Table of Contents

Preface xiii
T. Masson-Zwaan

About the IISL xxiii

Board of Directors 2014-2015 xxv

New Members Elected in 2014 xxvii

Standing Committee on the Status of International Agreements Relating to Activities in Outer Space xxix

Photos of IISL Activities in 2014 xlv

57th IISL COLLOQUIUM ON THE LAW OF OUTER SPACE TORONTO, CANADA

SESSIONS

1. Nandasiri Jasentuliyanaka Keynote Lecture on Space Law & 6th Young Scholars Session

Orbit/Spectrum International Regulatory Framework: Challenges in the 21st century 3
Y. Henri
Nandasiri Jasentuliyanaka Keynote Lecture On Space Law

Legal Issues Relating to Unauthorised Space Debris Remediation 13
J. Chatterjee
Winner of the 2014 Isabella H.Ph. Diederiks-Verschoor Award for Best Paper by a Young Author

Use Versus Appropriation of Outer Space: The Case for Long-Term Occupancy Rights 35
B. Cohen

The New HPCA’s Optional Rules for Arbitration and Their Relevance to Disputes Arising from Erroneous Navigational Signals 53
A. Loukakis
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Orbit and Beyond: Present Risks and Liability Issues from the</td>
<td>75</td>
</tr>
<tr>
<td>Launching of Small Satellites</td>
<td></td>
</tr>
<tr>
<td>N. Antoni &amp; F. Bergamasco</td>
<td></td>
</tr>
<tr>
<td>Exploring the Boundaries of Free Exploration and Use of Outer Space</td>
<td>93</td>
</tr>
<tr>
<td>Article IX and the Principle of Due Regard, Some Contemporary</td>
<td></td>
</tr>
<tr>
<td>Considerations</td>
<td></td>
</tr>
<tr>
<td>N. Palkovitz</td>
<td></td>
</tr>
</tbody>
</table>

2. Up Up and Away: Future Legal Regimes for Long-Term Presence in Space

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space Traffic Management Options</td>
<td>109</td>
</tr>
<tr>
<td>J. Rendleman</td>
<td></td>
</tr>
<tr>
<td>In-Space Maneuvering, Servicing, and Resource Use:</td>
<td>137</td>
</tr>
<tr>
<td>The Commercial Need for Legal Assurances</td>
<td></td>
</tr>
<tr>
<td>H. Hertzfeld</td>
<td></td>
</tr>
<tr>
<td>Chasing Ghost Spaceships: Law of Salvage as Applied to Space Debris</td>
<td>153</td>
</tr>
<tr>
<td>O. de O. Bittencourt Neto</td>
<td></td>
</tr>
<tr>
<td>Encouraging Innovation and Technological Advancement for</td>
<td>163</td>
</tr>
<tr>
<td>Greater In-Depth Exploration of Outer Space through Patents</td>
<td></td>
</tr>
<tr>
<td>S. Wood</td>
<td></td>
</tr>
<tr>
<td>Private International Law (Conflict of Law Rules) for Human</td>
<td>193</td>
</tr>
<tr>
<td>Presence of Long Term in Space</td>
<td></td>
</tr>
<tr>
<td>S. Kozuka &amp; F. Masuda</td>
<td></td>
</tr>
<tr>
<td>Mars Treatymaking Workshop Results from ISU SSP14</td>
<td>207</td>
</tr>
<tr>
<td>I. Stotesbury</td>
<td></td>
</tr>
<tr>
<td>Space Exploitation – Digging in a Legal Vacuum?</td>
<td>221</td>
</tr>
<tr>
<td>A. Rinner</td>
<td></td>
</tr>
<tr>
<td>Legal Uncertainties Related to Additive Manufacturing in Space</td>
<td>233</td>
</tr>
<tr>
<td>M. Mineiro &amp; B. Lal</td>
<td></td>
</tr>
<tr>
<td>The Legal Implications of Space Weather Awareness and the Need for</td>
<td>243</td>
</tr>
<tr>
<td>International Dissemination of Space Weather Forecasts</td>
<td></td>
</tr>
<tr>
<td>G.A. Long</td>
<td></td>
</tr>
</tbody>
</table>
GNSS Soft Law Standards Are Developing in the United Nations  
*P.B. Larsen*  
273

Providing for Sustainable Exploration and Use of Outer Space Environments  
*J.D. Rummel & P. Ehrenfreund*  
285

3. The ISS IGA: Lessons Learned and Looking to the Future

A European Perspective on Lessons Learned from the Intergovernmental Agreement (IGA) on International Space Station (ISS) Cooperation  
*M. Ferrazzani & A. Farand*  
293

Analysis of the Legal Instruments Operating the ISS as the Most Complex Space Program Ever Undertaken: From Historical Perspective  
*S. Aoki*  
309

Criminal Jurisdiction in International Space Law: Future Challenges in View of the ISS IGA  
*M. Chatzipanagiotis & R. Moro-Aguilar*  
323

An Emerging Marketplace: Low Earth Orbit and the International Space Station  
*S. Scimemi*  
337

Governance with Transparency and Confidence in the Sky as well as on Earth  
*J.J. Monserrat-Filho*  
345

What’s Human Rights Got to Do with Outer Space? Everything!  
*S. Freeland & R. Jakhu*  
365


Standards, Standards Everywhere! Assessing Current Initiatives for Human Spaceflight Standards and Their Potential Effect on Future Regulations  
*M. Sundahl*  
383

From Space Tourists to Unruly Passengers? The US Struggle with ‘On-Orbit Jurisdiction’  
*F. von der Dunk*  
391
The Intersection of Insurance Markets and Liability Regimes Regarding Third-Parties and Space Flight Participants in Commercial Space Activities  
M. Schaefer  
407

Legal Bases for Securing Human Presence in Space  
O.S. Stelmakh  
423

New Perspectives on International Administrative Cooperation in Regard of the Development of Private Human Spaceflight  
J.-M. de Poulpiquet  
433

Jurisdiction and Control over Installations and Facilities Serving Space Tourism Activities  
G. Kyriakopoulos  
445

Suborbital Flights: Applicable Law  
G. Catalano Sgrosso  
467

Regulatory Regime for Tomorrow’s Suborbital Space Flights: Point-to-Point International Flights  
Y. Takeuchi  
487

Outer Space and White Space: Promoting the Efficient Use of These Resources  
S. Ospina  
501

5. Recent Developments in Space Law

Computer Network Attacks in Outer Space: The Case of Harmful Interference to Satellite-Based Communications  
Y. Takaya-Umehara  
519

Eliminating Contradictions between Domestic Legislation in the Field of Satellite Telecommunications and International Obligations within the Framework of the World Trade Organization  
E. Morozova  
533

Possible Legal Implications of Disruptive Technologies: Selected Examples  
D. Howard  
537

The Challenges in Drafting National Law for Space Activities – A Brazilian Experience  
A.C. van Oijhuizen Galhego Rosa, J. Macedo Scavuzzi dos Santos & T. Viana  
549
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Law and Regulation of Dual Use Technology in the Evolving South African Outer Space Legal Regime</td>
<td>569</td>
</tr>
<tr>
<td>P. Sekhula</td>
<td></td>
</tr>
<tr>
<td>Recent Discussion in the Committee on National Space Policy of Japan</td>
<td>583</td>
</tr>
<tr>
<td>Y. Hashimoto</td>
<td></td>
</tr>
<tr>
<td><strong>COLLOQUIUM REPORT</strong></td>
<td></td>
</tr>
<tr>
<td>Report of the 57th Colloquium on the Law Of Outer Space</td>
<td>589</td>
</tr>
<tr>
<td>Toronto, Canada, 2014</td>
<td></td>
</tr>
<tr>
<td>E. Bouillé, A. Loukakis, A. Rinner, T. Aganaba-Jeanty</td>
<td></td>
</tr>
<tr>
<td>Compiled and edited by R. Moro-Aguilar &amp; P.J. Blount</td>
<td></td>
</tr>
<tr>
<td><strong>29th IAA/IISL SCIENTIFIC-LEGAL ROUNDTABLE</strong></td>
<td></td>
</tr>
<tr>
<td>Controlling the Eyes in the Sky: Preventing Abuse of Space Data</td>
<td></td>
</tr>
<tr>
<td>Report of the Roundtable</td>
<td>607</td>
</tr>
<tr>
<td>M. Haese &amp; N. Rohner-Willsch</td>
<td></td>
</tr>
<tr>
<td>Technical Capabilities of Remote Sensing Satellites:</td>
<td>611</td>
</tr>
<tr>
<td>The Potential for Human Scale Development or Abuse</td>
<td></td>
</tr>
<tr>
<td>S. Mostert &amp; L. de Witt</td>
<td></td>
</tr>
<tr>
<td>Earth Observation – Between Public Interest and Privacy</td>
<td>623</td>
</tr>
<tr>
<td>K. Oštir</td>
<td></td>
</tr>
<tr>
<td>Privacy, Earth Observations and Legal Ways to Reconcile the Two</td>
<td>633</td>
</tr>
<tr>
<td>C. Doldirina</td>
<td></td>
</tr>
<tr>
<td>Security and Potential (Anti-)Terrorism Aspects of High Resolution</td>
<td>649</td>
</tr>
<tr>
<td>Earth Observation Data</td>
<td></td>
</tr>
<tr>
<td>F. Tronchetti</td>
<td></td>
</tr>
<tr>
<td><strong>JOINT IISL/IAF SESSION</strong></td>
<td></td>
</tr>
<tr>
<td>Legal Framework for Cooperative Space Endeavours</td>
<td>667</td>
</tr>
<tr>
<td>Mechanisms for the Development of International Agreements</td>
<td></td>
</tr>
<tr>
<td>Regarding Space Activities</td>
<td></td>
</tr>
<tr>
<td>A. Froeblich</td>
<td></td>
</tr>
</tbody>
</table>
Applying Ostrom’s Nobel Winning Study to International Cooperation in Space Activities
E. Tepper

New Policy of Russia in the Area of Utilization of Space Activity Results
O. Volynskaya

“Soft law” as an Impediment to the Regulation of Space Activities with Military Implications: A View from the U.S Congress
J.M. Beard

Reproducibility: A New Phenomenon in Space Barter Agreements
E. Boullé

A New Experience on the International Transfer of Space Technology
A. Fabricio dos Santos

Space Activities in the Jurisprudence of International Dispute Settlement Institutions
M. Hofmann

Capacity-Building of the National Space Legislation in Post-Soviet Countries: The Recent Contribution of Kazakhstan
B. Schmidt-Tedd & O.S. Stelmakh

UNITED NATIONS
2014 IISL-ECSL SPACE LAW SYMPOSIUM
HELD ON THE OCCASION OF THE 53rd SESSION
OF THE LEGAL SUBCOMMITTEE OF UNCOPUOS
VIENNA, AUSTRIA

Regulatory Needs for Very Small Satellites
(24 March 2014)

Program of the Symposium

Report of the Symposium
E. Boullé
9th EILENE M. GALLOWAY SYMPOSIUM ON CRITICAL ISSUES IN SPACE LAW, WASHINGTON D.C., UNITED STATES

Non-Traditional Commercial Space Activities, Legal & Policy Challenges, Opportunities, and Ways Forward (December 2014)

Program of the Symposium
Report of the Symposium
P.J. Blount

23rd MANFRED LACHS SPACE LAW MOOT COURT COMPETITION

The 2014 Manfred Lachs Space Law Moot Court Competition (Introduction, Case and Winning Memorials)
M. Mejía-Kaiser

Author Index
Author Index

Aganaba-Jeanty, T. 589
Anthony, G. 243
Antoni, N. 75
Aoki, S. 309
Beard, J. 699
Bergamasco, F. 75
Bittencourt Neto, O. 153
Blount, P. 589, 791
Boullé, E. 589, 719, 777
Catalano Sgroso, G. 467
Chatterjee, J. 13
Chatzipanagiotis, M. 323
Cohen, B. 35
de Poulpiquet, J. 433
de Witt, L. 611
Doldirina, C. 633
Fabricio dos Santos, Â. 735
Farand, A. 293
Ferrazzani, M. 293
Freeland, S. 365
Froehlich, A. 667
Haese, M. 607
Hashimoto, Y. 583
Henri, Y. 3
Hertfeld, H. 137
Hofmann, M. 745
Howard, D. 537
Jakhu, R. 365
Kozuka, S. 193
Kyriakopoulos, G. 445
Lal, B. 233
Larsen, P. 273
Loukakis, A. 53, 589
Masuda, F. 193
Mheni, A. 799
Mineiro, M. 233
Monserrat Filho, J. 345
Moro-Aguilar, R. 323, 589
Morozova, E. 533
Mostert, S. 611
Ospina, S. 501
Oštir, K. 623
Palkovitz, N. 93
Rendleman, J. 109
Rinner, A. 221, 589
Rohner-Willsch, N. 607
Rona, A. 549
Rummel, J. 285
Sandau, R. 607
Scavuzzi dos Santos, J. 549
Schaefer, M. 407
Schmidt-Tedd, B. 755
Scimemi, S. 337
Sekhula, P. 569
Stelmakh, O. 423, 755
Stotesbury, I. 207
Sundahl, M. 383
Takaya-Umehara, Y. 519
Takeuchi, Y. 487
Tepper, E. 675
Tronchetti, F. 649
Viana, T. 549
Volynskaya, O. 687
von der Dunk, F. 391, 607
Wood, S. 163