resources, a list of international agreements and other legal documents relevant to activities in outer space, and where they might be found, as a working document for the Member States. The Committee further recommended that the Legal Subcommittee should continue its consideration of the item at its session in 1999, and establish a working group for this purpose in accordance with the its previous recommendation of 1997.

h) New Agenda Item for the Legal Subcommittee

While the Committee noted that various new agenda items were under consideration for possible inclusion by the Legal Subcommittee, the primary focus of discussions was on the possible new agenda item, "Improving the Registration Convention" which had been proposed by Germany (on behalf of the Member States of ESA and States having signed cooperation agreements with ESA) in Section III of its working paper "Review of the Status of the Five International Legal Instruments governing Outer Space"[24], submitted to the Legal Subcommittee at its 1998 session.

This proposed new agenda item received a great deal of support within the Committee, as a result of continuing informal negotiations between its major sponsors and other delegations. However the United States, in particular, was not prepared to accept the adoption of this new agenda item or the suggested compromise of a consideration of the adequacy of the concept of the "launching State" as contained in the Registration Convention and the Liability Convention, without the opportunity to further analyse their possible implications. It was therefore agreed that inter-sessional consultations would be carried out by interested delegations in an attempt to achieve consensus on this matter for the next session of the Legal Subcommittee.

i) Shortened Committee and Subcommittee Sessions for 1999

The Committee agreed that the 1999 Committee and Subcommittee sessions should be shortened and somewhat re-organized as a result of the holding of the UNISPACE III Conference in July of that year. Consequently it was decided that the Scientific and Technical Subcommittee and Legal Subcommittee sessions should be held back to back, each for five days, from 22 February to 5 March 1999. Due to the fact that the Scientific and Technical Subcommittee will continue to serve as the Advisory Committee for the UNISPACE III Conference, it was agreed that its session could be extended up to three additional days if so required. The COPUOS session for 1999 will be held from 14 to 16 July and focus primarily on a review of

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24 *See* U. N. Doc. A/AC.105/C.2/L.211/Rev.1.

the work of the two Subcommittees and resolution of any outstanding issues related to the UNISPACE III Conference.

Philip R. McDougall & Natercia F. Rodrigues
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COMMENTS

PROTECTION OF THE SPACE COMMONS: NEW CUSTOMARY LAW?

*K. Gorove**

There has been considerable scientific and legal literature for some years on the problem of space debris[1] and the gaps or lacunae in the existing space treaties.[2]

Although the Outer Space Treaty and the Liability Convention can be of some assistance when specific damage[3] has occurred to a specific person or property and when the source of the damage can be identified,[4]

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1 *See, e.g.,* H. BAKER, SPACE DEBRIS: LEGAL AND POLICY IMPLICATIONS (1989). *See also* the numerous chapters contained in ENVIRONMENTAL ASPECTS OF ACTIVITIES IN OUTER SPACE (K. H. Böckstiegel ed.) (Cologne 1990); *idem, The Draft of the International Law Association for a Convention on Space Debris*, 38 PROC. COLLOQ. L. OUTER SPACE 73-77 (1996).

2 *See* K. Gorove & E. Kamenetskaya, *Tensions in the Development of the Law of Outer Space*, in BEYOND CONFRONTATION 225-275 (L. Damrosch, *et. al.*, eds. 1995).

3 "Damage" means the "loss of life, personal injury or other impairment of health; or loss of or damage to property of states or of persons, natural or juridical or property of international intergovernmental organizations." Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 UST. 2389, T.I.A.S. 7762, 672 U.N.T.S. 119 (eff. Oct. 9, 1973) (hereinafter "Liability Convention").

4 *Id.*, arts. II (strict liability for "damage" occasioned by a launching state's space object to the surface of the earth or to aircraft in flight) and III (negligence standard when the damage is caused "elsewhere than on the surface of the earth to a space object" or to "persons or property on board such a space object." *See also* Treaty on Principles Governing the Activities of States in the Exploration and Use of Oputer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. 6347, 610 U.N.T.S. 205 (eff. Oct. 10, 1967) (hereinafter "Outer Space Treaty"), art. VI (mandates international responsibility for national activities in outer space, irrespective of whether they are carried out by governmental or non-governmental entities) and art. VII (launching state is liable

neither provides much assistance in dealing with problems of over-cluttering of the lower earth orbit[5] or protection of the space commons generally.[6]

There have been efforts to have the Legal Subcommittee of the UN Committee on Peaceful Purposes Of Outer Space ("COPUOS") place space debris on its agenda,[7] but they have met with no success. The debris issue is currently only being addressed as an agenda item within the Scientific and Technical Sub-Committee of COPUOS.[8]

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for injuries caused by such launch object to another state or to natural or juridical persons).

5 General or specific damage to the space environment from chemical, biological, or radiological contamination or large amounts of debris does not fall within the Liability Convention's definition of "damage" because the space environment is not property belonging to people or institutions.

6 For an excellent and thorough discussion of the shortcomings of the Outer Space Treaty in dealing with the issues of space debris, see the piece by N. Jasentuliyana, *supra*, at 139-162 of this issue of the Journal. Article IX of the Outer Space Treaty imposes an obligation on the States Parties to avoid harmful contamination of the moon and other celestial bodies. Article IX could be interpreted to apply to outer space as well, the obligation being only "to avoid harmful contamination." That phrase is not defined in the Treaty and it is not clear whether it means debris, or some type of biological contamination. In addition, Article IX requires States Parties to prevent the introduction into the earth's environment of extraterrestrial matter which may cause adverse changes. This provision would not apply to debris of terrestrial origin. Also, the phrase "adverse changes" is not defined nor is it stated when states should think it necessary to adopt appropriate measures and what those measures should be. Article IX also stipulates that States Parties shall conduct their activities in outer space "with due regard to the corresponding interests of all other States Parties to the Treaty." Further, if a State Party has reason to believe that an activity planned by another State Party would cause "potentially harmful interference" with its activities "in the peaceful exploration and use of outer space," it "may request consultation" with the potentially interfering state. Nonetheless, the other State Party's obligation to consult exists only when it has a reasonable belief that its activities "would cause potentially harmful interference" to another State Party's activities. Presumably, in such a case, if the State decided not to consult, it would be in breach of its international treaty obligations. Apart from this, there is the "common interest" provision in Article I and some other general provisions in the Outer Space Treaty which require compliance with international law and call for promotion of international cooperation.

7 For the treatment within U N COPUOS, see Philip R. McDougall & Natercia F. Rodrigues, *Review of the Work of the United Nations Committee on the Peaceful Uses of Outer Space and its Subcommittees 1998,* in this issue of the Journal.

8 The issue was placed on its agenda in 1994. Report of the Scientific and Technical Subcommittee on the Work of its Thirty-first Session, UN Doc. A/AC.105/571 (1994).

Most of the literature pertaining to debris calls for one or more of the following actions: further study of the debris problem, particularly in terms of tracking the existing debris to collect data and adopting mitigation measures; the drafting of a new space treaty or protocol to an existing treaty; or the formulation of guiding principles or standards and recommended practices. Some progress is being made on the first.[9] To date, there has been no movement on the latter actions.

In the meantime, the gaps or lacunae in the legal regime for problems arising from space debris will have to be filled by customary international law norms applying to the areas outside the jurisdiction and control of states. As to mitigation of debris, states will continue to develop their own requirements and plans of action until global norms develop. There have been three recent decisions of international tribunals that bear upon customary norms and unilateral actions for protection of the environment of the space commons.

Of particular note is that for the first time, the International Court of Justice has had the opportunity to set forth its view of a state's environmental obligations vis-a-vis the commons in both an Advisory Opinion in 1996 and a Judgement in 1997.[10] The Court stated:

> the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn. The existence of the general *obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control* is now part of the corpus of international law relating to the environment. (Emphasis added).[11]

This language used by the Court reflecting its view of the state of customary international law for protection of the environment of the commons departs from earlier formulations. For example, Principle 21 of the Stockholm Declaration on the Human Environment provides that "States have ... the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other

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9 Recently, the US and Norway have agreed to set up a radar station named "Globus II" to track space debris.

10 *See* Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion of July 8, 1996), 35 ILM 809 & 1343 (1996); Gabcikovo-Nagymaros Project (Hungary/Slovakia) (Judgement of September 25, 1997), 1997 ICJ 3, 37 ILM 162 (1998).

11 Gabcikovo-Nagymaros Project, *id.*, para. 54, citing Nuclear Weapons Advisory Opinion, *id.* at para. 29.

states or of areas beyond the limits of national jurisdiction."[12] The view expressed by the drafters of the Restatement (Third) of Foreign Relations Law of the United States as of 1987 was that under customary international law:

> A state is obligated to take such measures as may be necessary, to the extent practicable under the circumstances, to ensure that activities within its jurisdiction or control
>
> a conform to generally accepted international rules and standards for the prevention, reduction, and control of injury to the environment of areas beyond the limits of national jurisdiction; and
>
> b are conducted so as not to cause significant injury to the environment of areas beyond the limit of national jurisdiction.[13]

The question, therefore, is whether the ICJ's use of the word "respect" encompasses earlier formulations of a state's environmental obligation to the commons. It could be said that the term "respect" would surely include an obligation not to cause significant injury and an obligation to apply international standards of prevention, reduction and control of injury. It is doubtful, however, whether it encompasses the language of the Stockholm Principle "to not cause damage." But, irrespective of whether the ICJ's pronouncements can be viewed as a narrower formulation of what had heretofore been considered a patchwork quilt of customary obligations of states, its pronouncements significantly strengthen the body of customary norms governing the commons. In short, there is now no doubt that states have an obligation to ensure that activities within their jurisdiction and control respect the space commons.

Also of relevance to the protection of the space commons issue is a recent Appellate Body decision of the World Trade Organization pertaining to the protection of sea turtles. The decision wrestles with the legality of a state adopting regulations which have the effect of proscribing conduct outside its territory for the purpose of protecting an exhaustible natural resource not located exclusively within its jurisdiction.[14] The United States had placed a prohibition on imports of shrimp from countries which did not receive U.S. certification of being in compliance with U.S. shrimp

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12 Declaration of the United Nations Conference on the Human Environment in Support of the United Nations Conference on the Human Environment, UN Doc. Conf. 48/14/Rev.1 (UN Pub. E.73.II.A.14), at 2, 7 (1972).

13 RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW OF THE UNITED STATES § 601 (1987).

14 United States, Import Prohibition of Shrimp and Certain Shrimp Products, WT/DS58/AB/R, 12 October 1998 (hereinafter "Sea Turtle Case").

trawler regulations aimed at protecting the sea turtle.[15] Normally, such restraints of trade are illegal under the GATT unless they fit into one of the GATT exceptions, one being Article XX (g). That provision permits such measures if they: "relat[e] to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption...." The Appellate Body stated that there was sufficient nexus between the endangered marine populations involved and the United States for purposes of Article XX (g), even though many of the turtles were not within U.S. jurisdiction. Because the provision of the U.S. was designed to "influence countries to adopt national regulatory programs" in line with U.S. standards,[16] the Appellate Body found that "the means and ends relationship between [the US legislation] and the legitimate policy of conserving an exhaustible...[resource] is observably a close and real one... 'relating to' the conservation of an exhaustible natural resource within the meaning of Article XX(g) of the GATT 1994."[17] Nonetheless, the Appellate Body stated that the measures constituted "a means of arbitrary or unjustifiable discrimination", partly because the U.S. had failed to engage in "serious, across-the-board negotiations with the objective of concluding bilateral or multilateral agreements for the protection and conservation of sea turtles, before enforcing the import prohibition..."[18]

The relevance of this case for the treatment of the space commons may be somewhat speculative since currently the General Agreement on Trade in Services does not apply to launch services. Nonetheless, outside the WTO context, conflicts have arisen between countries when one country attempts to apply its laws in such a way as to effect a change in the policies of another country.[19] The Sea Turtle Case stands for the proposition that a country or group of countries could impose restrictions in order to effect a change or impose requirements for space debris mitigation to protect the natural resource of the space commons. The pre-condition to adopting such

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15 The U.S. passed regulations whereby shrimp trawlers had to use turtle excluder devices, with a few exceptions, in particular areas with high incidence of mortality among certain types of sea turtles. India, Malaysia, Pakistan and Thailand asked the WTO Panels be established to examine U.S. actions and their consistency with WTO obligations.

16 Sea Turtle Case, *supra* note 14, para. 138.

17 Sea Turtle Case, *supra* note 14, paras. 141-2.

18 Sea Turtle Case, *supra* note 14, para. 166.

19 *See, e.g.*, the blocking legislation implemented by the European Union, Canada, and Mexico in response to U.S. legislation imposing penalties on persons "trafficking" in Cuban property, *reprinted in* 36 ILM 133 (1997). The Cuban Liberty and Democratic Solidarity Act of 1996, U.S. Public Law 104-114, March 12, 1996, *reprinted in* 35 ILM 357 (1996).

restrictions would be that serious efforts had been made to negotiate multilateral or bilateral arrangements to address the issue. For example, if a country makes several attempts to negotiate multilateral mitigation measures aimed at preserving the space commons, that country could prohibit its nationals from utilizing launch services of countries with lesser standards, justifying its actions with reference to the WTO Appellate Body decision.

The conclusion that emerges from this presentation is that the reviewed ICJ pronouncements significantly strengthen the body of customary norms governing the commons and that there can be little doubt that states now have an obligation to ensure that activities within their jurisdiction and control respect the space commons. The recent Appellate Body decision of the World Trade Organization provides further support for the ability of States to take action to protect it. All in all, these developments suggest that there appears to be an ongoing gradual emergence of a body of customary norms pertaining to the protection of the space commons.

SHORT ACCOUNTS

Melbourne Colloquium on the Law of Outer Space

The 41st IISL Colloquium on the Law of Outer Space was held in Melbourne, Australia, September 29 to October 2, 1998. Papers were presented on a wide range of subjects in four sessions: (1) Managing Space Resources and Revitalizing the Space Treaties; (2) Confidence Building and Commercial Interests in Outer Space; (3) Legal Aspects of Navigation Satellites, Space Applications and Space Uses; and (4) Other Legal Matters, Including the Thirtieth Anniversary of the Rescue Agreement of 1968.

The Colloquium was well attended throughout to hear expert authors from a dozen countries. The opening session took up the question of managing space resources. Several papers focused on the management of resources on the moon and the need for institutional organization to facilitate effective management. The session dealing with uses of space generated substantial discussion about the status of extraterrestrial resources and the extension of personal property rights to resources beyond the Earth. One paper directly discussed the landing on and declaration of ownership of an asteroid. The author, recognizing the incompatibility of the arguments of the paper with the existing law, declared his company's current intent to challenge the law by the actual flight to and taking control of an asteroid, to force the issue. In discussion of this paper, a number of comments reflected the concern that there are better ways to test the law than to set out intentionally to violate it, but the author believes this approach will engage all parties and all issues of relevance to the matter of exercise of property rights over resources in outer space. This subject was earmarked to be discussed at greater length in future colloquiums. Other papers in this session addressed the need for regulation of routine and recurring flights into outer space; proposed

European initiatives to improve the 1975 Registration Convention; the probable needs in the future to expand and improve the 1968 Rescue and Return Agreement; and finally, a comparative survey was done of the limits to sovereignty in treaties relating to outer space, the high seas, and Antarctica.

The second session heard three papers dealing with the use of space resources, particularly remote sensing systems, as tools for reducing tension in international security by offering confidence building measures. As new technology is acquired and made more widely available, national and regional security interests are affected. These papers argued that the sharing of knowledge and information through establishment of a range of confidence building measures could reduce or eliminate tensions generated by the spread of new technologies, particularly those relating to missile launch capacity and the conduct of reconnaissance. Another paper in this session described the confidence building of private business interests in spaceflight activity through expanding experience with contracts and related agreements. Other papers addressed the legal framework in Japan for third party liability for injury or damage caused by NASDA's launch activities; an interesting assessment of secured interests in satellites; and the effects of US policies on international trade in provision of launch services.

The third session included two papers discussing legal aspects of current developments and program plans in the navigation satellite service area. Three papers discussed aspects of international regulation and spectrum management problems associated with the use of communication satellite systems, and the role of the International Telecommunication Union in this connection. One paper addressed the process of privatization of INMARSAT, one discussed legal and regulatory issues of routine and recurring passenger space travel, and several of the papers planned for this session were withdrawn.

In the fourth session, a summary of a paper was presented recommending the review and formulation of guidelines for examination of the 1967 Outer Space Treaty. Another paper addressed the long-standing issue of the delimitation of outer space, and a survey paper was presented on the recent developments in space law in Brazil. The final paper presented addressed the status of the concept of the common heritage of mankind in modern space law. Several of the papers of the planned fourth session were also withdrawn by authors unable to attend the colloquium.

The general discussion period that followed conclusion of the fourth session was largely focused on issues raised in the opening session related to the use of space resources and the possibility of extension of property rights and even of sovereignty to resources located in outer space. In concluding the Colloquium, IISL President, Dr. Jasentuliyana, noted that the status of resources in outer space was a matter of high interest to many

people. He indicated that this topic will be given additional attention in future colloquia of the Institute.

Stephen E. Doyle
Director, International Institute of Space Law (IISL)

Establishment of the Chinese Institute of Space Law

After long years of preparation, the Chinese Institute of Space Law (CISL) was established on December 21, 1997.

The plenary meeting adopted the constitution of the Institute and elected members of the Board as its leading organ.

During the plenary meeting, *Dr. Qizhi He*, Deputy President of CISL, made a Key-note speech entitled "Space Law Problems under Current Situation", which recapitulated the important developments of space activities and the relevant space law issues, stressing the elaboration and adoption of space law and regulations governing Chinese space activities as a primary and urgent task for Chinese Space Law workers. Meanwhile, he noted the necessity of strengthening legal awareness and measures of space commercialization, as well as the perspectives of certain legal issues, such as the controversies over the delimitation of air space and outer space, the growing importance of environment protection by space technology, space debris and the legal issues of manned space flight and space station.

The founding of CISL will provide a forum and organization which will attract students in the legal, social and other sciences as well as people from government, academia and other walks of life. It will also create favorable conditions for studying space law in China. The CISL will carry out academic research activities and will promote exchanges with the International Institute of Space Law, as well as corresponding organizations in other countries for the purpose of progressive development of international space law.

Dr. Qizhi He
Deputy President
Chinese Institute of Space Law

CASE DEVELOPMENTS

A patent infringement lawsuit brought in 1995 by TRW against ICO Global Communications, London, claiming that ICO Global's satellite mobile-telephone system was based on designs patented by TRW for its own satellite mobile telephone system, called Odissey, was dropped by TRW in return for a specified share in ICO's system.

On Jan. 30, 1998 Comsat filed a lawsuit against IDB Mobile Communications Inc. for breach of contract seeking payment for satellite services rendered to IDB in 1997. IDB's parent company, Stratos Mobile Networks, claimed that it has paid for all Comsat's services and earlier in 1997 filed a complaint against Comsat claiming unfair pricing practices.

Executive and Legislative Notes

The Pentagon could revive funding for the U.S. military space plane in 1999 by using funds left over from prior years. The $10 million funding for the program was slashed from the 1998 budget by Presidential veto.

Under a 1996 U.S. law, known as the **Kyl-Bingaman amendment,** American companies were restricted from imaging Israel at a resolution better than what is commercially available from non-U.S. sources. Russia has marketed reconnaissance satellite imagery with a 2-meter film based imagery which was deemed by U.S. government officials to be the qualitative equivalent of 1-meter digital imagery. Notwithstanding this prior determination the Departments of State and Commerce in a surprise July ruling concluded that there is no "readily and reliably available commercial imagery" with 1-meter resolution and over industry's objection barred U.S. companies from selling satellite imagery of Israeli territory with 1-meter resolution.

Under a July 27, 1998 decision of the Department of Defense a new type of booster will be used for launching ground-based interceptors into space to destroy incoming warheads by impact. However, legislation to speed up implementation of the **National Missile Defense** system failed by one vote in the Senate in September.

Under the **Commercial Space Act of 1997** (H.R. 1702), signed by President Clinton on Oct. 28, 1998, the Federal Aviation Administration has been given authority to license privately-owned reusable launch vehicles to re-enter the Earth's atmosphere (see CURR. DOCS. *infra*). The previous law had not permitted Space Shuttle-type atmosphere re-entry for private industry. A provision which sought to impose a 60-day time limit on the U.S. Defense and State Departments to respond to remote-sensing licensing requests was dropped from the Act.

The NASA spending bill approved by the House on July 29, banned any funding for **Triana,** an Earth-observing satellite program and cut funds from NASA's Earth Science program. However, a peer review resulted in the selection of Triana which would be launched from the space shuttle's cargo bay in December 2000. The project would also contribute to a better understanding of the role the Sun plays in global warming models.

The U.S. Dept. of Commerce granted Research and Development Laboratories of Culver City, Calif. a license to build and operate **Radar 1,** a satellite capable of taking radar images with 1-meter resolution.

The proposed **"Space Launch Cost Reduction Act of 1998,"** (S. 2121), if enacted, would provide loan guarantees for qualifying private sector companies to receive otherwise unattainable financing.

Congress in two bills (S. 2365 and H.R. 1872) has been considering changing the 1962 law that established Comsat Corp., the U.S. signatory to and partial owner of **INMARSAT and INTELSAT** which are in the process of privatization. While the House passed the measure, it failed to receive Senate approval. It is likely to be reintroduced in 1999.

NASA's $13.6 billion **1999 budget** (H.R. 4194), a small fraction of the $1.7 trillion U.S. budget, included $245 million in unsolicited funds

earmarking money mostly for University associated projects in specific congressional districts. The International Space Station was fully funded at $2.27 billion.

The DoD authorization bill (H.R. 3616) approved overwhelmingly by the Senate on Oct. 1, 1998 would shift responsibility for **satellite export licenses** next March from the Commerce Department, where President Clinton had transferred it in 1996, back to the State Department.

International Developments

A new era in space exploration and colonization opened up on Nov. 20, 1998 with the successful placement into orbit of the 43,000-pound Zarya (Sunrise, formerly known as the Functional Cargo Block), the first module of the **International Space Station** in which 16 nations participate. Launched by Russia's powerful Proton booster from Kazakhstan Zarya was joined by Unity, a 25,000-pound American built connecting passageway, which was placed into orbit by the space shuttle Endeavour on Dec. 4. The launching of the oft delayed, Russian-built Service Module has been pushed back to July 1999. Canada's Remote Manipulator arm is to be launched in 2000 and pieces of the Japanese Experiment Module in 2002 and 2003. The Bilateral Crew Operations Panel, made up of top Russian and U.S. managers, agreed on the makeup of the first crew, to arrive in space in 1999. It will be commanded by astronaut William Shepard who will be accompanied by two veteran cosmonauts. Shepard's crew will be replaced in late 1999 or early 2000 by commander Yuri Usachev and two U.S. astronauts. The cost by completion around 2004 will exceed $60 billion, of which $53 billion is to come from the United States (including launches).

Under a decree signed by Russian President Yeltsin the **Russian Space Agency** is given integrated oversight authority over civilian, military and industrial space policy.

Sea Launch, an international partnership of American, Ukrainian, Russian and Norwegian companies to launch Zenith rockets from an offshore platform in the equatorial Pacific 2,240 kilometers southeast of Hawaii awaited its first payload's arrival in August 1998, but because of safety concerns, Boeing's license to cooperate with its foreign partners in the Sea Launch of a PanAmSat Galaxy 11 satellite was temporarily suspended by the U.S. State Department, but has been reinstated after a settlement between Boeing Co. and the Department over technology transfers.

In June 1998, the **Australian** government decided to grant a 22 percent wholesale **tax exemption** for equipment launched into space thereby providing a significant incentive for the commercial space launch industry in Australia.

ITU's Radio Regulation Board ruled in July that **EUTELSAT** failed to meet its mid-1997 deadline for occupying its assigned orbital slot when it had tried to keep the slot by testing a satellite in that location before moving it on to its intended orbital slot elsewhere. The ruling allowed the

Société Européenne des Satellites to use its slot situated less than one degree away from EUTELSAT's intended location.

ITU's Minneapolis Plenipotentiary Conference concluded Nov. 6 adopted a number of measures aimed at reflecting the importance of the private sector in fulfilling the mission of ITU and agreed to adjust ITU's Constitution and Convention to reflect this need. The conference also established fees beginning Nov. 7 for satellite applications to offset the cost of coordinating orbital slots

The **Tampere Convention** on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations was signed by 33 countries on June 18, was opened for signature in New York on June 22, 1998 and will remain open until June 21, 2003. It will enter into force 30 days after it is ratified or accepted by 30 countries.

An Internet search engine enabling users to easily find satellite **remote sensing** data **(Infeo)** is to be ready in December 1998 as contemplated by the European Commission's Center for Earth Observation.

INMARSAT government members meeting in Rhodes, Greece, Sept. 23-25, decided to make INMARSAT a private company by April 1, 1999 with a publicly traded stock offering about two years later.

The U.S. and Norway are planning to build in the Norwegian Arctic region a radar station, named **Globus 2,** to track space debris.

Manfred Lachs Space Law Moot Court Competition

The final competition of the 7th Manfred Lachs Space Law Moot Court program was held in the Supreme Court of Victoria, Melbourne, on October 1, 1998, between the teams of the University of North Carolina (USA), including Robin Frankenberry and Gary Smith, and the University of Helsinki (Finland), including Mirkka Mykkänen and James Summers. The competition was adjudged by ICJ Justices Weeramantry (Vice President of the Court), Koroma, and Vereshchetin.

The winning team was the University of North Carolina and the best memorial, awarded at the initiative of Prof. Stephen Gorove with the 1998 issues of the JOURNAL OF SPACE LAW, was written by members of the Helsinki team. ** Robin Frankenberry was selected as the best oralist receiving a certificate and a prize at the initiative of the Law Offices of Sterns and Tennen.***

** The case involving the Commercial Exploitation of the Moon -- The Rover Games Project -- and the text of the winning memorial may be found in **CURRENT DOCUMENTS**, *infra.*

*** On the 1999 Competition, please see ***Forthcoming Events, infra.***

Other Events

The explosions of Boeing's Delta 3 launcher in August, and China's Long March 3B, ESA's Ariane 5, and Lockheed-Martin's launch vehicle in recent years provides an alert to insurance companies and satellite owners.

An **IAA** session at COSPAR's July 1998 Congress urged a new cosmic study to establish a Radio Observatory on the Far Side of the Moon, needed not only for SGTI but also for the future of high sensibility radioastronomy for the next 20/30 years.

A U.S.-Russian agreement signed September 2 in Moscow provides for sharing missile early warning information.

The **Mars** Society Founding Convention held at the University of Colorado, August 13-16, 1998 addressed Mars science, politics, economics, law, as well as cultural and ethical issues.

During the International Law Weekend on November 13, 1998 in New York City a panel discussion sponsored by the National Space Society focused on the Future of **World Peace** and **Outer Space** with an emphasis on telecommunications and the United Nations.

Brief News in Retrospect

New pictures taken in October 1998 by a new camera of the ***Hubble Space Telescope*** revealed the oldest galaxies as they appeared when universe was only about one-twentieth of its present age, or much less than a billion years old.

A **micrometeorite,** one of the oldest extraterrestrial debris to have hit the earth 1.4 billion years ago, has been discovered in a layer of sandstone in Finland.

ESA's Infrared Space Observatory satellite using infrared sensors to measure radiation has detected 24 distant **galaxies.**

A NASA sponsored conference at the Ames Research Center earlier this year considered the question of **extraterrestrial life** which has moved beyond the question of whether it exists to where and how we should look for it.

Lunar ice containing as much as 10 billion tons of water, enough to sustain life for a colony and provide hydrogen and oxygen propellant for the space shuttle's main engines, appears to be at both poles according to data from Lunar Prospector launched in January 1998.

Use of nuclear thermal rockets which may be capable of reaching **Mars** in only 180 days could help in the eventual colonization of Mars.

"Deep Space 1" launched Oct. 24, 1998, destined to visit an asteroid and make close-up pictures of two comets, uses an economical and efficient ion propulsion engine providing 10 times more power than conventional fuel. It requires less space and a lighter launch vehicle, knows where it is in the solar system, and can correct its course automatically on its own. It may lead to frequent, affordable trips to space.

The use of satellites equipped with **hiperspectral sensors,** an emerging NASA program in its Earth Observing System (EOS), may generate up to 40 times more data than multispectral sensors used by LANDSAT satellites with similar coverage.

The delayed launches of LANDSAT 7 and of NASA's EOS AM-1 satellite are not expected before March and June 1999, respectively.

An **Air Force rocket** carrying a classified military satellite exploded shortly after liftoff on August 12, 1998. The cost of the rocket, the launch and the satellite was about $1.3 billion, making it one of the worst American unmanned launch failures.

The first suborbital launch from the new spaceport on **Kodiak** Island, Alaska, took place in early Nov. 1998.

The Nov. 17 **Leonid** meteor onslaught, the most intense in 33 years, appears to have damaged no satellites to the relief of operators.

The inauguration of **Iridium's** commercial service in November permits users to make and receive calls via satellite from virtually any spot on Earth. Efforts to improve voice quality continue.

Alan Shepard, the first American to fly in space in 1961 who planted the American flag on the moon in 1971 during Apollo 14 which he commanded, died at 74.

The 77 year-old U.S. Senator **John Glenn,** the first American to orbit the Earth in 1962, returned to space Oct. 29 as a mission specialist to study the effects of weightlessness on aging. He landed safely on Nov. 7 and, later, together with the other participating astronauts, including a Spanish and a Japanese astronaut, received a hero's welcome in New York's ticker tape parade.

After Feb. 1, 1999, passenger ships and cargo ships of 300 gross tons or more will no longer use the Morse code for distress calls but will rely on global satellite communications by using the **Global Maritime Distress and Safety System.**

NASA is planning to set up a Near-Earth Object Program Office at its Jet Propulsion Lab in Pasadena, Calif. to track an estimated 2,000 asteroids and comets larger than 1 km wide that are approaching the Earth.

The test flight of NASA's **X-33** reusable launch vehicle has been postponed until about December 1999 because of manufacturing problems.

A Space Infrared Telescope Facility providing views of hitherto invisible objects in the universe is expected to be launched in 2001.

The heaviest **Ariane** 4 ever launched put two telecommunications satellites into orbit Oct. 28. Ariane 5, a new European launcher, will start its commercial operations with flight 503 carrying two satellites.

NASA's plan for the robotic exploration of **Mars** is predicated on international collaboration with France, Italy and ESA. The French CNES would build a Mars orbiter to be launched by Ariane 5 in 2005.

Japan's first automated rendezvous and docking experiment between two orbiting satellites, one of six planned, succeeded on July, 7.

Russia's Cosmos 2350, an early warning satellite responsible for detecting possible ballistic missile strikes, stopped functioning on July 6, 1998 and could not be recovered.

Hungary is the first Central European country to provide links via EUTELSAT satellites for digital video, audio and data satellite broadcasting.

B. FORTHCOMING EVENTS

The Second International Conference on "Russian Small and Medium Class Launch Vehicles in Space Projects of 21st Century" is to convene December 7-11, in Moscow and at the Plesetsk Space Center.

The **Global Air & Space '99** International Business Forum and Exhibition is scheduled for May 3-5, 1999, in Arlington, VA.

An International Colloquium **on "International Organisations and Space Law: Their Role and Contributions,"** co-organized by ESA/ECSL, the University of Perugia and the Italian National Research Council will be held May 6-7, 1999 in Perugia, Italy.

The **UNISPACE III** Conference will meet in Vienna, Austria, July 19-30, 1999.

As reported by our Journal previously, the 42nd IISL **Colloquium** will take place in **Amsterdam,** The Netherlands, **Oct. 4-8, 1999.** The following sessions and chairs have been proposed:

Session 1: Legal aspects of Space Station utilization (patents, property rights, crew, commercial uses, debris, international cooperation, private sector...)

Chairman: Prof. Dr. I. Diederiks-Verschoor (The Netherlands) & Prof. Dr. H. A. Wassenbergh (The Netherlands);

Session 2: New developments relating to legal aspects of telecommunications (LEOs, tethered structures, geostationary platforms in the stratosphere, and recent ITU regulations)

Chairmen: Ms. Marcia Smith (USA) & Dr. L. Perek (Czech Republic);

Session 3: Legal Implications of expanding privatization in space national law aspects, interaction between government and industry...);

Chairmen: Prof. Jonathan Galloway (USA) & Ms. T. Masson-Zwaan (The Netherlands);

Session 4: Other issues of Space Law, including legal aspects of launching space objects from non-terrestrial sites.

Chairmen: Dr. J. Monserrat, Filho (Brazil) and Dr. L. Tennen (USA).

Finals of the 8th Manfred Lachs Space Law **Moot Court** Competition are scheduled to be held during the Colloquium in the World Court Chambers at the Peace Palace in The Hague. The case deals with sea-launch and problems of liability ("The Mor-Toaler Sea-Launch Project").

Telecom 99 and Interactive 99 exhibition and forum will be held at Palexpo, in Geneva, Switzerland, from Oct. 9-17, 1999 under the general theme Join the World. In addition to a Telecom Development Symposium, the forum will include three summits, a Policy and Regulatory Summit, an Infrastructure Summit and an Interactive Summit.

Americas Telecom 2000 will be in Rio de Janeiro, Brazil, as will the 51st **IAF Congress.**

The **World Radiocommunication Conference** will consider radio frequency allocation issues in 2000.

The 69th and 70th Conference of the **International Law Association** will take place in London in 2000 and in New Delhi in 2002, respectively.

The next **ITU** Plenipotentiary Conference will meet in 2002 in Morocco.

BOOK REVIEWS/NOTICES

REVIEWS

THE USE OF AIR AND OUTER SPACE - COOPERATION AND COMPETITION, edited by CHIA-JUI CHENG (Kluwer Law International, The Hague/London/Boston 1998), pp. 448.

While space law has developed into a distinct legal discipline, it proved to be a common sense approach to organize international space law conferences under a wider umbrella which juxtaposes both air and space developments, attracts the support of airlines, the aviation industry and concentrates on issues of special interest to them.

Far Eastern international conferences focusing on the use of air and outer space have been held every two years since a 1991 meeting in Taipei, Taiwan. Organized by such leading academic institutions as Leiden, McGill, Peking (Beijing), and Soochow (Taipei) Universities, this hardcover book deals with the proceedings of the third meeting that took place in Beijing from August 21-23, 1995.* The conference brought together many eminent scholars associated with the aforementioned institutions as well as other authorities who provided an instructive overview of selected subjects with an emphasis on the legal and practical issues of international air transport.

The treatment of space law, which occupies only about one-fourth of the publication but is the major preoccupation of this Journal, starts off with a keynote address (*Qizhi He,* Beijing), which reviews the development of international space cooperation, both bilateral and multilateral, and recalls China's entry into the space age with the placement into orbit of its first artificial satellite on April 24, 1970. In the mid-nineties, the organization of space cooperation in the Asia-Pacific region was still at a preliminary stage but it was the Chinese bilateral agreements pertaining to space activities which, *inter alia,* paved the way for China's entry into the international space launch service market, a topic which has also been the subject of important U.S.-China agreements.+

Who owns the orbit and issues of equitable access constituted other important areas for discussion dealing with space telecommunications in the Asia-Pacific region (*Toshio Kosuge,* Tokyo). The applicable international regime precluded stakeholder rights, but it did not prevent the valuable economic resource from being used under conditions of unethical business practices (p. 204).

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* Since then a fourth conference assembled in Seoul in 1997. *See* 25 J. SPACE L. 54-5 (1997).

+ For details, see 24 J.SPACE L. 82 (1996); 24 *id.* at 161.

As to new sources of international space law (*Chia-Jui Cheng,* Taipei), a substantial part can be expected to emerge from the private law sector as a result of anticipated commercial activities of private enterprises in outer space.

While the settlement of disputes in the field of space law is regarded as a "must" (*I.H.Ph. Diederiks-Verschoor,* Leiden), it is desirable to make more use of arbitration procedures. It is equally important to review the grounds for product liability established in a series of court decisions and also to further the development of intellectual property protection.

International responsibility and liability is an area that deserves major attention by both individuals and organizations associated with launch activities (*Bin Cheng,* London).* An adequate analysis requires a clarification of terms and a clear distinction between responsibility and liability in light of the applicable rules under general international law and under provisions of relevant space treaties.

A discussion of the future of space applications, including the future technical and legal framework within the United Nations (*N. Jasentuliyana,* U.N., Vienna), points to the vital role that the U.N. has played and the need for the international community to adapt itself "to a more flexible, more technological and more commercial world." There is a need for countries of the Asia-Pacific region to "develop draft position papers" on a variety of space law topics, including remote sensing, verification, disaster management and mitigation, tele-education, mobile communications systems and space debris (pp. 395-6).

There can be little doubt that the space law chapters of the book provide thought-provoking insights into key issues and practices and raise challenging notions which spur further legitimate inquiries. Within the confines of a brief review, one would be hard up to argue with the thorough and well thought-out assertions, forecasts and conclusions of the various space law analyses, especially since much of the surmised expectations and trend perspectives appear to have been borne out by recent developments. As to some specifics, by way of example, the approach of Professor Bin Cheng deserves mentioning. While his presentation is done with thoroughness and logic in a step-by-step approach, it deviates from the customary summary by restating on eight printed pages, in a slightly abbreviated fashion, all the findings set forth in the preceding 23 pages, a procedure that might be repetitious to the knowledgable, but of probable need to the less well-versed reader.

All in all, the great care that must have gone into the preparation of the conference and the meticulous work reflected in the editorial effort set a fine precedent for subsequent conferences.

Stephen Gorove
Chair, Ed. Bd., J. SPACE L.

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* The topic is scrutinized in great detail in the first issue of this Anniversary volume. *See* Bin Cheng, *Article VI of the 1967 Space Treaty Revisited: "International Responsibility", "National Activities", and "The Appropriate State",* 26 J. SPACE L. 7 (1998).

NOTICES

SPACE SAFETY AND RESCUE 1996, edited by Gloria W. Heath (Am. Astronautical Soc'y, Science and Technology Ser., vol. 95, Univelt 1998), pp. 350.

The sessions of the 1996 Safety and Rescue Symposium were organized, as those in prior years, by the International Academy of Astronautics Committee on Safety, Rescue, and Quality. The era of budgetary constraints appeared to have left its mark on the presentations of the technical aspects of the subject to develop effective, efficient collision avoidance and mitigation strategies. As noted by the editor, the papers presented in the three debris sessions revealed that space debris is more determined by collisions than by explosions, that constellations of satellites present new problems for collision risk management, that international approaches are called for if the space environment is to be preserved for future exploration, and that our understanding of the debris environment is still incomplete.

One of the definitive improvements, from a legal point of view, over prior Space Safety and Rescue symposia was the inclusion of a much needed review of the legal regulation and management of outer space, including the monitoring of objects in outer space and the status of space debris issues in the UN which was eminently described in the Appendix by Luboš Perek, former chief of the Outer Space Affairs Division of the UN Secretariat.

LEGAL ASPECTS OF COOPERATION BETWEEN THE EUROPEAN SPACE AGENCY AND CENTRAL AND EASTERN EUROPEAN COUNTRIES, PROCEEDINGS OF THE INTERNATIONAL COLLOQUIUM, CHARLES UNIVERSITY, PRAGUE, CZECH REPUBLIC, 11-12 SEPT. 1997 (ESA & ECSL 1998), pp. 195.

This book is a compilation of all papers presented at the International Colloquium held on 11-12 September 1997 in Prague, the subject of which focused upon the legal and policy aspects of cooperation between Eastern, Central, and Western Europe.* The contributions from the many scholars and experts in the field of space law review the fruits of existing cooperation, including those borne out in a variety of agreements between ESA and non-member states or international organizations, and provide perspectives and insights into the means to expand, improve and facilitate this cooperation.

From the many papers presented with differing viewpoints on the subject matter, it is evident that a solid framework for establishing cooperative agreements presently exists and is producing tangible benefits for the Parties involved. It also appears that all parties possess the desire to build upon and expand the areas of cooperation. The ongoing identification of specific projects in which joint cooperation would provide

* For a short account of the Colloquium, see 25 J. SPACE L. 164 (1997).

mutual benefits to all Parties will be crucial in fostering the formation of new Agreements, as well as broadening the scope and subject matter therein. How dedicated the Parties are to efficiently use these agreements to produce synergistic results will determine how quickly integration of countries in Central and Eastern Europe with ESA occurs.

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Corrigenda

In Bin Cheng's discussion *Article VI of the 1967 Space Treaty Revisited: "International Responsibility", "National Activities", and "The Appropriate State"* which appeared in No. 1 of the Anniversary Volume 26 (1998), an extra sentence in footnote 24, erroneously reproducing the last sentence of note 26 "The Court spoke &c.", is to be deleted. Similarly, the words "we know that" on p.23, line 20 of the same article should also be deleted.

In the same issue (Vol. 26, No.1, 1998), the following lines should be inserted at the bottom of p. 77:

The last Chapter of Part VI, on "The Commercial Development of Space: The Need for New Treaties", originated in 1990. As commercial use of outer space develops, there appears a need for new international agreements. There is a need to delimit outer space as well as airspace, need

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Gorove, Stephen a *"summa cum laude"* recipient of the J.D. degree from the University of Budapest and a holder of fellowships from Harvard, Oxford and Yale, received his J.S.D. and Ph.D. degrees from Yale. He served as Research Associate at Yale, Columbia and Georgetown Universities and as Law Editor of the Grolier Corporation, publishers of the Encyclopedia Americana and the Encyclopedia International.

Prior to joining the Law Faculty of the University of Mississippi in 1965 as Chairman of the Graduate Law Program and Professor of Law, he taught as Professor of Law in Colorado, Ohio and New York. Currently, a Professor Emeritus of Law at the University of Mississippi, he chairs the Editorial Board of the JOURNAL OF SPACE LAW, the Int'l Space Law Committee of the International Law Association (ILA, Am. Branch) and Int'l Space Law Interest Group of the American Society of International Law (ASIL), directing space law and policy studies.

During the formative development of space law, Professor Gorove served as an observer/representative of the International Astronautical Federation (IAF), the ILA, and the ASIL before the U.N. Committee on the Peaceful Uses of Outer Space and its Legal Subcommittee, where he also chaired several symposia presented to the delegates. A member of the International Academy of Astronautics, he also served as a consultant to the Advisory Committee of the Institute of Air and Space Law of McGill University and chaired several Committees of the American and Inter-American Bar Associations and the Association of American Law Schools.

He has lectured before leading academic institutions around the world which include California, Cambridge, Chicago, Cologne, Columbia, Geneva, McGill, Princeton and Virginia universities, the Institut des Hautes Etudes Internationales and The Hague Academy of International Law as well as many other notable institutions of higher learning in Australia, China, Hungary, Latin America, Japan and the former Soviet Union.

He is a recipient of distinguished testimonials from the International Institute of Space Law (IAF), the American Astronautical Society, the Centro de Investigacion y Difusion Aeronautico-Espacial of Uruguay, the Consejo de Estudios Internationales Avanzados of Argentina and the Japanese Society for the Study of Space Law and Policy on Space Utilization.

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JANKOWITSCH, Peter, Past chair (1972 - 1991) of UN COPUOS. As Foreign Minister, Ambassador and Permanent Representative to the UN and OECD, he held senior positions in the government and diplomacy of Austria, representing currently the host country in preparations for UNISPACE III to be held in Vienna in 1999.

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CURRENT DOCUMENTS

Commercial Space Act of 1997

(Excerpts)*

Sec. 1. Short title; table of contents

(A) Short title. - This act may be cited as the "Commercial Space Act of 1997".

(B) Table of Contents. -

Sec. 2. Definitions.

For purposes of this Act -

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* The excerpts are from the Aug. 3, 1998 Lexis-Nexis version of 105 H.R. 1702 entitled "An Act to encourage the development of a commercial space industry in the United States, and for other purposes." (Some bold letters and capitals added).

(1) the term "Administrator" means the Administrator of the National Aeronautics and Space Administration; . . .

TITLE I - PROMOTION OF COMMERCIAL SPACE OPPORTUNITIES

Sec. 101. Commercialization of space station.

(A) Policy. - The Congress declares that a priority goal of constructing the international space station is the economic development of earth orbital space. The Congress further declares that free and competitive markets create the most efficient conditions for promoting economic development, and should therefore govern the economic development of earth orbital space. The Congress further declares that the use of free market principles in operating, servicing, allocating the use of, and adding capabilities to the space station, and the resulting fullest possible engagement of commercial providers and participation of commercial users, will reduce space station operational costs for all partners and the federal Government's share of the United States burden to fund operations.

(B) Reports. - . . .

Sec. 102. Commercial space launch amendments.

(a) Amendments. - Chapter 701 of Title 49, United States Code, is amended - . . .

(15) In Section 70117 - . . .

(C) by amending subsection (f) to read as follows:

"(f) Launch not an export; reentry not an import. - . . . except that payloads launched pursuant to foreign trade zone procedures as provided for under the Foreign Trade Zones Act (19 U.S.C. 81a-81u) shall be considered exports with regard to customs entry."; . . .

Sec. 103. Promotion of United States Global Positioning System Standards.

(a) Finding. - The Congress finds that the global positioning system, including satellites, signal equipment, ground stations, data links, and associated command and control facilities, has become an essential element in civil, scientific, and military space development because of the emergence of a United States commercial industry which provides global positioning system equipment and related services.

(b) International cooperation. - In order to support and sustain the global positioning system in a manner that will most effectively contribute to the national security, public safety, scientific, and economic interests of the United States, the Congress encourages the President to -

(1) ensure the operation of the global positioning system on a continuous worldwide basis free of direct user fees;

(2) enter into international agreements that promote cooperation with foreign governments and international organizations to-

(a) establish the global positioning system and its augmentations as an acceptable international standard; and

(b) eliminate any foreign barriers to applications of the global positioning system worldwide; and

(3) provide clear direction and adequate resources to United States representatives so that on an international basis they can-

(a) achieve and sustain efficient management of the electromagnetic spectrum used by the global positioning system; and

(b) protect that spectrum from disruption and interference. . . .

Sec. 104. Acquisition of space science data.

(a) Acquisition from commercial providers. - In order to satisfy the scientific and educational requirements of the National Aeronautics and Space Administration, and where practicable of other federal agencies and scientific researchers, the Administrator shall to the maximum extent possible acquire, where cost effective, space science data from a commercial provider. . . .

Sec. 105. Administration of commercial space centers.

The Administrator shall administer the commercial space center program in a coordinated manner from National Aeronautics and Space Administration Headquarters in Washington, D.C.

TITLE II - REMOTE SENSING

Sec. 201. Land remote sensing policy act of 1992 amendments.

(a) Findings. - The Congress finds that -

(1) a robust domestic united states industry in high resolution earth remote sensing is in the economic, employment, technological, scientific, and national security interests of the United States;

(2) to secure its national interests the United States must nurture a commercial remote sensing industry that leads the world;

(3) the federal Government must provide policy and regulations that promote a stable business environment for that industry to succeed and fulfill the national interest;

(4) it is the responsibility of the federal Government to create domestic and international conditions favorable to the health and growth of the United States commercial remote sensing industry;

(5) it is a fundamental goal of United States policy to support and enhance United States industrial competitiveness in the field of remote sensing, while at the same time protecting the national security concerns and international obligations of the United States; and

(6) it is fundamental that the States be able to deploy and utilize this technology in their land management responsibilities. To date, very few States have the ability to do so without engaging the academic institutions within their boundaries. In order to develop a market for the commercial sector, the States must have the capacity to fully utilize the technology. . . .

Sec. 202. Acquisition of Earth Science Data.

(a) Acquisition. - For purposes of meeting government goals for mission to planet earth, and in order to satisfy the scientific and educational requirements of the National Aeronautics and Space Administration, and

where appropriate of other federal agencies and scientific researchers, the Administrator shall to the maximum extent possible acquire, where cost-effective, space-based and airborne earth remote sensing data, services, distribution, and applications from a commercial provider. . . .

TITLE III - FEDERAL ACQUISITION OF SPACE TRANSPORTATION SERVICES

Sec. 301. Requirement to procure commercial space transportation services.

(a) In general. - Except as otherwise provided in this section, the federal Government shall acquire space transportation services from United States commercial providers whenever such services are required in the course of its activities. To the maximum extent practicable, the federal Government shall plan missions to accommodate the space transportation services capabilities of United States commercial providers. . . .

Sec. 304. Shuttle privatization.

(a) Policy and preparation. - The Administrator shall prepare for an orderly transition from the federal operation, or federal management of contracted operation, of space transportation systems to the federal purchase of commercial space transportation services for all nonemergency launch requirements, including human, cargo, and mixed payloads. In those preparations, the Administrator shall take into account the need for short-term economies, as well as the goal of restoring the National Aeronautics and Space Administration's research focus and its mandate to promote the fullest possible commercial use of space. As part of those preparations, the Administrator shall plan for the potential privatization of the space shuttle program. Such plan shall keep safety and cost effectiveness as high priorities. Nothing in this section shall prohibit the National Aeronautics and Space Administration from studying, designing, developing, or funding upgrades or modifications essential to the safe and economical operation of the space shuttle fleet.

(b) Feasibility study. . . .

Sec. 306. National launch capability study.

(a) Findings. - Congress finds that -

(1) a robust satellite and launch industry in the United States serves the interest of the United States by-

(a) contributing to the economy of the United States;

(b) strengthening employment, technological, and scientific interests of the United States; and

(c) serving the foreign policy and national security interests of the United States. . . .

(b) Definitions. . . .

(c) Report. . . .

(d) Recommendations. . . .

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Manfred Lachs Space Law Moot Court Competition 1998 *

Case Concerning the Commercial Exploitation of the Moon

-- The Rover Games Project --

Nation of Freedom (Applicant) v. Nation of Bravatia (Respondent)

INTRODUCTION

The year is 2015. The International Civil Space Station has been in operation for 14 years. A fleet of single-stage-to-orbit ("SSTO") space launch vehicles and space "tugs" service the Moon on a regular basis. The Lunar Port Authority ("LPA"), an international regime established by governments pursuant to Article 11.5 of the Moon Treaty (and which now numbers as its member states a majority of the world's nations), is celebrating its tenth anniversary, its mission being to govern the exploitation of the natural resources of the Moon. It is clear that Lunar settlement is not far off.

STATEMENT OF THE CASE

The Applicant before the International Court of Justice ("the Court") is the Nation of Freedom ("Freedom"), a sovereign state, member of the United Nations ("UN"), and through its Ministry of Environment and Space, a founding member of LUNAVIRONMENT which is an international, non-governmental organization established pursuant to a United Nations resolution in 2001. LUNAVIRONMENT is composed of 101 environmental agencies and non-profit organizations worldwide. Its principal purpose is the preservation of the Lunar environment. LUNAVIRONMENT and its member states have authorized Freedom to represent the interests of the organization before the Court.

The Respondent is the equatorial Nation of Bravatia ("Bravatia"), also a sovereign state and a member of the United Nations but not a member of LPA or LUNAVIRONMENT. Both Freedom and Bravatia are parties to the Outer Space Treaty of 1967, the Rescue Agreement of 1968, the Liability Convention of 1972, the Registration Convention of 1976 and the Moon Treaty of 1979 (hereinafter referred to collectively as "the Space Treaties"). Bravatia had gained considerable

notoriety in the world community in 1999 by registering ten positions on the geostationary orbital arc, along with associated fixed and mobile satellite frequencies with the International Telecommunication Union ("ITU"), and reselling its acquired rights soon thereafter for large sums of money.

Bravatia's most recent commercialization endeavor in outer space is the development of a commercial amusement venture using a large (5 square kilometer) venue on the Moon. In 2011 Bravatia organized under its municipal laws a for-profit corporation, LUNABRAT, with majority ownership and control vested in the Ministry of Finance of Bravatia and minority ownership held by some fifty domestic and foreign private investors. The space activities of LUNABRAT are also supervised by the Ministry of Environment and Space of Bravatia which is represented on the board of directors of LUNABRAT.

LUNABRAT has deployed 2,000 small rover vehicles (each being roughly one meter square by 60 centimeters in height) on the 5 square kilometer Lunar venue, with an additional 8,000 vehicles planned for deployment within the next 24-months. Each rover is equipped with a SOLAR power source for mobility, a small TV camera, a transmitter and receiver, and a low-power laser "gun". Movement of the rovers over the Moon's terrain and the aiming and firing of the laser "guns" are controlled from small, easily-operated "controller" booths on Earth. When the project is fully established there will be in excess of 100,000 of these booths located worldwide in amusement parks, shopping malls and the like. Communications between the booths on Earth and the Lunar rovers is via communications earth stations located in various countries and a fixed communications base station centrally located in the Lunar venue. (In this way, communications signals, such as commands to the rovers sent from booths on Earth, are received by the Lunar base station and relayed to the appropriate Lunar rover vehicle, and *vice versa*.) A child or adult wishing to play the game of "Rover Tag" sits at a controller and for set 10-minute periods "drives" via the communications links an assigned rover on a "search and shoot" mission across the Lunar venue. The object of the game is to see how many other rovers the player can find with its rover, target with its laser, and "zap" (that is, temporarily immobilize) during the 10-minute period without, itself, being "zapped" by another player's laser or actually immobilized by some natural Lunar object. Depending on the player's score during a ten-minute session, the player may earn one or more additional free 10-minute sessions, assuming, of course, it has not been immobilized. The current price of a game is USD 10 (EURO 10) per

minute. The gross revenues of this activity so far have averaged USD 3 million per week and are projected over the next ten years to average in excess of USD 12 million per day.

Being mindful of the negative publicity which resulted following its 1999 commercial exploitation of rights on the geostationary arc, Bravatia has made a concerted effort to obtain international acceptance of its Lunar amusement project. For more than five years, Bravatia sought international approval for its activities from the LPA, but to no avail. Then in 2012, Bravatia applied to the Artemis Development Organization ("ADO") for a license to operate the rovers and ancillary communications equipment at the Lunar venue. ADO is an international inter-governmental organization established pursuant to treaty in 2011 and headquartered in the State of Alpha. Its member states total nearly a majority of the member states of the United Nations, although ADO is not an agency of the United Nations. ADO was established to control and regulate space vehicles operating within 1000 kms of the surface of the Moon and to license and regulate vehicular traffic on the surface of the Moon. Both Freedom and Bravatia deposited their instruments of accession to the ADO treaty in 2011. ADO has declared its acceptance of the rights and obligations under the Rescue Agreement, the Liability Convention, the Registration Convention and the Moon Treaty.

The establishment of an organization such as ADO had initially been suggested at an international "citizens" convention held in the State of Alpha during October - November 2008. Citizens from a majority of nations, including Freedom and Bravatia, attended the convention as participants, and many international organizations, including the UN, sent observers. The persons on the Governing Council and in the Executive Body of ADO consist of a broad international mix of engineers, architects, environmentalists and scientists possessing professional credentials in disciplines relevant to the planning and conducting of activities in outer space and on the Moon. Some of these persons are nationals of either Freedom or Bravatia.

Sixteen months after submitting its application to ADO, Bravatia successfully completed the required licensing procedures involving such matters as planning, engineering standards, environmental compliances, and legal and financial qualifications in accordance with ADO procedures and regulations, and its project was approved and licensed by ADO subject to two principal conditions, which Bravatia unequivocally accepted:

1. Fifty percent of all profits derived from the rover games are to be contributed to the LPA for the "Apollo 17 Site". This site, occupying 1,000 kms^2 on the surface of the Moon, is to be developed and operated by the LPA using mineral-mining and oxygen-generating equipment so that free gases and minerals eventually can be produced, refined, and stored at the site for the use of future Lunar settlers and generations of mankind. This activity will be managed for all peoples, as an interplanetary free "gas station."

2. When the 5 km^2 Lunar rover venue has been compacted by the lunar rovers so as to render that venue unsuitable for the rover games, Bravatia's license will revert to ADO for redevelopment as a lunar spaceport settlement and "dust-free" industrial park. In return, ADO will license Bravatia the use of another, perhaps larger, venue on the Moon for the continuation of the rover games.

Freedom and LUNAVIRONMENT vigorously opposed, within the organs of ADO and elsewhere, Bravatia's rover games project. In particular, Freedom sought unsuccessfully to persuade a majority of its fellow member states represented in ADO's Governing Council to reject Bravatia's application on the basis that Bravatia's proposed Lunar rover games would be inconsistent with international law as set forth in the Space Treaties. Moreover, Freedom contends that LPA, not ADO, is the only body competent under international law to license an activity on the Moon such as the rover games project. Having failed within ADO to stop the project, Freedom resorted to electronically jamming, intermittently, all signals between Bravatia's Lunar base station and the Lunar rovers. As intended, the jamming seriously interfered with the rover games thereby causing a precipitous drop in customer interest and revenues. It has also placed the 2000 deployed rovers in physical peril since the jammed signals also include system telemetry and command signals between the rovers and the base station. Consequently, the rover on-board systems (e.g., power and thermal systems) can no longer be continuously monitored and controlled as is absolutely necessary for their maintenance in the harsh Lunar environment.

Attempts through diplomatic channels to settle this matter proved unsuccessful. However, in an attempt to deflect increasing international opposition to the jamming of Bravatia's signals, Freedom signaled that it was prepared to institute proceedings against Bravatia in the International Court of Justice. Through the good offices of the Foreign Ministry of Alpha, Freedom and Bravatia agreed to the terms of a *compromis* with four submissions (set forth,

infra) for adjudication by the Court and agreed to be bound by the judgment of the Court.

Applicant contends that the Lunar rover games are environmentally unacceptable since they would disturb the Lunar surface, scatter manmade debris, and unnaturally disturb the lunar regolith. In addition, Applicant contends that the perception of the Moon as a peaceful, unspoiled celestial environment will be seriously diminished for mankind by pictures of rovers carrying out their "search-and-shoot" missions for the leisure of people financially able to engage in such amusement. Applicant asserts that mankind has a protected interest in preserving the peaceful environment of the Moon for future generations, as reflected in the provisions of the Outer Space Treaty and the Moon Treaty, and that LPA is the only authority competent under international law to act on an application for a proposed commercial use of the Moon. Therefore, in response to Bravatia's proceeding with its rover project without first obtaining approval of that project from LPA, Applicant contends that it has acted in a manner not inconsistent with the provisions of the Space Treaties in jamming Bravatia's Lunar signals, regardless of any damage this may cause to Bravatia.

Respondent, on the other hand, contends that under international law as reflected in the Space Treaties, the Moon is free and available for exploration and use by the parties thereto and that Bravatia is fully within its rights having fully disclosed its intentions and obtained the necessary authorizations from ADO, the international body charged with licensing and regulating vehicular traffic on the surface of the moon. Bravatia contends that LPA's scope of legal and regulatory competence is confined, in the words of its constitutive agreement, to "governance of the exploitation of the natural resources of the Moon as such exploitation becomes feasible" and therefore does not encompass the rover games project since neither Bravatia nor LUNABRAT will be engaged in the exploitation of such resources. Furthermore, Bravatia agreed to the license conditions specified by ADO from which substantial economic benefits will inure to the benefit of mankind's future exploration and use of the Moon. Respondent further contends that it has suffered, and continues to suffer, extensive economic harm as a result of the unlawful actions of Freedom in jamming all communications between the rovers and the base station on the Moon, and seeks relief from the Court.

ISSUES

The following four issues are reserved for briefing and argument to the Court under the agreed compromis. There are no issues of jurisdiction or

standing, and briefs and arguments with regard to the issue of remedies are to be confined solely to legal principles and not speculate as to monetary amounts.

1. Which international obligations do the Space Treaties impose on states parties to such treaties to refrain from causing environmental damage to the Lunar surface?

2. To the extent the Court establishes such obligations under the first issue, what would be the legal consequence under international law of Bravatia having obtained the approval from ADO, instead of LPA, to conduct its commercial rover activities?

3. Are the actions of Freedom in jamming the Lunar communications in the manner described in violation of its international obligations as a party to the Space Treaties?

4. To the extent the Court establishes the existence of international obligations under the third issue, to what remedies (if any) is Bravatia entitled under international law?

* * *

SUMMARY OF THE MEMORIAL FOR THE APPLICANT
James Summers and Mirkka Mykkänen

Winners of the "JOURNAL OF SPACE LAW" Award for the Best Memorial

The memorial requested provisional measures based on the argument that the jamming conducted by Freedom was preventing the operation of the Rover Games. Bravatia argued that such action was prima facie incompatible with the provisions of the Space Treaties. Bravatia then sought to undermine any legal justification for the jamming with two lines of jurisprudence. Firstly, citing the US/France Air Services Agreement Arbitration, Bravatia claimed that the jamming could not be justified as a counter-measure as the dispute was before a judicial body. The second line of argument was following from the Electricity Co. of Sofia and Bulgaria that the jamming was aggravating the dispute. However following the ICJ's recent decision in the Case Concerning the Vienna Convention on Consular Relations, this second line of argument was used subsidiarily. The memorial established as its basis the freedom of use of outer space. It cited that the principle was provided in the Outer Space and Moon Treaties and also in customary law and that it has been recognized as jus cogens by some authors.

Bravatia's main problem in the case was perceived to be one of image: that it was damaging the lunar environment for profit. Therefore the memorial sought to highlight that Bravatia was very conscious of the value of the environment. This was done by citing, in an objective way, the provisions and principles relevant to the preservation of the lunar environment and then explaining how Bravatia was complying with them..

The memorial examined the prohibition of "harmful contamination" in Article IX of the Outer Space Treaty and "adverse changes" in Article 7 of the Moon Treaty. It sought to establish the criteria by which these standards should be measured with the statement of UNCOPUOS that activities were not prohibited but that disruption should be minimised. The memorial also cited general provisions of international environmental law including the duty to respect the environment in areas beyond national jurisdiction contained in the Stockholm and Rio Declarations.

The memorial divided Bravatia's compliance with these provisions into three sections: the Rover Games site, the lunar spaceport and a future Rover Games site. Firstly, the memorial argued that Bravatia has followed the precautionary principle of the Rio Declaration by only starting the games once they had been approved by the environmentalists of the ADO. The ADO, it was emphasised, was a serious international organisation with a membership of just under half the world's nations.

Secondly, the memorial claimed that the Rover Games would not cause harmful contamination as debris from the games would not react with the lunar surface and could be collected and removed. Thirdly, the memorial recognised that the Rover Games would compress the regolith. However it argued that all lunar surface activities have that effect and the scale of the disruption was small. It further argued that if this disruption were to be considered unacceptable then it would be hard to conceive of the establishment of manned bases or exploitation of natural resources.It was further stated that the lunar spaceport would help to minimise the disruption of landings of the surface of the moon and that any future Rover Games site would be strictly regulated.

On peaceful use, the memorial argued that as the Rover Games were non-military, they complied with the definition of "peaceful" in the Space Treaties.

The memorial then sought to establish the competence of the ADO over the LPA in the regulation of the games. Bravatia claimed that the CHM was strictly restricted to the exploitation of the natural resources of the moon, and that under

Article 8 of the Moon Treaty, the placement of vehicles on the surface of the moon was considered to be use. This then raised the issue of why Bravatia applied first to the LPA. It was argued that even though the mandate of the LPA was restricted to the exploitation of natural resources, through implied powers, it could expand its mandate to regulate other activities. However it was stressed that since the establishment of the ADO, and by lex posterior, the LPA's mandate was now restricted.

On the issue of non-appropriation, the memorial cited Article 11(3) of the Moon Treaty which provides that the placing of vehicles on the surface of the moon does not constitute an appropriation. It was further argued that the agreement between the ADO and Bravatia was only to facilitate international co-operation rather than to claim property rights.

The memorial then asserted that by jamming the Rover Games, Freedom was in violation of its treaty obligations. Firstly, it has frustrated the activities of the ADO in a way contrary to its obligations under the ADO Convention. Secondly, Freedom was in breach of an obligation not to cause harmful interference contained in Article IX of the Outer Space Treaty and Article 15 of the Moon Treaty. Thirdly, Freedom had failed to request consultations with Bravatia and this was also in violation of the same articles of the Space Treaties. Fourthly, as Freedom knew its actions would cause potential danger to Bravatia's rovers, its actions were a hostile act, contrary to Article 3 of the Moon Treaty.

Having established Freedom's responsibility, the memorial then sought to prevent a successful defence of counter-measures. This was done in two ways: firstly that there was no breach to remedy, and secondly that the counter-measures were disproportionate. There are no guidelines as to what is proportionate, so the memorial extrapolated from cases, principally the US/France Air Services Agreement Arbitration, possible criteria for determining proportionality. The criteria used were that; Freedom could have resolved the situation through the dispute settlement procedures of the Space Treaties, the lack of equivalence with the alleged breach, the danger of escalating the dispute and that the counter-measures will affect third parties.

Finally, the memorial dealt with the issue of remedies available to Bravatia. The remedies requested were a declaratory judgement, satisfaction: an apology from Freedom and an undertaking not to repeat similar action, and financial compensation.

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