tional policies of its member states, but does not detail a uniform formulation method. The Council and the Commission are supposed through community regulations to take care of this future community requirement. Since this action of the Council and of the Commission may take some time to be implemented, Italy should now issue a comprehensive national space legislation that would cover the whole spectrum of its space activities as other European states have already done. It would formally define the scope of space activities, the nature of compulsory authorization for the carrying out of such activities, the conditions requested for such authorizations. It would also identify what public entities would be entrusted with the registration registry, with the granting of authorizations and who is to exercise control and supervision of Italian space objects.

Philippe Achilleas, "The New French Legislation on Satellite Frequencies Assignments".

France has modified its Post and Telecommunication Code in order to introduce a clear legal framework dealing with the use of satellite frequencies. The 2004 Loi pour la confiance dans l'économie numérique (LEN) has defined procedures for the utilisation of space frequencies and provided for sanctions in case of non compliance with the new prescriptions. This document, which is mainly directed towards Internet applications, has its Title 4 devoted to satellite frequencies assignments. The LEN extends its provisions to any private radio-communications satellite system. Requests must be directed to the Agence Nationale des Fréquences (ANFr), which will check their compatibility with the National Frequency Board. Frequency assignment must also be authorized by the Minister after consultation with either the Audiovisual Regulatory Authority (CSA) or the Telecommunications Regulatory Authority (ART). Authorization may be refused for specific reasons. The authorization holder must avoid harmful interference and stop any broadcast upon request of the Ministry of telecommunications. He also must ensure control of the signal of each radio station.

Jean-François Mayence, "National Space Legislation: The Belgian Approach".

Belgium has a draft Space Act entitled Avant-projet de loi relative aux activités de lancement et de guidage d'objets spatiaux, which is expected to be approved as a law by the end of 2005. Its scope is restricted to the operation of space objects in the launching phase and during flight operations, and to their monitoring during their life cycle. It excludes application activities such as remote sensing and telecommunications or exploitation of payloads. The Belgian draft law clearly focuses on implementing Article VI, VII and VIII of the 1967 UN OS Treaty, and on a few other provisions. Essentially, this draft law provides for the setting-up of an authorization procedure, the setting-up and the maintenance of a national registry for space objects; and the opening of a legal action by the Belgian Government towards the operator, under detailed conditions, in the case of third party damage liability. Specific provisions also prevent any appropriation of fallen or landed space objects on the Belgian territory by derogation to civil law.

Frans G. von der Dunk, "Implementing the UN Outer Space Treaties: the case of the Netherlands".

Until recently, the amount of space activities that were undertaken on Dutch territory was not so important so as to justify a general and comprehensive action in the form of a national space law. These activities were limited to industrial projects that were subcontracted by the European Space Agency (ESA) to Dutch companies or projects that were undertaken by Dutch parties within the EADS consortium. This paradigm changed radically with the privatisation trend that affected all European telecommunications carriers. In 2001, the Government of the Netherlands approved the development of a national legal framework for space-related activities on its territory. A new law was to provide a licensing system, the accompanying general requirements taking in balance its bona fide interests and the interests of the public, national and international, an arrangement dealing with liability issues, and an arrangement for a national registry. A first draft law to be produced by a senior Ministry official was originally scheduled for September 2004 but was postponed until a later time horizon.

B) SESSION 2 - INTERNATIONAL LAW AND PRACTICE OF AGREEMENTS ON COOPERATION REGARDING SPACE ACTIVITIES

Chairmen: Mr. Marco Ferrazzani, ESA and Ms Indra Heed, Canada

Rapporteur: Ms Macha Ejova, Russia

This session enjoyed a wide variety of papers from many authors and many opinions were expressed on a topic of such general interest as space cooperation.

The article of *Thomas Reuter* analyzes *"The framework agreement (FA) between the European Space Agency and the European Community"*. The main idea of this paper is that framework agreement creates an efficient basis for European space Policy even if the agreement doesn't change a lot the relation between ESA and EU. In this article, the author also explains the aim of 3 models of cooperation mentioned in article 5 of FA.

The second presentation is about *"The cooperation of ESA and EU and the relationship of their legal regimes" by Katharina Kunzmann and Jürgen Cloppenburg.* This paper analyses the consequences of possibly conflicting obligations arising out of provisions of ESA-Convention and EC-Treaty. The author's conclusion is that the prevailing treaty is ESA-Convention according to the international public law.

The next presentation is a summary of a paper *"European Space Policy: a common future for ESA and EU" by Juan Manuel de Faraminan Gilbert.* This paper analyses the given institutional answer i.e. the Framework Agreement between EU and ESA and the Treaty establishing a Constitution for Europe will bring to the real European Space Policy.

The paper presented by *Eszter Pörneczi* is entitled *"ESA and EU cooperation for a better future of the European citizens"*. This paper analyses the relationship between ESA and the EU. Why should the EU be involved in space activities? There are different reasons for cooperation between ESA and the EU like commercial opportunities, benefits for the citizens, etc... The author's conclusion is that the consistent European Space Policy

will be achieved by the effective harmonization of both institutions.

The next paper *"Guaranteed access to Space: extension to countries without launcher?" by Alain Conde Reis* addresses the question how securing the access to space for space emerging countries without launcher. Because of the fact that the cooperation in launchers is close to the military area, there are difficulties to motivate such cooperation. The conclusion is the cooperation in launchers technology will be possible as the launchers move towards commercial exploitation and the United Nations is an appropriate framework for such cooperation in an equitable way.

The presentation of *Professor C. Heather Walker, "Bi-lateral agreements to facilitate launch projects and satisfy non-proliferation obligations"*, focuses on the following question: How the countries have to balance the concerns of missile technology proliferation and need to allow countries to utilize proven launch vehicle system. After giving an overview of the non-proliferation regimes like Missile Technology Control Regime and Wassenaar Arrangement and looking at the structure of sample space launch vehicle system transfer agreements, the author gives some potential alternatives to avoid problems by harmonizing the export license review criteria and creating the international launch consortium.

The paper of *Nathanael A. Horsley, "Justifying the Arianespace monopoly: the role of consolidation, subsidies, and preferences in the evolving global launch industry"* addresses the question on how the competition law could influence the structure of the space launch industry in the future years.

The paper written by *Margaret A. Roberts* is about *"Organizing for science participation on the International Space Station"*. It focuses on the life science missions of the ISS and the legal mechanisms being employed by several space agencies to maximize science opportunities and international cooperation. The author's conclusion is that the legal framework of the ISS program and the International Space Life Science Working Group (ISLSWG) provide a solid basis for a strong cooperation and may offer a model for planning future multinational programs.

The presentation by *John Hudiburg* on *"Techno-political space cooperation: a longitudinal analysis of NASA's bilateral and multilateral agreements"* analyses some of the techno-political conditions contributing to the amount of cooperation experienced and recorded in NASA's International Agreement Database. The author explains that by utilizing a cluster analysis approach, NASA's international cooperation can be understood along both aggregate and regional perspectives. According to the author a new era of international cooperation in space seems to be starting regarding the US space exploration vision which calls for international involvement.

The paper written by *Yun Zhao* focuses on *"Evaluation of space cooperation between China and Brazil: an excellent example of South-South cooperation"*. The cooperation between China and Brazil have as a legal basis the 2002 Protocol which provide a concrete framework for further cooperation in space projects. The cooperation between China and Brazil came with the first joint satellite, China–Brazil Earth Resource satellite (CBERS) which shows that such cooperation has the added benefit of ensuring a balanced share of interests and that no state monopolizes the space resources put in common. Also, the model of this space cooperation can be extend to other developing countries.

The paper written by *Macha Ejova* is about *"Legal aspects of Franco-Russian commercial and industrial cooperation in space"*. This paper describes and analyzes the legal framework of commercial cooperation between France and Russia regarding three different levels of cooperation: institutional, inter agencies and private i.e. between Russian and French space companies. The paper focuses in particular on the project Soyouz in Guyana with the first launch planned in 2007.

The presentation of *Atsuyo Ito* concerns *"The legal aspects of the International Charter on Space and Major Disasters"*. The purpose of this paper is to examine the legal regime of the Charter and to describe the Charter's principles, exposing the current limitations of the legal regime of Earth Observation. The author's conclusion is that the current legal regime of EO is insufficient because it does not cover all the potential operations of the Charter and the lack of a clear liability regime. Consequently, the author highlights the need to provide a proper li-

ability regime that protects both the victim and the helper in disaster monitoring and mitigation.

The last two papers have a more philosophical character.

The paper of *Liara M. Covert* is entitled *"The Post-human Era: a Time to Reduce Barriers to Intra-Professional Dialogue & Apply More Effective Policy Response"*. It analyses the notion of success and failure in emergence, expansion and enforcement of international space law using six case examples of global problems. The conclusion is that the leaders have to be less territorial in visions, law-making and actions, and have to cooperate to solve the current problems.

The paper of *Yasuaki Hashimoto* is entitled *"Asian Satellite Center – Promotion of Regional Peace and Security"*. It examines the feasibility on the establishment of an international (regional) organization like a satellite center which contributes to the regional peace and security in Asia. The author's conclusion is that the foundation of such an organization will be a common benefit in regard to the avoidance of international crimes, environmental pollution, disputes and effective use of resources.

C) SESSION 3 - A GENERAL CONVENTION ON SPACE LAW

Chairmen: Prof. Ram S. Jakhu (Canada) and Dr. Said Mosteshar (U.K.)

Rapporteur: Ali Akbar Golrounia (Iran)

Dr. Lotta Viikari (Finland) presented the paper *"Problems Related to Time in the Development of International Space Law"*. He noted that the time lag between the drafting, adoption, and entry into force of international space treaties are so long that by the time accords are implemented, the problems in question may have reached entirely new and different proportions and strategies. He proposed mechanisms such as interim agreements, self - correction treaties, nonbonding codes of conduct, *"Supranationally"* adopted technical standards, and international certification mechanisms, to over come this problem.

Mr. Kenneth M. Weidaw III (USA) presented the paper *"The General Convention on Space Law: Legal Issues Encountered in Establishing a Lunar and Martian Base"*. He proposed that A

General Convention on Space Law must be convened to address critical issues such as property rights on Lunar and Martian bases and environmental restrictions on Lunar and Martian Surface. He suggested voting delegates must be limited to those having active space programs that will directly participate in the Lunar and Martian Landing.

In the paper *"A Place for the Moon Agreement, in the General Convention on Space Law". Ms. Deirdre Ni Chearbhaill* (UK) argued that the General Convention on Space Law should ensure the inclusion of the Moon Agreement, so that human activities on the Moon can develop within a solid legal Framework and the space environment may be protected.

Dr. Ali Akbar Golrounia (Iran) presented the paper *"Private Sector Involvement in Space, a Need for Codification of Regulations".* He proposed in order to encourage the private sector to expand current and make new investments in outer space activities, as well as safe and standard operations. There is a need to establish international regulatory body, which can be achieved through a new convention to codify existing space law.

Prof. Maurice N. Andem (Finland), presented the paper *"The 1967 Outer Space Treaty (1967 OST) as the Magna Charta of Contemporary Space Law: A Brief Reflection".* He emphasized the importance of the Outer Space Treaty as the Magna Carta of contemporary space law and proposed that COPUOS should adopt procedural rules for the implementation of its provisions by all UN Members states.

With the paper *"Previewing a Series of Potentially Cataclysmic Events." Dr. E. E. Weeks* analyzed seven events which are problems of potential world conflict in outer space and recommends that IISL and COPUOS should consider the international rules concerning space tourism, space mining and space settlement and to what extent are private property rights permitted or prohibited in accordance with the wishes of the international community?

The paper *"Supranational or Stateless Incorporation for Space Traffic Management and Control"* was presented by *Mr. William O. Glascoe III* (USA). He commented that as a result of the growing success of space transportation there will be a need to establish a supranational corporation for space traffic control

and a regulatory paradigm of stateless authority for space traffic control must be created.

Discussion:

Mr. Mayence stated that it is very difficult to achieve an acceptable general Convention on Space Law in a short time.

Ms. Viikari held that international treaty development is too slow. She suggested other mechanisms such as interim agreements, non-binding codes of conduct, "supranationally" adopted technical standards, and self-correcting treaties.

Mr. Weidaw argued that a new general convention on space law must re-examine and determine private business right of ownership.

Ms. Deirdre Ni Chearbhaill said that the Moon Agreement should be included in the general convention on space law, so that human activities on the Moon can develop within a solid legal framework and the space environment may be protected.

Prof. Andem raised the importance of the 1967 Outer space Treaty and in order to enhance its effectiveness, he submitted that there is an urgent necessity for COPUOS to adopt procedural rules for the implementation of OST provisions by all UN Member States.

Ms. Weeks stated that COPUOS must place on its agenda, space tourism, space mining and space settlement and private property rights and specify to what extent these activities are permitted under existing international space law.

D) SESSION 4 - LEGAL ISSUES RELATING TO PRIVATE ENTERPRISE, PROPERTY RIGHTS AND SPACE APPLICATIONS

Chairmen: Dr. Sylvia Ospina, Colombia and Prof. Sergio Marchisio, Italy

Rapporteur: Mr Kenneth Weidaw, USA

Paul B. Larsen, Moon and Mars Exploration and Use.

The paper examines the legal basis for the United States announcement by President Bush of the Moon and Mars exploration initiative. Cooperation between the U.S. and Europe has

been difficult. However, such cooperation is crucial to current space initiatives. He recommends that careful international coordination and cooperation occur for most new outer space enterprises.

J. Triplett Mackintosh and Lizbeth C. Rodriguez, General discord and Bar Harmony: U.S. Export Controls in Space.

The paper provides an introduction to U.S. export regulatory controls and their application to the space and aerospace industries. A broad array of technologies are subject to regulation. Exports of some technologies require a license from the Department of State. Most exports of space and aerospace technology will require export authorization. If trading occurs with prohibited parties, there are criminal and administrative penalties. The paper advises what actions may be taken in the event of a violation - providing a step-by-step approach. National security is at the core of the regulations and the consequences of failing to comply may be costly.

Prof. Dr. Stephan Hobe and Jurgen Cloppenburg, Towards A New Aerospace Convention? - Selected Legal Issues of "Space Tourism"

The paper clarifies to which extent existing instruments of private international air law may apply to "space tourism." The authors argue that the applicability of international space law to "space tourists" must be analysed and amendments to existing law should be considered. Clear rules are required, as in an environment of legal uncertainty the industry is not likely to develop. Issues of passenger liability will likely be of highest importance.

Zeldine O'Brien, Liability For Injury, Loss or Damage to the Space Tourist.

With the potential for growth in the space tourism industry, concerns regarding the state of the law governing the liability for possible damage, loss or injury to tourists increase. The author believes that a legal regime governing liability of carriers and others for loss, injury to space tourists should be established. Such need has previously been recognized by other authors. A legal regime would be best established through a U.N.

convention on carrier liability. The author believes the new convention should roughly follow the Montreal Convention with a two tier system of liability, a review clause and a similar range of applicability.

Tanja L. Masson-Zwaan, A Practical Application of Egnos and Galideo: The Advantis Project.

This paper describes the *Advantis Project* - the first contract awarded in February 2004 by the Galileo Joint Undertaking, established by ESA and the EC to manage Europe's global satellite navigation system, *Galileo*, to a consortium of ten European companies. The author explains two key concepts of the system, namely, data concentration and Advantis Integrity. It is noted that the 25 EU Member States need to harmonize their national laws for the system to effectively operate in a harmonious regulatory environment.

Jakub Ryzenko, Explorers, Merchants and Envoys of Mankind.

This paper focuses on challenges directly created by extensive operations beyond low Earth orbit. He then discusses the use of *in situ* lunar resources and exploration of Mars in the search for living organisms. He notes that attitudes and interests towards space exploration divide states into three distinct groups - 1. Space-exploring nations; 2. Emerging space powers and potential exploration players and; 3. Other states. The issues discussed in the paper encourage the role and value of international cooperation. As the number of states involved with space exploration increases, more states will come to embrace space exploration - with a feeling of "ownership" which will minimize opposition and, thus, will limit possible conflicts of national interest.

Mahulena Hofmann, Recent Plans To Exploit the Moon Resources Under International Law.

The future exploitation of lunar resources is the subject of this paper. Lunar resources may be exploited according to the Outer Space Treaty so long as appropriation of the exploited areas does not occur. Concern is expressed in light of President Bush's January 2004 speech in which he stated that lunar re-

sources will be exploited in the future. Since the Moon Treaty was not signed by the U.S., only customary international law provides guidance. The author recommends that a regime be established to guide all parties in their plans to exploit lunar resources to be assured that they are in compliance with international law.

Ricky J. Lee, Transferring Registration of Space Objects: The Interpretative Solution.

In recent years it has been observed that the legal principles concerning the registration of space objects present a hindrance to some commercial transactions involving satellites. Specifically, the requirement that the State of registry has to be a launching State of the space object appears to prevent the effective commercial transfer of title in satellites. The paper discusses three means by which the effects of registration of a space object by a non-launching state may be achieved lawfully without the need to amend the Outer Space Treaty or the Registration Convention. Although amendment of the treaty or convention is preferred, the three means provide an interim solution to the dilemma.

Sreejith S.G., "When Sputnik Orbits Geneva": Legal Reflections on WTO Governance In Respect of Commercial Space Activities.

The author believes that World Trade Organization jurisprudence is applicable to space commerce; WTO law is a source of space law. When space law recognizes WTO law as a source, it will become broader in scope. The author believes that the GATT duties and numerous other enforcement procedures may not be of benefit to space law although it will have to deal with them in any event. However, the author cautions against allowing the WTO enforcement mechanism to dictate space industry decisions due to potential overreaching by WTO.

Prof. Dr. Maureen Williams, Dilemmas of Remote Sensing Data in National and International Courts.

The paper summarizes remote sensing activities and addresses issues such as distribution and commercialization of the data obtained by remote sensing technologies and their use.

Specific problems arising from the use of data collected by Earth observation satellites and its value before the courts is also considered. Digital maps have been used as evidence in litigation. An expert witness is required during trial to interpret the maps. The expert is allowed a wide margin in interpreting the digital maps. Judges or arbitrators must rely upon such testimony - the author considers this to be a source of trouble as evidenced by a recent case outlined in her paper.

Luis F. Castillo, Legal Issues Relating to Private Enterprise, Property Rights, and Space Applications.

The primary objective of the paper is to describe the mechanisms available to states and international organizations and corporations for dispute settlement. The author believes that the 1998 Final Draft of the Revised Convention adopted by the International Law Association of the original 1984 Convention adopted in Paris contains provisions that are current with the times, especially considering commercial space law developments. It is recommended that a specific tribunal be established to hear and render binding and non-binding decisions in disputes dealing with commercial space activities. The paper then presents a Declaration of Principles In Relation To Dispute Settlement In Commercial Space Activities.

Virgiliu Pop, Extraterrestrial Real Estate: Debunking the Myth.

The subject of the paper deals with the illegality of Dennis Hope, through his "Lunar Embassy," selling real estate on the Moon. The paper sets forth the specific reasons why the Lunar Embassy does not own the Moon, and, thus, cannot legally sell portions of it. With the advent of the internet, the illegal claims of the Lunar Embassy have been widespread and the public believes it could actually own a portion of the Moon. The author contends that lunar ownership claims are not only misleading but are false and the sale of real estate is fraudulent activity. Reference is made to the recent (2004) proclamation by the IISL Board of Directors stating that private ownership is forbidden under international law, specifically, the Outer Space Treaty of 1967.

E) SESSION 5 - OTHER LEGAL MATTERS, TELECOMMUNICATIONS, NPS AND MILITARY IMPLICATIONS.

Chairmen: Dr. Kai-Uwe Schrogl (Germany) and Dr. Lucy Stojak (Canada)

Rapporteur: Martha Mejia-Kaiser (Mexico)

Prof. Francis Lyall (UK) presented the paper *"The Protection of the Public Interest in the Light of the Commercialization and Privatization of the Providers of International Satellite Telecommunications"*. He reviewed the current trend in the privatized INMARSAT and INTELSAT organizations. He stated that there is a threat to the original aims of both institutions to serve international public interest. Prof. Lyall fears that adventure capitalists may overtake these organizations, who may put aside the public interest to the detriment of underdeveloped countries. He proposed to convert the International Mobile Satellite Organization to a general monitor of compliance with public service obligations.

The paper *"Digital Divide"* was presented by *Ms. Delphine Gomes de Sousa* (France). She commented that the gap between persons who "have" or "have not" access to information and communication technologies is a new form of inequality. She pointed out that this inequality is a result of terrestrial technologies being fixed to a certain area and of the commercial motives of the operators. She proposed to correct this gap through the establishment of wireless technology through a global broadband satellite infrastructure.

Mr. Sethu Nandakumar (India-UK) presented the paper *"Legal Impasse-Commercialization of Space through Reusable Sub-Orbital Launchers"*. Although there is no legal definition of space object, Mr. Nandakumar noted that the international community has accepted that they require at least one completed orbit around the Earth. Although sub-orbital flights may reach an altitude higher than 100 km, and may cross the orbits of some satellites, they describe a parabolic path, therefore can not be considered as space objects. At the present such flights are in the test phase and subject to domestic air law (in US), but

some international legal issues will arise with the commercialization of these flights, for example the status of passengers, remote sensing activities while ascending and descending, liability aspects in case of an accident, etc. He stressed that there is a need to create a new legal regime and to establish an international organization for the coordination of these activities.

With the paper *"Civil Liability in Space at Common Law"*, *Mr. Dermont Sheehan* (LL.B. student in Ireland) presented some hypothetical examples on space liability and examined them under the existing common law. He proposed to apply maritime law (admiralty law) – with modifications – to outer space activities and to develop specific space torts. He concluded that private disputes in outer space should be solved at private level and not at governmental level.

In the paper *"High Altitude Platforms and International Space Law"*, *Prof. Peter Haanappel* (Netherlands) analyzed the legal aspects of High Altitude Platforms which may be large stationary bodies, deployed between 30 and 50 km. altitude. Although such devices may use radio communication services allocated for outer space services, he commented that they are governed by (international) air law. Prof. Haanappel asserted that it is necessary to consider the interrelationships between the laws of air space and outer space, because the High Altitude Platforms may obstruct the access of space objects to outer space in the ascent or descent phase of space, thereby creating liability issues in case of an accident.

Dr. Carl Christol (US) presented the paper *"Gathering and Dissemination of Space-Based Data in Time of Armed Conflict"*. The author commented that at present, satellite remote sensing data collected by military agencies and private commercial companies are used in various ways in the war against terrorism and in the recent Iraqi wars. Prof. Christol reviewed the coordination of US governmental institutions and private satellite remote sensing companies in the areas of data acquisition, data analysis and immediate transmission to the war theater. Based on the legal viewpoint that States have the sovereign right to protect themselves against warlike adversaries, he affirmed that remote sensing satellites contribute to a more benign phase of international relations.

Mr. Sa'id Mosteshar (UK) presented the paper *"Militarization of Outer Space. Legality and Implications for the Future of Space Law"*. In his paper, Mr. Mosteshar analyzed the term "peaceful use" and concluded that it should mean "non-military" rather than "non-aggressive". He refereed to the Bush foreign policy which is directed to "...dominate the space dimension of military operations to protect US interests and investments...denying other countries access to space". He is of the opinion that any military use of outer space weakens international law of outer space.

Philippe Achilleas presented the summary of the paper written by Ms. *Yuri Takaya* (Japan) named *"The Usage of Space Weapons and International Law"*. Ms. Takaya reviewed the applicable international law to prevent the deployment of space weapons. She referred to the planned deployment of "interceptors" in outer space. Because such devices do not fall under the scope of the definition of weapons, as defined in the Outer Space Treaty and the Moon Agreement, she commented that it is necessary to establish appropriate measures to prevent their deployment in outer space.

General Discussion:

About the flight of *SpaceShipOne* and the legal implications of sub-orbital flights:

In respect to the status of sub-orbital tourists, Dr. van Fenema remarked that the Astronauts Agreement addresses the assistance to astronauts in case of accident and danger and that this treatment should also apply to sub-orbital tourists. However, he questioned if the status of "envoys of mankind" apply also to sub-orbital tourists.

About militarization and weaponization of outer space:

Mr. Salin commented that the legality of the "legitimate defense" argument in outer space must be analyzed. He stressed that the US uses this argument to impose their will without taking into account the rest of the international community. He commented that there is a link between militarization and commercialization in order to anchor investors through shares and bonds.

Mr. Mosteshar indicated that in pursuing its policy, the US is undermining its peaceful commitments and international law.

Dr. Stojak referred to statements of the US secretary of Defense, Donald Rumsfeld, which reflect the US policy of avoiding signing cooperation agreements, in order to have freedom in their non-pacific endeavors.

About the delimitation of air and outer space and an international space convention:

Dr. von der Dunk observed that although the 100 km limit was set as the goal for the X-prize, it may be necessary to go back to discussion of setting a limit between air and outer space, in order to have clarity which law applies to a certain segment of flight. He remarked that Australia is the first country having established the limit between air and outer space at 100 km by national law. He regarded this a good sign and pointed out that other more complex national legislations, as for example the US space legislation, have not yet gone so far.

Mr. Salin disagreed and was of the opinion that air space and outer space should be considered as a continuum. The setting of a formal delimitation would not solve the problem.

Dr. Schrogl informed that presently the United Nations prepare a draft resolution on the application of the legal principles of the launching State. This draft contains a recommendation to encourage implementation of national space legislations. Such topic may be an issue in the next meeting of the COPUOS legal subcommittee, where drafts models may be developed.

Dr. van Fenema added that discussions on a possible international space law convention show again the two contrary positions: countries who wish to set a limit between air and outer space, and countries, like US, who are reluctant to accept new rules which may limit their space activities. Before starting the discussion on a new international space law convention, he emphasized to identify the aspects which are not covered by the five existing space treaties. Subsequently, this would lead to the question, if national governments can be entrusted with establishing such rules at the national level in such a way to comply with the existing space law treaties.

Dr. Freeland pointed out that the 100 km delimitations set by the Australian government was done for practical reasons.

The government wanted to define if an object launched from its territory could reach this limit. The establishment of this limit was not intended to put Australia into the role of a pioneer concerning this delimitation.

Dr. Schrogl commented that countries like France, Germany and Netherlands must sit together with countries that already have national space legislations like the UK and Sweden, in order to draft national legislations which are harmonic at the European level. This may be the same in COPUOS, because some countries appreciate if they get some inputs on space law matters, not only from other countries but also from the IISL.

On the creation of an international space convention, Dr. Ram Jakhu was of the opinion that such convention should also contain new aspects not contained in the 5 existing treaties, for example, property rights and liability issues. Another aspect is who should be drafting this convention. COPUOS may be the obvious forum for such issues, but in this context also the militarization and weaponization of outer space will be addressed. Therefore some delegates of countries who interpret "peaceful" uses as "non-aggressive" uses will evoke the argument that COPUOS is restricted to discuss the peaceful uses of outer space only.

PREPARING WRITTEN BRIEFS FOR INTERNATIONAL LAW COMPETITIONS: A PRIMER

Stephen E. Doyle, BA, JD[*]

INTRODUCTION

This brief discourse offers advice for potential competitors in international moot court competitions, such as the Manfred Lachs Space Law Moot Court Competition or the Phillip C. Jessup International Law Moot Court Competition. As a participant, and later a judge in such competitions, I have found that preparation of written briefs is often a weak area of competitor performance, mainly because of lack of experience or lack of understanding of the administrative procedures and guiding principles of the Court. In these competitions, briefs are prepared on the model of briefs prepared for a case before the Interna-

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tional Court of Justice at The Hague, hereinafter referred to as the ICJ.

In the preparatory materials made available to competitors, usually there are: 1) an extended statement of the facts of the case, included in a *Compromis*, being the facts agreed to by the parties, 2) a stated series of issues agreed to be considered by the Court, 3) a prescribed brief format, with an assigned page length for arguments, and 4) the administrative procedures and rules applicable to the competition.

PREPARATIONS FOR BRIEF WRITING

Before beginning to write any part of the required brief, carefully and fully study the documentation provided. Often a complex fact situation can be significantly illuminated if a representative graphic is prepared. It is useful to make a drawing, if practical. Such a drawing, capturing the factual situation of the case, might even be included in a brief, or as an annex, for the information of the Court. In many cases, as a judge, I found a simple sketch helped considerably to clarify understanding of the facts and/or the physical or geographical relationships of the parties.

Do not spend a lot of time rehashing and restating the facts of the case. It is, in fact, undesirable to restate a condensed version of *the relevant facts* of the case, which are usually bodily contained in the *Compromis* of the parties. Be careful in your study to sort the relevant facts from the irrelevant. The Court may be assumed to have a working knowledge of the relevant facts. A lengthy or reworked presentation is unproductive and may be counterproductive. Do not rewrite the *Compromis*.

Include in your brief a *verbatim text* of the *Compromis*. A fault I frequently find in briefs is that students want to "improve" the *Compromis*. This document represents the agreement to the stipulated facts between or among the parties. Rewriting a *Compromis* to condense or sharpen it ignores the nature of the document. It is the agreed statement of the parties to the stipulated facts therein. The *Compromis* should be included in the brief *verbatim*, not in an amended, shortened, or improved form. As part of, or immediately following the *Com-*

promis presented, there will be an agreed list of issues for resolution by the Court. List these issues also *verbatim* in the brief, and proceed to argue them, whether for the applicant or respondent. You will be required to prepare a brief for both sides and to submit both for judging. Your orals may be for either side, or both.

CONDUCTING RESEARCH

Before beginning to write a brief, obtain as many relevant source documents as possible to draw upon as you set forth your arguments. Source materials vary in weight as to their probative value to the Court. Many students miss completely the relevance of whether they are working in primary sources, secondary sources, or tertiary sources. This is likely a manifestation of their lack of information or understanding of the relative weights assigned to sources.

In law, when one refers to "primary sources," one refers to the actual text of a constitution, treaty, statute, or an established regulation relevant to a case. These are sources of the controlling, binding, enforceable law. "Secondary sources" are those which include the interpretation of the law in primary sources. Principal secondary sources are the decisions of courts interpreting or explaining a primary source. In international law, the negotiating history of a treaty, particularly if there are verbatim minutes of the negotiation, may have high probative value. Well established and generally accepted interpretive documents, may by their reputation deserve consideration as secondary sources. Widely cited and quoted commentaries and administrative tribunals' findings or arbitration decisions may warrant consideration as secondary sources. "Tertiary sources" are the commentaries, journals, and works of scholars, pundits, journalistic reports, and practicing lawyers who write articles or papers arguing, interpreting or explaining a position on the law.

With reference to the status of "custom" as a source of law, a sitting member of the ICJ recently informed me that "The Court always treats international custom as a primary source along with a treaty. For some judges and international lawyers generally it stands, in principle, higher than a treaty. More-

over, they equate "general international law" with customary international law. On the other hand, constitutions and other national law are treated by the Court as "facts," rather than "sources" of international law. These remarks do not take away the importance of all documentary sources, which you correctly emphasize in your recommendations."[1]

It should be understood that citation to and quotation of a primary source presents *prima facie* evidence of "the law." In some cases, the language of the law may be vague and unspecific. In such cases, use of secondary sources is made to argue for the interpretation of the law desired by a party to a dispute. Secondary sources will show how other courts, tribunals, administrators or arbitrators have viewed or interpreted the law. Bear in mind that arguing secondary sources does not decide a matter, it merely presents arguments in favor of one or another interpretation of a primary source. Courts generally consider relevant prior judgments or decisions significant indications of the meaning of a primary source. The ICJ may be expected to give significant weight to earlier judgments of the Court.

Students make a serious error when they conclude that because they have found one tertiary source that argues a particular position, that position should be persuasive to the Court. Generally, it is not so. Description of one tertiary source reciting a position is evidence of the position of that source originator. If one can find five or six or more reputable or qualified writers in tertiary sources who hold a common position on the interpretation of a law, this is more likely to have an impact on the view of the Court. If commentators in different countries with different languages and different legal systems can be shown to have a common position, it can be even more persuasive to the Court. The existence of a single advocate of a position in a tertiary source does not constitute any compelling argument to the Court.

Therefore, in conducting research it is important to know the resources you have available to discover and clarify the law, as manifest in primary, secondary, and tertiary sources. This is

[1] E-mail from Judge Vladlen Stepanovich Vereshchetin, International Court of Justice, to the author (Sept. 13, 2005) (on file with author).

the substance of the first year law student's legal research class. Many students choose to minimize their effort in this course and, by doing so, handicap themselves for their entire legal career, because they never learned well the resources available to them. Good brief writing is at least 80 percent research and not more than 20 percent composition.

In the United States, for example, in 1877, John L. Cadwalader, Assistant Secretary of State, prepared a Digest of the Published *Opinions of the Attorney-General, and of the Leading Decisions of the Federal Courts, with Reference to International Law, Treaties and Kindred Subjects.*[2] In 1886, Francis Wharton, Chief Examiner of Claims, Department of State, prepared an *International Law Digest*, in three volumes.[3] In 1906, John Bassett Moore's *International Law Digest* was published in eight volumes.[4] Beginning in 1940, Judge Green H. Hackworth's *Digest of International Law* began to be published, and it concluded with eight volumes.[5] In 1963, the last in the State Department's *Digest* series, Marjorie M. Whiteman's *Digest of International Law,* began to appear.[6] The Whiteman *Digest* concluded with volume 15 in 1973. Subsequently, in the United States and in other countries, appropriate government agencies involved with legal aspects of foreign relations have published annual summaries of practices in international law, like the US Department of State's *Digest of Practice in International Law*, first published in 1973.[7]

A student researching a current case in international law would want to look first for the relevant primary and secondary sources, being treaties, laws, agreements and related decisions interpreting them. When arguing a case before the ICJ, it is

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[2] JOHN L. CADWALADER, DIGEST OF PUBLISHED OPINIONS OF THE ATTORNEYS-GENERAL AND OF THE LEADING DECISIONS OF THE FEDERAL COURTS, WITH REFERENCE TO INTERNATIONAL LAW, TREATIES, AND KINDRED SUBJECTS (1877).

[3] FRANCIS WHARTON, DIGEST OF THE INTERNATIONAL LAW OF THE UNITED STATES (covers 1776-1886) (1886).

[4] JOHN B. MOORE, DIGEST OF INTERNATIONAL LAW (covers 1776-1906) (1906).

[5] GREEN H. HACKWORTH, DIGEST OF INTERNATIONAL LAW (covers 1906-1939) (1940-1944).

[6] MARJORIE M. WHITEMAN, DIGEST OF INTERNATIONAL LAW (covers 1940-1960) (1963-1973).

[7] DIGEST OF UNITED STATES PRACTICE IN INTERNATIONAL LAW (1973-1988, 2000-).

particularly relevant to look at the prior decisions of that Court on relevant topics. Then look into the recent annual compilations of international practice produced in any states party to the dispute. Similarly, the student would want to consider the relevant contents of the periodical *International Legal Materials*, published by the American Society of International Law. The *Journal of the American Society of International Law* is a significant source of commentary on international law, and it should be researched carefully in cases involving international law.

With reference to space law, there are similar compilations of relevant laws and commentary. Nandasiri Jasentuliyana and Roy S. K. Lee compiled and edited a *Manual on Space Law*, published by Oceana in 1979-80, in 4 volumes.[8] Professor Stephen Gorove, of the University of Mississippi, compiled *United States Space Law: National and International Regulation,* published by Oceana in 1982.[9] The United Nations Office of Outer Space Affairs (OOSA) makes available, on line, many of the primary sources of international law generated through the United Nations. Kuo Lee Li compiled a comprehensive *World-Wide Space Bibliography*, published by the Carswell Company in 1978,[10] with a later second volume.[11] A student looking through the Li bibliography can immediately discover which commentators have produced the most prolific commentary on selected subjects in space law, and thereby guide the research necessary to discover commentary on a particular topic.

One of the most fertile sources of informed commentary on space law is found in the annually published *Proceedings of the International Colloquium on the Law of Outer Space*, which is the compilation of papers presented by legal writers from various countries, before an international audience, addressing is-

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[8] MANUAL ON SPACE LAW (Nandasiri Jasentuliyana & Roy S.K. Lee eds., 1979).

[9] STEPHEN GOROVE, UNITED STATES SPACE LAW: NATIONAL AND INTERNATIONAL REGULATION (1982).

[10] KUO LEE LI, WORLD WIDE SPACE LAW BIBLIOGRAPHY: VOLUME I (1900-1976) (1978).

[11] KUO LEE LI, WORLD WIDE SPACE LAW BIBLIOGRAPHY: VOLUME II (1977-1986) (1987).

sues of currency in international space law.[12] The meetings at which the papers are presented are the annual colloquia on the law of outer space sponsored and organized by the International Institute of Space Law of the International Astronautical Federation. Following presentation of the papers, there are provisions for exchanges of views and discussion of the papers. Summaries of the discussions are also included in the *Proceedings*. Unfortunately, many law libraries fail to subscribe to this singularly valuable commentary source. It is available by subscription through the American Institute of Aeronautics and Astronautics, readily locatable on the internet. An excellent bibliographic analysis of the Proceedings from 1960 to 1990, organized by authors and titles, has been prepared and published by the UN's Office of Outer Space Affairs.

Students should understand that it is not by discovery of a book or an article on the topic of relevance to a case, that they will have a good grasp of the law, or of a reasonable position under the law. It is by comparison of various scholars' views, various pundits commentaries, that they can assemble a "body of commentary" which would have persuasive influence on the Court. The commentary of one or two individuals is neither impressive nor compelling. Examination of one or more of the earlier winning written briefs will show readily how extensive the research was in preparation of the brief's arguments.

For a student located at a school with limited space law or international law library materials, the internet provides an exciting window on the world of legal commentary. Also, students should inquire of their librarian about possible interlibrary loans of particular sources or materials. In addition, a trip to a larger city with a better equipped library may well be a useful exercise for a week-end during brief preparation. Finally,

A student may find help from one of the existing centers of excellence in the world for space law studies and research.

Several academic institutes are dedicated to the study of air and/or space law. At least five major centers are:

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[12] PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE (2005).

1) The National Remote Sensing and Space Law Center, established at the University of Mississippi in 2000. This center addresses the legal aspects of emerging remote sensing, geographical information systems, and related geospatial information technologies. It is an internationally recognized research, advisory, and training resource. The Center hosts visiting scholars, publishes the *Journal of Space Law*, and has published a number of major books on space remote sensing and related issues. It also sponsors a wide variety of activities including live webcasts, workshops like A Legal Assistants' Guide to Legal Applications of Geospatial Information and the 1st International Conference on the State of Remote Sensing Law.

2) In 1951, McGill University established the Institute of Air & Space Law (IASL) in Montreal, Canada, to provide graduate legal education for students from around the world. In the ensuing half century, IASL has educated some 800 students from 120 countries. The McGill Institute's missions include: to help educate the next generation of air and space lawyers to serve the needs of the air and space community worldwide; to publish interdisciplinary research valuable to governmental and multinational institutions, the airline and aerospace industries, and the legal profession; and to create a thriving intellectual environment and professional global network for faculty, students, graduates, and experts in the related fields.

3) The Leiden University International Institute of Air and Space Law, founded in Holland in 1986, is also a leading international academic research and teaching institute, specializing in legal and policy issues regarding aviation and space. Its objective is to contribute to the development of aviation and space law and related policy by conducting and promoting research and teaching at the graduate and post-graduate levels. The relevance and topicality of its work is guaranteed by an extensive exchange of information with the air transport and space industries. The Institute possesses a modern library and organizes courses and conferences on all aspects of aviation and space law and policy. The Leiden Institute forms an integral part of the Faculty of Law of Leiden University. It cooperates with the Leiden University School of Management and many other academic institutions, both within the University and outside. The Institute maintains close contacts with re-

lated national and international organizations in Europe and beyond, both private and public.

4) The Indonesian Center for Air and Space Law (ICASL) was set up in Bandung in December 1988 to conduct and promote research and teaching in the fields of air and space law; to enhance interdisciplinary cooperation between universities, governmental agencies, and private entities dealing with air and space law affairs; and to provide educational and research services and facilities for the development of air and space activities at national, regional and international level. The ICASL sponsors and engages in education and training, research on air and space law affairs, seminars, workshops, symposiums, and conferences, produces publications and maintains a library. Finally,

5) The main objective of the European Centre for Space Law (ECSL) is to build up and spread, within Europe and elsewhere, an understanding of the legal framework relevant to space activities. ECSL does this by fostering the exchange of information among interested stakeholders and by helping to improve and promote the teaching of space law. Its aim is to provide updated information on Europe's contribution to space activities beyond Europe, and therefore to enhance the European position in the field of space law practice, teaching and publications. The ECSL, which is housed at offices of the European Space Agency in Paris, maintains general and specific relevant bibliographies, a survey of space law teaching in Europe and educational support tools, and a general repository and record for relevant events and documents of the European Space Agency and the European Union.

WRITING THE BRIEF

When writing begins, make an outline using the "agreed issues." Topically outline the arguments you intend to elaborate on each issue. Develop arguments targeted at the "agreed issues," with appropriate support. Judges will be looking for the evidence of knowledge of the law and understanding of its applicability to the case, proper and articulate analysis, the extent and use of the research conducted, clarity, organization, grammar, style and persuasiveness. In fact, one can go to the web

sites of the competitions and find the scoring factors used to evaluate the written briefs.

While these factors may differ slightly in wording in the different competitions, they are essentially the same. Persuasiveness and original thought might well be embraced in consideration of proper and articulate analysis, clarity, and organization. Can you present well formed, articulate and convincing arguments on the agreed issues? Your arguments must all be based on clear evidence of knowledge of the facts and the applicable law.

Jessup scoring factors:	Lachs scoring factors:
Knowledge of facts & law	Knowledge of facts & law
Proper & articulate analysis	Proper & articulate analysis
Extent and use of research	Use of authorities & extent of research
Clarity & organization	Clarity & organization
Correct format and citation	Logic & reasoning
Grammar & style	Grammar & style
	Persuasiveness
	Evidence of original thought

Be sure to cite and quote the primary sources containing the applicable law. Briefly declare how this law applies to the case at issue. Use secondary and tertiary sources to reinforce your arguments. Do not rely on single source commentators. Search until you find several qualified commentators to support your desired position. The more support you show, the more convincing you will be. Judges are favorably impressed by research, but only when it is gainfully applied. A student editor's comment in a law journal or a single judge's dissenting opinion should not be considered "authority' for a position. When writing, always seek brevity and clarity. Short, declarative sentences are clear. Long, convoluted sentences, with several subordinate clauses, are rarely helpful.

Consider carefully the weighting of the scoring factors in your competition. Recognize where the principal scoring effort will be directed by the judges. Read your rules carefully. Follow the format required. Do not try to reinvent the table of contents. Conclude your brief with recommended decisions by the Court on the agreed issues. I am continually amazed that students want to bring in issues not listed, because they think they are important. That is not the kind of "original thinking" judges will be looking for.

About twenty percent of the briefs I have graded over the past ten years contain rather embarrassing spelling and grammatical errors. There is no excuse for misspelling. Run a spell check! For grammar, ask another student to review and critique your writing. You are not sacrificing your authorship of your work by asking someone to critique it. It is important that you write it, not the reviewer.

CONCLUDING THOUGHTS

Many of the foregoing thoughts may appear to be self evident. Based on my experience as a judge of briefs for more than ten years, I am convinced that this paper may be a valuable contribution to the effort of some who have not heard these points before. They may have been exposed to many of them, but they may not have *heard* them. Whether judges are considering the written briefs or the oral presentations, they will be most impressed by a well demonstrated effort to conduct extensive research. This is an effort requiring several tens of hours. It cannot be done effectively in a weekend.

If you decide to enter one of these competitions, I applaud your effort and dedication. It is not an easy thing to maintain studies in law school and work on a competition requiring written briefs and oral presentations, but it can be enormously educational and fun. Just remember: a job worth doing is worth doing well.

MAKING SPACE HAPPEN: PRIVATE SPACE VENTURES AND THE VISIONARIES BEHIND THEM

By Paula Berinstein,
Published by Plexus Publishing, Inc. (2001)

Reviewed by Diane Howard*

Almost ebullient in tone, Ms. Paula Berinstein's book tells the story of the individuals working to "make space happen" as well as how they propose to do it. This approach, though it can be hard to follow, effectively communicates the spirit of today's space industry to the reader.

Ms. Berinstein formats her book into twenty chapters, an epilogue, and 5 appendices. She includes a cast of characters, a glossary, a useable index, and sprinkles the text with sidebars that supplement the surrounding text with ancillary, but pertinent, facts and figures. Each chapter addresses either an issue related to a commercial effort to utilize or travel to outer space, or to a personality involved in the same. Ms. Berinstein ends each chapter with her concisely labeled opinion. The book

* Diane Howard is a staff attorney at the Fourth District Court of Appeal in Florida. She participated in the United Nations/Brazil Workshop on Space Law in November 2004; lobbied the U.S. Congress on national space law issues with the ProSpace organization in March 2004, and attended the Institute of Air and Space Law, McGill University, Montreal, Quebec during the summer of 2003.

makes no effort at high-mindedness or objectivity, and always remains accessible to the lay person.

From the preface forward, Ms. Berinstein makes no secret of her fascination with space and her belief that private efforts will prevail. She states that her book purposely does not include discussion of NASA, nor does it only deal with efforts to commercialize space. Instead, she concentrates on the "underdog", believing these intrepid individuals have a better chance of getting people into space and utilizing the resources found in space back here on Earth. As she succinctly declares, her mission is to "inform and astonish", and she expresses the thought that it is her status as an outsider that affords her the latitude necessary to write this book.

Rather than base the book upon dry issues, this author instead focuses on the individuals themselves. Moreover, instead of merely stringing together a series of chapters on different approaches to privatizing space, she relies upon the words of these space visionaries, both through interviews and emails. As a result, the book is somewhat choppy in tone. Still, once the reader gets accustomed to the change in perspective from the interviewee to the interviewer and back, this format works to display the personalities of the people involved. The book definitely bears the imprint of Ms. Berinstein's style while conveying the enthusiasm and attitudes of her subjects.

She begins by discussing the various reasons for human expansion into space. These justifications range from ensuring human survival, through an argument that space utilization will enable us to survive our rapidly depleting resources, to a conviction that it is "manifest destiny" to explore space in search of other life and other habitats. Along the way she includes such esoteric rationales as recreation and the "search for beauty".

Tourism emerges as the strongest contender in the arena of potential privatization endeavors. The first five chapters (of twenty) discourse upon the possibility of getting people in space for some good, old-fashioned fun. Beginning with Tom Rogers, the "granddaddy of space tourism in the United States", the author first gives us the man's resume, and then moves into Mr. Rogers' story in his own words. He tells us about his days with

the Department of Defense and how he first became convinced that space tourism was a viable use of outer space technology. A participant in the space program after *Apollo* but before *Challenger*, Mr. Rogers discusses his personal observations of governmental involvement hindering progress in space. Part of Mr. Rogers' contribution to the privatizing space movement is a survey about the viability of space tourism conducted with NASA in the late nineties. This study represented the first time that NASA treated the subject with any credibility. Further, the study marked a joint project between NASA and Mr. Rogers' private organization, the Space Transportation Association. The study, like other market surveys exploring the subject, indicated that there is a sizeable segment of consumers willing to go up in space for fun. However, the size of the segment varies from study to study, and the studies don't factor in the enormous complications involved in spending time in space. In fact, chapter Three is devoted to discussion of such pedestrian challenges as showering in space, cooking in space, and properly disposing of human waste in space. Further, there are psychological ramifications in space travel not faced in travel on earth. Air rage occurs on short, intra-Earth hops but emergency landings are feasible. Dealing with recalcitrant passengers or passengers who cannot handle the prolonged confinement when the vehicle is weeks from landing is a recurring concern.

To bring home the logistics of placing ordinary civilians in space, either orbiting in zero gravity hotels or living in habitats with either no gravity or simulated gravity, Ms. Berinstein then turns her attention to a psychologist named Harvey Wichman. Dr. Wichman's involvement in space runs to design of showers for the space station, and training programs for crew members. He submits that training and screening of potential space passenger/tourists will prove to be the keys to success. He further postulates that design of facilities will be a crucial factor in accomplishing successful tourism ventures. Dr. Wichman suggests that health issues, physiological and psychological, hold the greatest risk. Ms. Berinstein chooses to temper some of the logistical nightmares with her opinion that people will be so hyped up to get into space that they will risk comfort and well-being to get there. As long as people are properly informed of

the risks, she feels that the excitement of getting there will outweigh the potential downside.

Ms. Berinstein tells us that, as a matter of fact, the chance to enjoy space as a tourist already exists, and for decidedly less than the millions spent by first space tourist, Dennis Tito. Enter Space Adventures, an American company using Russian facilities and technology to fly civilians to the edge of space on a MIG-25 for the view and also offering zero gravity flights, each for under $13,000 (a flight to the edge of space carries a price tag of $12,600, while a zero gravity flight comes in at a mere $5,400). Though the author concedes that this sounds pricey, and the cost does not come close to the proposed price tag for a week in space. The problem revolves around money. How much do people spend on vacations? How much can they spend on a space vacation? And without volume, how does a private company, driven by the bottom line, keep the costs down to an accessible price for consumers?

Further, we are told that the problem of money appears to be the major obstacle in developing the next generation of vehicles to get us into space. Money, and also the time value of money – it takes a long time to see a return on investment in space, and that assumes that there will be a return someday. Not only does transport need to be cost effective, it must also be safe. Now we are talking about testing the craft – test flights and certification. This can take a long time, particularly since conversation about getting out into space often involves conversation about alternative propulsion systems.

We are next introduced to Peter Diamandis. In an effort to pump up enough excitement to circumvent the almost crushing weight of the obstacles (cost, time, government certification), Mr. Diamandis modeled a competition on the aviation contests that abounded in the early twentieth century and called it the X-Prize. At the time Ms. Berinstein's book was published the X-Prize was only an offer. At the time of this writing, the X-Prize had become the Ansari X-Prize and was handily won by Burt Rutan and Paul Allen's team, *SpaceShipOne*. The potentials that this accomplishment made possible created excitement that spilled over into all international communities, both civilian and aerospace.

Diamandis believes that healthy competition between teams from different countries is the way to go. After all, wasn't it competition between the U.S. and the U.S.S.R. that originally fueled the race to space? The competition offered a $10 million dollar prize to the first team that designed a private space vehicle that could successfully launch three people to a sub-orbital altitude of 100 km on two consecutive flights within two weeks. Teams had to be privately financed. The competition raised the funds for the prize through private donations, a credit card, sponsorships, a sweepstakes, and selling the book and film rights.

Former astronaut Buzz Aldrin and his partner Ron Jones offer another approach to making space travel accessible to the masses. These two think that the X-Prize focus on small transport vehicles is missing the mark. They want transport big, like buses, capable of carrying eighty to 100 tourists at a time. Further, they want to re-work already existing NASA technology, sort of like re-inventing the wheel, into reusable rockets. Actually, their ideas come across as a somewhat practical application of what already exists. Part of what makes present space flight (*Shuttle*) so very expensive is the fact that it is expendable. Once used, the rocket is done. Aldrin and Jones propose that existing rockets be used as boosters, and that transport be approached as a sort of modular system that can evolve into other uses as our space involvement develops. They are big fans of public-private partnerships and see these as the only practicable means of getting unstuck from the rut that holds space travel trapped.

Once the vehicle exists, where will it take people? Some enthusiasts want to go to Mars, some will accept the Moon, others are content to orbit in space "cruise ships". Berinstein introduces us to a number of people who, in turn, introduce their version of the next, best thing in space. Some of these versions do not factor in human transport. There are marketing companies like Applied Space Resources, headed by Denise Norris. Berinstein appears somewhat fascinated with Norris, a computer programmer turned entrepreneur. Norris' efforts lie in the realm of robotics – using interactive technology to allow paying customers to scoop their own Moon dirt, later to receive it

via FedEx or the like – and marketing these space applications to the consumer. Norris embodies the spirit of the private space community. She is a hearty libertarian and an Ayn Rand devotee; the fact that she employs an ethicist certainly has positive impact upon Berinstein's view of her.

Finally, two thirds of the way through the book, Berinstein tackles the tougher issues, most notably, legislation. Domestic law requires an inter-agency licensing process. That means that an application to launch moves from one overloaded desk to another, subject to more than one set of specifications and approvals. Here lies a source of frustration for many. Property rights in space are also a huge grey area. The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies (hereinafter Outer Space Treaty) clearly articulates that no State can appropriate space or anything in it. Berinstein is not trying to solve any problems here. She introduces us to Alan Wasser, who has his own theories about this big gap in international space law, and though she allows him to make his case, she keeps the book light. She gives her own reasonably developed opinion and she ties ownership to actual human presence in space; for her, it is not enough to simply send out a probe to identify and catalog.

The "financial issue" is a constant theme. Cost overruns, cost shortages, cost justification, all factor into the challenge of making space accessible. Research and development cost a lot. Where will the money come from? Ms. Berinstein tells us that traditional venture capital does not appear to be an option because of the time lapse between money spent and money recaptured and the tremendous uncertainty regarding markets and return of investment. She, and others in the industry, seem to be hoping for a fairy godparent to come along, get bitten by the space bug, and wave a magic checkbook. Perhaps a Bill Gates or a Warren Buffet will step up to the plate. This is called "Angel Funding", and though it may seem a tad unrealistic, it remains indicative of the incredible, unbuoyed optimism in the space community. As a point of fact, one such dot.com success story, Jim Benson of SpaceDev, did start his company with a windfall from the software industry. Paul Allen's in-

volvement in the Ansari X-Prize certainly adds credence to this mode of funding.

Insurance costs money, also, and insurance becomes very necessary. In order to satisfy the national requirements for launch certification, applicants must show financial responsibility as per the Outer Space Treaty, the Convention on International Liability for Damage Caused by Space Objects, and the Convention on Registration of Objects Launched into Outer Space. State members are responsible for all parties involved in space, whether public or private. Money is important on both sides of the equation – research and design and also funding and risk allocation. Ms. Berinstein almost dismisses these concerns with a flippant toss, stating that insurance is "an incredibly boring subject". Maybe so, but it is a necessary subject, made more so because of the international treaties that we ratified many years ago. Perhaps her prioritizing of subject matter flows from tactical choice. Her goal may be to inflame the reader with such passion for space that the barriers just crumble from grass roots pressure. She doesn't even address the regulatory climate until the appendices of the book.

Ms. Berinstein begins her book by stating that she only wants to inform her readers. She does not offer hard science or political agendas or strategies to navigate through the existing international and domestic law relevant to her issue. This book can only be viewed as an introduction to the idea of a privatized space industry, and that introduction is appropriate only for those with little to no background in either space or law. It reads like a pep talk. It can be difficult to follow, but then so can conversations. And that is basically what this book remains – a series of conversations and press releases. Although a good read, it causes some frustration at the paucity of real life practical solution-oriented information. However, the book definitely engages, and the zeal of both the interviewer and the interviewed infect the reader with the space bug. Read this book and one is ready to either sign up for the next flight, invest some money, or at the very least, participate in some interactive exploration ala Denise Norris. It will leave you wanting more.

SPACE LAW AND RELEVANT PUBLICATIONS

Keishunna Randall[*] *& Katrina Sandifer*[**]

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Joanne Irene Gabrynowicz, *The Perils of Landsat from Grassroots to Globalization: A Comprehensive Review of US Remote Sensing Law with a Few Thoughts for the Future*, 6 CHI. J. INT'L L. 45 (2005).

Michael V. Hayden, *Balancing Security and Liberty: The Challenge of Sharing Foreign Signals Intelligence*, 19 NOTRE DAME J.L. ETHICS & PUB. POL'Y 247 (2005).

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[**] Katrina Sandifer is a third-year law student at the University of Mississippi School of Law, and serves as a Student Editor for the *Journal of Space Law*.

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Paul Tobias, Note, *Opening the Pandora's Box of Space Law*, 28 HASTINGS INT'L & COMP. L. REV. 299 (2005).

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Julian Hermida, *Space Law, in* 6 ORGANIZATION AND STRATEGIES IN ASTRONOMY (Andrew Hecht, ed., Dordrecht: Springer 2005).

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Human Space Flight Requirements for Crew and Space Flight Participants; Proposed Rule, 70 Fed. Reg. 77261 (proposed Dec. 29, 2005) (to be codified at 14 C.F.R. pt. 401, 415, et al.).

Iran Nonproliferation Amendments Act of 2005, S. 1713, 109th Cong. (2005).

National Aeronautics and Space Administration Authorization Act of 2005, S 1281, 109th Cong. (2005).

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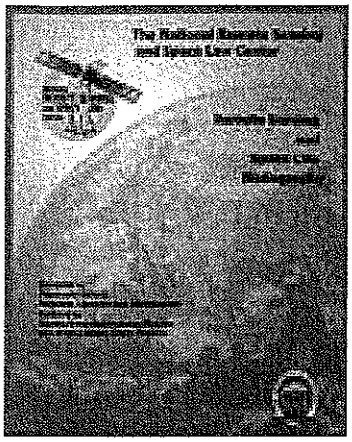

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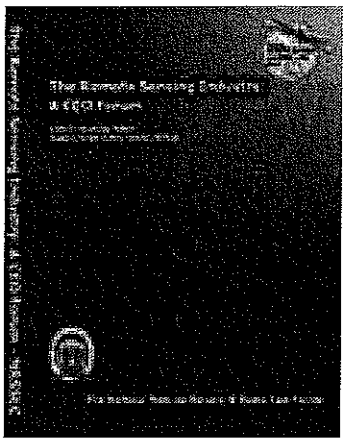

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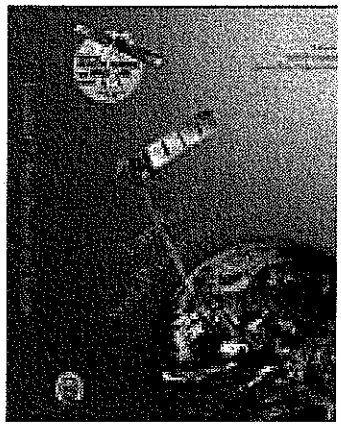

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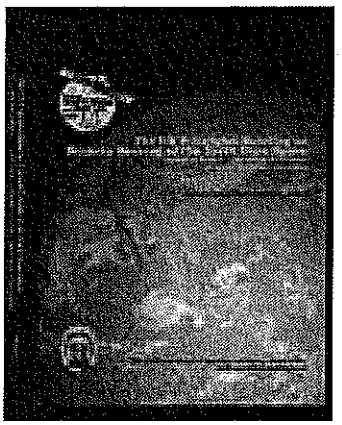

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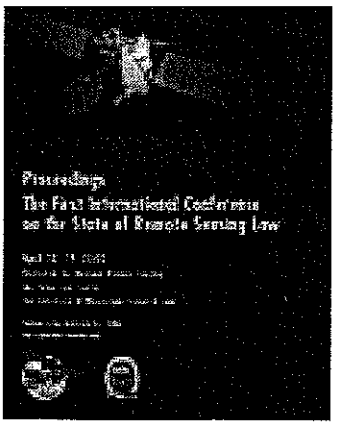

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