASA, Washington, D.C. • Dr. Yu. M. Kolossov, Senior Research Fellow, Institute of State and Law, Academy of Sciences, USSR; • M. G. Bourely, Legal Adviser, European Space Agency and M. G. Dieterle, Meteosat Programme Office, European Space Agency; • Dr. M. L. Laiden, France; • Dr. A. Padang, Chief of Section, United Nations Space Affairs Division; • Dr. L. Perek, Head of Space Affairs Division, United Nations. <p>The Second Roundtable continued in the general exchange of views started at the first Roundtable discussion in Prague. This Roundtable on the same topic concentrated on the more specific questions:</p> <p>a) What situation will emerge in the years to come when several remote sensing systems will operate;</p> <p>b) in what a situation will a user of remote sensing data be under such circumstances;</p> <p>c) in particular, questions of compatibility and complementarity of such different systems in order to increase the effectiveness of information received, were con-</p>	

		sidered in greater detail.	
3	1979	Scientific and Legal Aspects of Large Systems in Space: Problems and Prospects	30. IAC, Munich, Germany
		Speaker: <ul style="list-style-type: none"> • Lebeau, European Space Agency, Paris, France; • H. Nauges, Centre National d'Etudes Spatiales, Paris, France; • A. Dupas, Centre National de Recherches Spatiales, Paris, France; • J. P. Layton, Consultant, Princeton Junction, N.J., USA; • C. Q. Christol, University of Southern California, Los Angeles, USA; • L. Perek, Outer Space Affairs Division, United Nations, New York, USA. 	
4	1980	<i>No report</i>	31. IAC, Tokyo, Japan
5	1981	<i>No report</i>	32. IAC, Rome, Italy
6	1982	Energy from Outer Space: Problems of Technological Feasibility and International Cooperation	33. IAC, Paris, France
		Speaker: <ul style="list-style-type: none"> • Dr. Peter E. Glaser, President, SUNSET Energy Council, USA; • Dr. Rudolf C. Meiner, European Space Agency-European Space Research and Technology Centre, The Netherlands; • Professor Stephen Gorove, University of Mississippi Law Center, USA; • Professor Aldo A. Cocca, University of Cordoba, Argentina; • Professor Isabella H. Ph. Diederiks-Vershoor, President of the International Institute of Space Law, University of Utrecht, The Netherlands; • Dr. Andre Lebeau, Etablissement public de la Villette, France. <p>It is hoped that this publication will be instrumental in encouraging a further exchange of views on this complex, but highly interesting and significant topic, with a full participation of specialists representing all disciplines involved.</p>	
7	1983	<i>No report</i>	34. IAC, Budapest, Hungary
8	1984	Present and Expected Uses of Outer Space and Problems of Protecting the Space Environment Chaired by Ing. Gen. Pierre Contensou, France, and Dr. Vladimir Kopal, Chief UN Outer Space Affairs Div.	35. IAC, Lausanne, Switzerland
		Speaker: <ul style="list-style-type: none"> • Dr. Lubos Perek, Astronomical Institute of the Czechoslovak Academy of Sciences, Prague, Czechoslovakia; • Dr. E.A. Roth, European Space Operations Centre (ESOC), Darmstadt, Germany; • Dr. Yuri V. Zonov, Space Data Research Center, USSR Ministry of Fisheries, Moscow, USSR; • Professor Carl Q. Christol, University of Southern California, Los Angeles, USA; • Dr. Gyula Göl, University of Budapest, Budapest, Hungary; • Dr. Nandasiri Jasentuliyana, Outer Space Affairs Division, United Nations; • Patricia M. Sterns and Leslie I. Tennen, Attorneys and Counselors-at-Law Phoenix and Tucson, Arizona, USA. 	
9	1985	Legal and Technical Implications of Space Stations Chaired by Professor Manfred Lachs, Judge of the United Nations International court of Justice, and Chairman of the Scientific-Legal Liaison Committee.	36. IAC, Stockholm, Sweden
		In addition to general aspects of this topic, the subjects for discussion included scientific, technical and legal problems pertaining to communication between	

		space objects, the danger of collisions and debris, the problem of re-entry and other particular questions relating to the topic. Four papers were presented. Speaker: <ul style="list-style-type: none"> • Dr. Malcolm G. Wolfe, Aerospace Corporation, Los Angeles, California, USA presented: "Orbital Debris Current Issues as they Impact on an Expanding Manned Presence in space" • Eilene Galloway, Honorary Director of the IISL and Chairperson of IAA Section 4, Washington, D.C., USA, presented: "The Space Station: US Proposal and Implementation" • A.I. Rudev, Member of the Soviet Association of International Law, Moscow, USSR, presented: "Manned Orbital Stations: Technico-legal aspects." His report was presented on his behalf by Dr. Vladlen S. Vereshchetin, USSR, Vice-President of the IISL. • Professor Dr. Josef Dvofk, Chief of the Research Division of the Central Institute of the Railway Health Services, Prague, Czechoslovakia, submitted the paper "Medico-Legal Implications of Space Stations", presented by Dr. Gloria Heath, Co-Chairperson of the IAA Committee on Space Safety and Rescue Studies 	
-	1986	<i>No roundtable</i>	37. IAC, Innsbruck, Austria
		After the roundtable 1985, the Chairman of the roundtable, Judge M. Lachs, noted in his final remarks that the discussion could bring but an initial input to the solution of the problems. Therefore the Scientific-Legal Liaison Committee at its meeting held after the roundtable, decided to keep "space stations" on its agenda and discuss it two years later. In the light of further experience with operations of existing orbital stations and taking into account further progress in the design and planning of future stations, a list of specific questions of the topic, directed to scientists and lawyers, might provide a basis for shaping the discussions at the roundtable 1987.	
10	1987	<i>No report</i>	38. IAC, Brighton, UK
11	1988	<i>No report</i>	39. IAC, Bangalore, India
12	1989	The Impact of Significant Scientific and Technological Changes on the Law of Outer Space Chaired by V. Kopal and S. E. Doyle	40. IAC, Malaga, Spain
		Speaker: <ul style="list-style-type: none"> • Lubos Perek presented "Impact of the Development of Space Technology on the Law of Outer Space"; • P. M. Sterns and L. I. Tennen presented "Commercial Applications and the Geostationary Ring: Controlling Orbital Sprawl." • HE Quizhi, submitted, presented by S. E. Doyle, who made his own remarks on the up-to-date development of the legal regulation of space activities. Moreover, comments of F. Lyall and A. Miele were made, followed by a general discussion. 	
13	1990	Scientific/Legal Aspects of Management of Space Debris Chaired by Justice Manfred Lachs, coordinated by Dr. Vladimir Kopal, session rapporteur Dr. Stephen E. Doyle.	41. IAC, Dresden, Germany
		Speaker: <ul style="list-style-type: none"> • L. Perek (Czechoslovakia) presented "Technical Aspects of the Control of Space Debris"; • J. Loftus (USA) presented a paper jointly authored with Andrew E. Potter on "United States Studies in Orbital Debris Prevention and Mitigation;" and in the absence of a planned paper on the legal aspects of managing space debris, 	

		<p>which was withdrawn late in the summer of 1990,</p> <ul style="list-style-type: none"> • Dr. Doyle presented a paper on "Regulating Space Debris: What Can Be Done About it." In addition, commentary on these papers was offered by Professor D. Rex of the Technical University in Braunschweig, Germany, and Dr. Nandasiri Jasentuliyana, Director of the Outer Space Affairs Division of the United Nations Secretariat in New York. <p>Since the discussion on this topic was far from being exhausted, the Scientific Legal Liaison Committee decided to convene another roundtable on "Scientific and Legal Aspects of Space Debris" at a later stage (see 1993), believing that a new meeting could benefit from a number of specialized studies and meetings planned for the period between the two roundtables.</p>	
-	1991	<i>No roundtable.</i> Discussion on "Advance the possibility for appropriate action on the issue of space debris in the future".	42. IAC, Montreal, Canada
14	1992	<p>Exploration and Uses of the Moon and Other Celestial Bodies</p> <p>Chaired by F. X. Kane, Co-chairman of the Committee (USA), coordinated by Dr. Vladimir Kopal (Czech Republic), session rapporteur Dr. M. Orrico Alarcon (Mexico).</p> <p>Speaker:</p> <ul style="list-style-type: none"> • Dr. Carl B. Pilcher (USA) presented "Space Exploration: Scientific and Technological Aspects"; • Dr. Marcello Coradini (ESA) presented "Exploration and Uses of Celestial Bodies of the Solar System". • Professor Nicholas M. Matte (Canada) presented "Legal Implications of the Exploration and Uses of the Moon and Other Celestial Bodies"; • Dr. Vladimir Kopal (Czech Republic) presented "Some Legal Aspects of the Return to the Moon and Expected Flights to Other Celestial Bodies"; • Patricia M. Sterns and Leslie I. Tennen (USA) presented "Utilization of Extraterrestrial Resources: Law, Science, and Policy". 	43. IAC, Washington DC, United States
15	1993	<p>Scientific and Legal Aspects of Space Debris</p> <p>Chaired by Dr. Isabella H. Ph. Diederiks Verschoor, The Netherlands, coordinated by Dr. Vladimir Kopal, Czech Republic, session rapporteur Dr. Miguel Orrico Alarcon, Mexico.</p> <p>Speaker:</p> <ul style="list-style-type: none"> • W. Flury, ESA / ESOC, Darmstadt, Germany: "Space Debris-A Status Report. Summary of the First European Conference on Space Debris." • D. McKnight, Kaman Science Corporation, Alexandria, Virginia, USA: "Summary of the IAA Position Paper on Orbital Debris. Recent Events and Observations." • C. Q. Christol, Pacific Palisades, California, USA: "Scientific and Legal Aspects of Space Debris." • P. M. Martin, Toulouse, France: "Liability Issues on Space Debris. The Opinion of a Teacher in International Law." • V. Kopal, Charles University, Prague, Czech Republic: "Summary of Replies to the Questionnaire Which Included Issues Concerning Space Debris." • R. Obermann, Space Subcommittee, U.S. House of Representatives, Washington, DC, USA, and Ray A. Williamson, Office of Technology Assessment, U.S. Congress, Washington, DC, USA: "Controlling Orbital Debris: The Role of the U.S. Congress." <p>The Liaison Committee decided, in accordance with its policy to hold the Scientific-Legal Roundtables on a <i>biennial</i> basis, to organize the next roundtable in 1995, during the 46th IAF Congress in Oslo, Norway. The 16th Roundtable in 1995</p>	44. IAC, Graz, Austria

		should be devoted, according to a definition suggested by Dr. S. Doyle, USA, to "the continually increasing demand for radiofrequency allocations for expanding space services and the scientific, technical, legal, and policy implications of the international practices and machinery for managing the use of the radiofrequency spectrum."	
-	1994	<i>No roundtable (only biennial, see report 1993)</i>	45. IAC, Jerusalem, Israel
-	1995	<i>No report. Evt. radiofrequency allocations</i>	46. IAC, Oslo, Norway
16	1996	Space Telecommunications Chaired by V. Kopal and J. Pelton	47. IAC, Beijing, China
		Senior executives from ITU and INTELSAT presented their views on the breathtaking prospects in this field and how international organizations try to adapt. For example, the plans by INTELSAT to create a commercial entity - like INMARSAT already did - were explained in detail. In the case of the ITU, the new structure which entered into force in 1994 as well as the efforts to streamline the Radio Regulations were discussed.	
-	1997	<i>No report</i>	48. IAC, Torino, Italy
17	1998	SETI and Society Chaired by John Billingham (USA) and Vladimir Kopal (Czech Republic); Rapporteur Donald Tarter (USA)	49. IAC, Melbourne, Australia
		Speaker: <ul style="list-style-type: none"> • Roger Malina (USA): Search strategies; SETI activities and society • Guillermo Lemarchand (Argentina): SETI technology; detection scenarios • Seth Shostak (USA): Interactions with the public and the media • Stephen Doyle (USA): Cultural and institutional aspects • Michael Michaud (Switzerland): Policy issues on communication with ETI • Francis Lyall (UK): SETI and International Space Law 	
18	1999	Protection of the Space Environment Coordinated by Mark Williamson (UK), chaired by Dietrich Rex (Germany) and Vladimir Kopal (Czech Republic), Rapporteur: Kai-Uwe Schrogl.	50. IAC, Amsterdam, Netherlands
		Speaker: <ul style="list-style-type: none"> • Mark Williamson (UK): Planetary Spacecraft Debris - The case for Protecting the Space Environment • Ivan Almar (Hungary): Protecting the Planetary Environment - The Point of View of an Astronomer • Nicholas L. Johnson (USA): Man-Made Debris in and from Lunar Orbit • Francis Lyall (UK): Protecting the Space Environment and Law • Patricia M. Sterns (USA): The Scientific-Legal Implications of Planetary Protection and Exobiology • Martyn. J. Fogg (UK): The Ethical Dimension of Space Settlement 	
-	2000	No Roundtable	51. IAC, Rio d.J., Brazil
19	2001	Scientific and Legal Implications of establishing Solar Power Systems on the Geostationary Orbit Coordinator: Bryan Erb (Canada) Chairpersons: Bryan Erb (Canada) and Marcia Smith (USA), Rapporteur: Kai-Uwe Schrogl (Germany)	52. IAC, Toulouse, France
		Speaker: <ul style="list-style-type: none"> • John C. Mankins (USA): The International Spectrum Management Process and Selected Technical Background for Space Solar Power, presented by Richard M. Dickinson • Richard M. Dickinson (USA): Wireless Power Transmission Technology: Basics, 	

		<p>Frequency Choices and Issues</p> <ul style="list-style-type: none"> • A.C. Charania (USA) and Yuri Takaya (Japan): Legal Constituencies and Economic Efficiencies of Space Solar Power: A joint Japanese and American Perspective • Patrick A. Salin (Canada): Legal Implications of the Co-Habitation of Space Solar Power Systems and Satellite Communication Systems 	
	2002	<i>No information</i>	53. IAC, Houston, USA
	2003	<i>No information</i>	54. IAC, Bremen, GER
	2004	<i>No information</i>	55. IAC, Vancouver, CAN
20	2005	<p>Space Traffic Management Chairpersons: Kai-Uwe Schrogl (Germany) and Petr Lala (Czech Republic) Rapporteur: Corinne Contant-Jorgenson (US)</p> <p>Speaker:</p> <ul style="list-style-type: none"> • William Ailor (USA): Technical basics and prospects for the use of outer space • Lubos Perek (Czech Republic): Space traffic management - what is possible? • Peter van Fenema (Netherlands): Air and space traffic management compared • Contant/Lala/Schrogl: Status of the IAA study on space traffic management 	56. IAC, Fukuoka, Japan
21	2006	<p>Nuclear Power Systems in Space – The new Reality</p> <p>Speaker:</p> <ul style="list-style-type: none"> • Dr. Frans G. von der Dunk, Intern. Institute of Air and Space Law (The Netherlands): Legal Aspects of the Use of Nuclear Power and the Debate in UN-COPUOS • Dr. Kai-Uwe Schrogl, European Space Policy Institute (ESPI, Austria): Nuclear Power Sources as a Problematic Topic in the Public Debate • Prof. Gerhard Haerendel, Max-Planck Institute for Extraterrestrial Physics (Germany): European Plans for the Use of Nuclear Power Sources • Dr. David E. Bartine, National Aeronautics and Space Administration (NASA)/Kennedy Space Center (United States): Utilization of Nuclear Power Sources in the U.S. Vision for Space Exploration 	57. IAC, Valencia, Spain
22	2007	<p>Google Earth et al. – Pros and Cons of an easier Access to Satellite Images Chaired by: Frans von der Dunk (The Netherlands) and Petr Lála (Czech Republic) Rapporteur: Nicola Rohner, DLR (Germany)</p> <p>Speaker:</p> <ul style="list-style-type: none"> • Thomas Snitch (USA): Expanding and easing the access to global satellite imagery: Making the process faster, better and cheaper • Gunter Schreier (Germany): Market issues on data products and GMES data purchase • Jacques Blamont (France): Maintaining privacy – a question for space policy • Frans von der Dunk (The Netherlands): The European legal approach to privacy 	58. IAC, Hyderabad, India
23	2008	<p>Paper Satellites Chaired by: Luboš Perek (Czech Republic) and Kai-Uwe Schrogl, ESPI (Austria) Rapporteur: Nicola Rohner-Willsch, DLR (Germany)</p> <p>Speaker:</p> <ul style="list-style-type: none"> • Petr Lála (Czech Republic) : Registration of Geostationary Satellites by the United Nations • Heiner Klinkrad (Germany): Status of the Geosynchronous Orbit 	59. IAC, Glasgow, United Kingdom

		<ul style="list-style-type: none"> • Yvon Henri (France): Long-Term Efficiency of the Space Regulatory Framework: "Paper Satellites" issueL • Luboš Perek (Czech Republic): Paper Satellites and Space Networks • Victor S. Veshchunov (Russia): Statement on behalf of Intersputnik 	
24	2009	<p>Assessing Commercial Human Spaceflight Chaired by: Christophe Bonnal, CNES (France), and William Pomerantz, X-Prize Foundation (USA), Rapporteur: Nicola Rohner-Willsch, DLR (Germany)</p> <p>Speaker:</p> <ul style="list-style-type: none"> • Christophe Bonnal CNES (France): Overview of Private Human Access for Space • Hugue Laporte-Weywada, EADS Astrium (France): Space Tourism Perspective: The Point of View of a Large Prime • Chuck Lauer Rocketplane XP (USA): Current and Future Activities • Claire Jollie France, OECD: Space Tourism in Terms of Economic Crisis • Frans von der Dunk, Nebraska University (USA): Space Tourism and Other Private Spaceflight: Key Legal Aspects 	60. IAC, Daejeon, Republic of Korea
25	2010	<p>The New Age of Small Satellite Missions Chairs: Rainer Sandau, DLR (Germany) and Jane Smith, Leuphana University Lüneburg (Germany) Rapporteur: Nicola Rohner-Willsch, DLR (Germany)</p> <p>Speaker:</p> <ul style="list-style-type: none"> • Sir Martin Sweeting Surrey Space Centre (SSC, UK): Small Satellite Missions for Earth Observation - Status & Trends • Eberhard Gill: Distributed Space Systems of Small Satellites - Opportunities and Challenges • Attila Matas: ITU radio regulatory requirements for small satellite design and operation • Ram S. Jakhu: Liability and related legal aspects of small satellites 	61. IAC, Prague, Czech Republic
26	2011	<p>Space Debris Remediation Chairs: Kai-Uwe Schrogl, ESA, France, Wendell Mendell, US, Rapporteur: Nicola Rohner-Willsch, DLR, Germany</p> <p>Speaker:</p> <ul style="list-style-type: none"> • Heiner Klinkrad: The IAA Study on Space Debris Environment Remediation, ESA-ESOC, Germany • Carsten Wiedemann: Space Debris Mitigation Measures & Cost Issues; TU Braunschweig, Germany • Catherine Doldirina Critical Legal Issues in "cleaning up" Outer Space, McGill University Montreal, Canada <p>Jana Robinson: Space Security Dimensions of Debris Remediation, ESPI, Austria</p>	62. IAC, Cape Town, South Africa
27	2012	<p>Optical Communications Chairs: Toshio Kosuge, Professor Emeritus, University of Electro-Communications, Tokyo, Japan, Pierre Mollette, France, Rapporteur: Marc Haese, DLR, Germany</p> <p>Speaker:</p> <ul style="list-style-type: none"> • Bernard Laurent: Optical communications applications & regulatory aspects EADS-Astrium, France • Erich Auer: Laser Communications @ Tesat – Technology, Heritage and Applications, Tesat-Spacecom, Germany 	63. IAC Naples, Italy

		<ul style="list-style-type: none"> • Mahulena Hofmann: Optical Communications in a Legal Vacuum? University of Luxembourg, Luxembourg • Yvon Henri, WRC-12 outcome on AI 1.6-2, ITU, Switzerland 	
28	2013	<p>Space and the Polar Regions – Issues of satellite applications, policies and regulations</p> <p>Chairs: Kai-Uwe Schrogl, ESA, France, Geir Hovmork, Norwegian Space Centre, Rapporteur: Isabelle Duvaux-Béchon, ESA, France</p> <ul style="list-style-type: none"> • Stephan Hobe: Governance and legal issues regarding the polar regions, University of Cologne, Germany • Isabelle Duvaux-Béchon: Space applications for the polar regions – an overview, ESA, France • Lauren Small-Pennefather: Focus on space applications for resource management in the polar regions, CSA, Canada • Toru Fukuda: Space applications for transportation in the polar regions, JAXA/EORC, Japan • Bo Andersen: Marine and maritime monitoring in the Arctic, Norwegian Space Centre, Norway 	64. IAC Beijing, China
29	2014	<p>Controlling the Eyes in the Sky: Preventing Abuse of Space Data</p> <p>Chairs: Frans von der Dunk, The Netherlands, Rainer Sandau, Germany</p> <ul style="list-style-type: none"> • Sias Mostert: Capabilities of Earth Observation Satellites– Potential for Human Scale Development or Abuse, Space Commercial Services Holdings (Pty) Ltd, South Africa • Krištof Oštir: Earth Observation - Between Public Interest and Privacy, Slovenian Centre of Excellence for Space Sciences and Technologies • Catherine Doldirina: Earth Observations and Legal Ways to Reconcile the Two, Joint Research Centre (JRC) of the European Commission, Italy • Fabio Tronchetti: Security and Potential (Anti-) Terrorism Aspects of High Resolution Earth Observation Data, Harbin Institute of Technology, China / School of Law, Univ. of Mississippi 	65. IAC Toronto, Canada
30	2015	<p>Universities as Actors in Space</p> <p>Chairs: Kai-Uwe Schrogl, ESA, France, Herman Steyn, Stellenbosch University, South Africa</p> <ul style="list-style-type: none"> • Sir Martin Sweeting, Surrey Space Centre, University of Surrey (UK): Universities as a stimulus for change in the economics of space • Klaus Schilling, University of Würzburg (Germany): A university in space – a case study • Matteo Emanuelli, INSSET (France): Lessons learned from a satellite project - obstacles and accelerators • Abe Bonnema, Innovative Solutions In Space BV, ISIS (The Netherlands): Flight opportunities for university payloads • Yvon Henri, ITU (Switzerland): Frequency Management and Universities – ITU Radio Regulations related to Small Satellites 	66. IAC Jerusalem, Israel

7 Building on the past - looking ahead

*Prof. Dr. Kai-Uwe Schrogl,
European Space Agency (ESA), Vice-President IISL*



Kai-Uwe Schrogl

30 years of IAA/IISL Scientific-Legal Roundtables have by far not exhausted the topics and the need for multi-disciplinary dialogue on space activities.

To the contrary. Every year, the IAA/IISL Scientific-Legal Liaison Committee experiences the (pleasant) difficulty in selecting a topic for the Roundtables amongst many ideas and suggestions. All fields of space activities are in a growing need for broader, you might even call it holistic approaches to understand, define and tackle issues in the use of outer space.

This is true for science, exploration, applications as well as transversal issues such as protecting the space environment and regulating the space traffic. The main question for the Roundtables always is: how can we support space activities so that their benefits can be reaped in a broad and encompassing way, and the activity itself is conducted in view of maintaining sustainability for the space environment and its use for now and the future.

It is obvious that responding appropriately to this main question requires a view encompassing the technical as well as the legal, and more broadly a social science angle in order to accomplish the trias of understanding, defining and tackling the issues. This still makes the Roundtables a remarkable event during the International Astronautical Congresses. It is also substantiated by the traditional participation of the IAA Secretary General and the IISL President and the publication of the papers and the conclusions of the Roundtables in the IISL Proceedings. The need for multi-disciplinarity is therefore demonstrated every year, and if we look at forums such as the UNCOPUOS, where the coordination between the Scientific and Technical and the Legal Subcommittees is called for continuously but is not happening, our Roundtables fill a void and can be regarded as an important contribution to the debate on space activities.

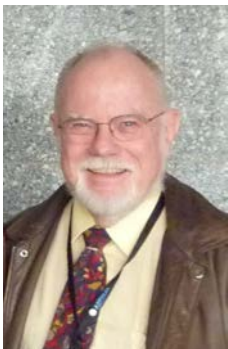
As indicated, the Roundtables will not run out of topics either over the next 30 years. What can be identified is the focus on three main sectors, which might also dominate the future work of the Liaison Committee: space exploration, the sustainable use and governance of outer space, and space applications. Each of them comprises a wealth of sub-items. The chronology points out many of them, and many more are in line for being dealt with in future

Roundtables. The Liaison Committee is confident that in the future also, relevant and even exciting topics will be picked and that invitations to speak at a Roundtable will continue to be seen as an attractive slot in the IAC programme. With this, the Roundtables can be expected to continue to provide useful input to further the benefits of space activities.



Scientific-Legal Roundtable 2009, Daejeon, Korea

Vladimír Kopal, "pioneer" of the strong scientific-legal bond, and Kai-Uwe Schrogl, 2010



Wendell Mendell, former Co-Chair of the Scientific-Legal Liaison Committee Bureau until 2013



30th Scientific-Legal Roundtable in Jerusalem, Israel, 2015

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