INTERNATIONAL LAW ASSOCIATION

BERLIN CONFERENCE (2004)

SPACE LAW COMMITTEE

Members of the Committee:

Professor Maureen Williams (HQ): *Chair*
Professor Stephan Hobe (Germany): *Rapporteur*

Dr R I R Abeyratne (HQ)
Professor Bozidar Bakotic (Croatia)
Dr Kaare Bangert (Denmark)
Professor Karl-Heinz Bockstiegel (Germany)
Alternate: Dr Mahulena Hofmann
Professor Carl Christol (USA)
Professor Ingrid Detter (Sweden)
Professor Jacqueline Dutheil de la Rochere (France)
Ambassador Edward R Finch Jr (USA)
Associate Professor Alexis Goh (Australia)
Professor Raimundo Gonzalez Aninat (Chile)
Judge Gilbert Guillaume (France)
Mr Niklas Hedman (Sweden)
Professor Elisabeth Back Impallomeni (Austria)
Mr R K Jain (India)
Professor Sir Robert Jennings (UK)
Alternate: Mr P J Dann
Professor Armel Kerrest (France)
Professor Doo Hwan Kim (Korea)
Professor Emil Konstantinov (Bulgaria)
Professor Vladimir Kopal (HQ)
Professor Umberto Leanza (Italy)
Ricky Lee (Australia)
Professor Jacek Machowski (Poland)
Professor Marco G Marcoff (Switzerland)
Tanja Masson-Zwaan (HQ)
Professor Nicolas Mateesco Matte (Canada)
Professor Jose Monserrat Filho (Brazil)
Dr Y S Rajan (India)
Dr Olivier Ribbelink (Netherlands)
Finn Seyersted (Norway)
Professor Gabriella Venturini (Italy)
Dr F G von der Dunk (Netherlands)
Professor G P Zhukov (Russia)

REPORT ON THE LEGAL ASPECTS OF THE PRIVATISATION AND COMMERCIALISATION OF SPACE ACTIVITIES

REMOTE SENSING AND NATIONAL SPACE LEGISLATION

INTRODUCTION

by Professor Maureen Williams (HQ)
Chair

The scope and title of the present report were discussed and agreed by the Space Law Committee on the basis of a questionnaire circulated to members shortly after the New Delhi Conference. On this basis the terms of reference for our work were approved by the ILA Executive Council in November 2002.

In the initial quest, a number of interesting views were received from Committee members representing the different ILA Branches, namely our former Chair, **Professor Böckstiegel**, and **Dr. Mahulena Hoffmann** (Germany), **Prof. Carl Q. Christol** (USA), **Professors Gilbert Guillaume** and **Armel Kerrest** (France), **Prof. Vladimir Kopal** (Czech Republic), **Dr. José Monserrat Filho** (Brazil**), Ass. Prof. Alexis Goh** (Australia), **Dr. Nandasiri Jasentuliyana** (HQ) and **Dr. Frans von der Dunk** (Netherlands). Consensus was reached on the need to emphasise the legal questions related to remote sensing and national space legislation. The main objective of the Committee was to analyse the state-of-the-art in the present world scenario and reach some common denominators to serve as pillars for our next Report in 2006.

In view of the growth of commercial space activities, remote sensing and national space legislation become of major importance today and, in turn, are strongly linked to registration issues, a topic in need of clarification which the Legal Subcommittee (LSC) of the UN Committee on the Peaceful Uses of

Outer Space (COPUOS) has now added to its agenda. To this effect, the setting up of a working group is envisaged for 2005, on the occasion of the Legal Subcommittee's 44th Session.

In addition, the questions of space debris (ILA International Instrument adopted at the 66th Conference, Buenos Aires 1994) and dispute settlement (Draft Convention adopted at the 68th ILA Conference, Taipei 1998) continued under permanent review of the Committee in the aftermath of the Conferences of reference. During the 43rd Session of the Legal Subcommittee of Copuos in 2004 the study of the legal issues relating to space debris continued to gain support, *inter alia,* by the delegations of the Czech Republic, Greece, France and the European Space Agency[1].

The breadth and width of the Space Law Committee's Report for the Berlin Conference accounts for the division of the task between the **present writer**, focusing on ***remote sensing and the legal issues brought about by the increasing commercial applications of earth observation satellites*** and our general rapporteur, **Professor Stephan Hobe,** who is addressing the various questions surrounding ***National Space Legislation.*** Both topics are closely intertwined in the present phase of exploration and use of outer space.

Following the traditional practice of the Committee, our work was carried out in three different stages over the span between the New Delhi and the Berlin Conferences, as follows:

1. An initial questionnaire - mentioned above - sent out to Committee members in June 2002, and analysis of the comments and proposals received by the Chair and General Rapporteur (second half of 2002).
2. Following this, three special rapporteurs were appointed to prepare introductory reports in accordance with the terms of reference of the Committee (first half of 2003), namely

- **Professor Jose Monserrat Filho** (Brazilian Branch) and **Mr. Niklas Hedman** (Swedish Branch) on the ***Legal Aspects of Remote Sensing***, and
- **Dr. Frans von der Dunk** (Netherlands Branch) on ***National Space Legislation***.

3. During the first half of 2004 the Chair and the General Rapporteur of the Committee, in fluent communication with members on the various issues involved, prepared the reports on their respective topics to be submitted to the ILA Berlin Conference for adoption.

The three Introductory Reports were written during the first half of 2003. The Special Rapporteurs provided excellent, down-to-earth ideas to go ahead with our programme.These Reports were then circulated to Committee members with a request for comments and suggestions. Answers, sometimes including detailed and scholarly reasoning leading to realistic proposals, were received from **Professors Carl Q. Christol**, **Armel Kerrest, Gabriella Venturini** (Italian Branch) and **Dr. Y. S. Rajan** (Indian Branch). The Chair and General Rapporteur of the Committee will come back to these contributions later, in the scope of their respective presentations.

As a permanent observer to Copuos -a United Nations body which we continue to work with in close cooperation- the Committee was represented on different occasions during the past two years by **Professor Hobe** and **Mr. Hedman.** On the basis of reports prepared by the Committee Chair, these distinguished members gave detailed accounts on the progress and results of our work, particularly on topics presently on the agenda of the Legal Subcommittee of Copuos or likely to be included in the near future[2].

To the Special Rapporteurs, and to all those members who participated in the tasks of this Committee, our deepest thanks for their time and interest.

As announced above, Part I of this Report will be addressing remote sensing questions in the present international context and Part II will focus on matters relating to national space legislation.

P A R T I

[1] Report of the 43rd Session on the Legal Subcommittee, p.20, adopted on 8 April 2004 (Doc.A/AC.105/826).
[2] See, inter alia, Doc. A/AC.105/C.2/2004/CRP.15.

REMOTE SENSING
EARTH OBSERVATION SATELLITES

By Professor Dr. Maureen Williams
Chair

A. INITIAL REMARKS - THE BACKGROUND

1. The Seventies

In light of Article I of the 1967 Space Treaty it is quite clear that remote sensing from outer space comes under a régime of complete freedom. Yet, from the first stages of this modern technology a sharp confrontation divided the industrialised and developing world. Whilst the former group of countries generally believed that full freedom for carrying out these activities was indisputable, the latter considered that the operation of earth observation satellites over the territory of third states was in breach of the principle of sovereignty and thus, the prior consent of the sensed state was essential.

In simple terms, the principle of freedom of exploration and use of outer space embodied in the 1967 Treaty and the principle of exclusive jurisdiction in article 2 (7) of the UN Charter were at stake. In even simpler terms, it was valid to say that if and when remote sensing implied, in practice, taking high precision photographs of the Earth from outer space, the activity was consistent with international law. Conversely, when the data collected was meant to be used -for commercial purposes, for example- a range of issues immediately surfaced. The situation could lead industrialised countries using the modern technology to influence world markets on the basis of the information obtained and of which the sensed state was unaware. Such the contention of developing countries during that decade.

Even though state practice, so far, had included mainly data collection relating to the protection of the environment, the highly sensitive question of national security was ever present. In those days the overriding issue was state sovereignty, which appeared at risk by the advances of science and technology.

Within the United Nations the subject was brought up in 1968 at the First UN Conference on the Exploration and Peaceful Uses of Outer Space (Unispace I) held in Vienna, where the benefits stemming from the new technology were duly evaluated. In 1971 a Working Group was established by UNGA Resolution 2778 (XXVI) to operate in the framework of the LSC of Copuos. In those early days two draft texts were submitted to the Working Group, viz. one by Argentina and Brazil, co-sponsored by Chile, Mexico and Venezuela (Doc. A/C.1/10), and another by France and the Soviet Union (Doc. A/AC.105/PV133, Annex IV). In both texts the underlying idea was that the information obtained by remote sensing satellites should be disclosed to the sensed state only. Freedom of dissemination, they contended, might affect national interests. Conversely, the United States submitted a working paper whereby a sensing state, collecting data on the Earth environment, should make it available to all on a timely, equitable and non-discriminatory basis (Doc.A/AC.105/C.2/L.103).

From that time already the International Law Association was aware of the problem which was thoroughly discussed at its 57th Conference in 1976 in Madrid. On this occasion a suggested initial step was the drafting of guidelines with a view to covering all data obtained from environmental and earth-resource surveying. Moreover the Final Resolution of the Conference added that, in developing these guidelines, remote sensing activities should be conducted for the benefit and in the interest of all mankind.

Indeed, in those days, the commercial implications of space activities were not the *raison d' être* for further regulation.

2. The Eighties

The most important landmark in this decade was the adoption in 1986 of the UN Principles on the Observation of Earth from Space[3], following fifteen years of patient work at the Legal Subcommittee of

[3] UNGA Resolution 41/65.

Copuos. These Principles resulted from a compromise between the actors involved, given the impossibility of reaching agreement on an international binding instrument on the subject. In adopting these Principles the UN returned to the method of consensus which -after a long-standing tradition within Copuos- had been abandoned in 1982 on the occasion of the adoption of the Principles governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, which was decided by a majority vote[4].

Be that as it may, the 1986 Principles did not meet expectations. They were agreed at a time when the commercial sides of this activity were still not envisaged in their full dimension. This is clearly reflected in Principle I which describes the purpose of remote sensing as *improving natural resources management, land use and the protection of the environment.* This approach is strongly reminiscent of the thinking of the previous decade.

Today most of these Principles reflect customary international law and, thus, are binding upon States. It is fair to say that they have shed light on unwritten rules of international law and to some extent helped to clarify the meaning of some general principles enshrined in the 1967 Space Treaty.

Towards the end of the eighties a feeling began to grow whereby the sovereignty issues arising from remote sensing were gradually losing ground as a result of the growing activity of private entities in space. Developing countries -albeit careful not to give up sovereign rights in the new area- began to access the new technology on an increasingly wider scale. The technical aspects of remote sensing and the specific clauses contained in cooperation agreements of regional and bilateral scope appeared to take priority over matters which, in the earlier days, were highly sensitive. In many ways these agreements were filling gaps left by the 1986 Principles therefore providing an illustrative example of progressive development of the law.

3. The Nineties

This decade was streamlined by a sharp move towards commercial space activities. The participation of private companies in the use of outer space was now giving way to a more complex but clearer scenario, both from the legal and political standpoint. One of the most welcomed consequences was that dispute settlement procedures were eased as the principle of state immunity became weakened. This was no doubt paving the way for future agreements which, in the past decades, had been discouraged by the risk of a party -acting *de jure imperii*- invoking a clause of sovereign immunity in the course of the implementation of the agreement.

Agreements in these days were mostly technical and embodied detailed and specific legal clauses -again, supplementing the 1986 Principles- which enabled technology to develop and provided a more appropriate field for international cooperation to prosper. Nevertheless, the political moment in the nineties did not appear propitious for the revision of the 1986 Principles let alone the drafting of a binding instrument.

The subject was extensively discussed throughout this decade at various international meetings dealing with outer space. First and foremost, the III UNISPACE Conference held in Vienna in July 1999 which, for the first time, assigned an important place to space industry and commercial activities. Within this major event, the Workshop ***Space Law for the Twenty-first Century***[5]**,** organised by the International Institute of Space Law and the UN Office for Outer Space Affairs, devoted one of its sessions to the subject. On this occasion -marked by scholarly presentations followed by stimulating debate and well thought-out proposals- the long-standing confrontation between the industrialised and developing countries was still outstanding. However, a shift from sovereignty to commercial aspects was clearly perceived. The disagreement focused particularly on the position advocating full freedom of data collection, distribution and commercialisation vis-à-vis the position supporting the rights of sensed states and their permanent sovereignty over natural resources which the 1986 Principles protected vaguely. At

[4] UNGA Resolution 37/92.
[5] Proceedings of the Workshop of Space Law for the Twenty-first Century, Unispace III, Technical Forum, published by the United Nations, New York 2000 (Session 4 on Remote Sensing).

this meeting these Principles were considered binding on the basis of state practice and the existing *opinio juris* on the matter.

In the meantime agreements on remote sensing were proliferating, especially in connection with agriculture, water and other resources, and environmental protection, and involved actors from both developed and developing states[6]. These agreements had to cover various issues on which the 1986 Principles remained silent thus interpreting and shaping the applicable law.

An important milestone of the nineties in the private field was ***Project 2001***, a far-reaching study on the ***Legal Framework for the Commercial Uses of Outer Space***, under the direction of our former distinguished Chair, Professor Karl-Heinz Böckstiegel. Work began towards the end of the nineties and was conducted from Köln University, involving experts from all over the world[7]. The Working Group on Remote Sensing considered that the UN Principles allowed the commercialisation of data collected by remote sensing technologies[8]. This reasoning would therefore imply that, apart from article VI of the 1967 Space Treaty to rely upon, the only protection afforded to the sensed state was Principle IV stating that the activities should be carried out on the basis of respect for the principle of full and permanent sovereignty of all states and peoples over their own wealth and natural resources and that such activities should not be conducted in a manner detrimental to the legitimate rights and interests of the sensed state[9]. Principle IV also contemplates the possibility of participation of developing countries which have, at the same time, become sensed states, in the mutual benefits stemming from this activity.

It is important to highlight the fact that, in spite of having recommended the drafting of guidelines for the implementation of the 1986 Principles, the Working Group on Remote Sensing within Project 2001 could not reach agreement either on the need to revise them or on a move towards a binding instrument on this matter[10].

The wide margin left to the interpretation of these provisions was a matter of concern to developing countries who, throughout the nineties, firmly contended that the Principles should either be given a more precise meaning by means of a binding international instrument or should, at least, undergo revision, especially those which were most polemic.

B. THE STATE-OF-THE-ART

1. General Remarks

At the beginning of the new century a more cautious approach was perceived within the doctrine on the basis that the political will to agree on an international convention was lacking. The possibility of a fresh discussion on the most controversial points related to remote sensing, before actually embarking in possible changes, began to gain support. This was, *inter alia*, the proposal of a Research Project conducted by the present writer from the University of Buenos Aires, focusing on commercial space activities and the value, as evidence in national and international courts, of the data collected by earth observation satellites[11]. The Ibero American Institute of Air and Space Law (Madrid) has recently followed suit and again included this topic for its next Conference in October 2004 in Lima (Perú)[12].

---

[6] See, inter alia, the SABIA 3 cooperation agreement between Argentina and Brasil (CONAE/AEB) signed on 9 April 1996 concerning water resources, agricultural production and related areas. Likewise, SAATCOOP, involving Argentina, Brasil, Mexico and Spain. More recently, in 2002, Argentina and ESA signed an agreement on space cooperation which envisages the protection of data collected by space technologies (Art.4) a question to be put into practice by means of bilateral agreements dealing with intellectual property issues. Also, an agreement was signed in 2003 between Argentina and Italy, known as SIASGE, intended to early-warning systems for natural disasters, composed of nine satellites out of which two will be built by Argentina (www.conae.gov.ar).

[7] The book containing the Proceedings of the International Colloquium held in Cologne in May 2001 to mark the end of the Project is entitled ***'PROJECT 2001' - LEGAL FRAMEWORK FOR THE COMMERCIAL USE OF OUTER SPACE,*** ed. by K.H. Böckstiegel,Carl Heymanns Verlag 2002**.**

[8] See Project 2001, Working Group on Remote Sensing Issues, Toulouse, 28 October 1998.

[9] Cf. Bin Cheng, ***STUDIES IN INTERNATIONAL SPACE LAW***, Clarendon Oxford 1997, particularly Chapter 22, pp. 572-597.

[10] See note 7 supra, pp.152-154.

[11] The University of Buenos Aires Project is entitled ***Earth Observation Satellites and their applications in today's world (Ubacyt 2001-2003).***

[12] The Ibero American Institute had already discussed commercial space activities at its previous annual Conferences in Barcelona (2002) and Montevideo (2003).

The international arena is now entirely different from 1986, when the Principles were adopted, and we are light years ahead from 1967, when the Space Treaty became effective. Yet, world opinion remains divided. Technology has advanced dramatically in the last years and so has commercial space activity. It remains to be wondered why the model provided by satellite communications and the use of the geostationary orbit -an undoubted commercial activity from the early days- has not managed to inspire other international instruments relating to outer space.

.

The present situation is clearly seen in the LSC of Copuos. On the one side stand the advocates of an international binding agreement on remote sensing and -in a more cautious approach- those who favour the review of state practices and the discussion of the Principles in new light, along the lines suggested by the delegations of Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Greece, Mexico and Perú at the 43rd Session of the Legal Subcommittee of Copuos in April 2004[13]. At the other end of the spectrum are the United States and Japan who, based on the fact that a good number of developing countries are using the technology and that the Principles are operating well and should not be updated, stand for the principle of full freedom concerning the collection, distribution and commercialisation of data obtained by these means[14].

In industrialised countries the doctrine seems inclined to avoid premature solutions, particularly in fields where claims have barely been raised. Likewise, the political moment appears to indicate that the idea of introducing changes or binding rules in the field of remote sensing would not be seen with favour. In other words, sovereign states prefer to draw up guidelines or codes of conduct which could be enshrined in UNGA Resolutions but would not be binding. Unless, of course, they are declaring international customary law.

Be that as it may, in recent years international agreements have frequently envisaged the use of earth observation satellites to monitor the compliance with obligations embodied in their text, especially relating to the protection of the environment. Such, *inter alia*, the case of the 1992 Convention on Climate Change and the 1997 Kyoto Protocol. Likewise, Rermote sensing technologies enabled the detection of alterations in the levels of the ozone layer with extreme accuracy, at different times of the year and in different points of the stratosphere.

All of us are aware that the forceful arguments advanced by developed and developing countries for and against the need to create new law on the subject will continue to be. Whatever the outcome, the approach should be careful and should avoid too many details and regulations which are unlikely to survive the times. Nevertheless it is sensible to think that some of the 1986 Principles need clarification in order to be useful in the present state-of-the-art.

Therefore, proposals for the LSC of Copuos to review and discuss the Principles, with a view to establishing their consistency in today's world scenario, should be welcomed. This was, in fact, the method followed by the ILA Space Law Committee when dealing with the ***Review of the Space Treaties in View of Commercial Space Activities.*** The need for changes or adjustments, as embodied in the ensuing Resolution of the New Delhi Conference, was mostly answered in the negative[15].

1. *The Introductory Reports*

2.1 The Hedman Introductory Report

I shall now move on to the work on remote sensing by our special rapporteurs and the ideas expressed on the subject by distinguished members of our Committee. In so doing it is important to have in mind, from the outset, that these reports come from representatives of two different groups, namely Mr. Niklas Hedman (Sweden) and Professor José Monserrat Filho (Brazil). Both of them, in impeccable style, have advanced their views and suggestions to the Committee.

---

[13] Report of the Legal Subcommittee of Copuos adopted on 8 April 2004 (Doc. A/AC.105/826), p.21, paragraph 125.
[14] Ibid. page 21, paragraph 129.
[15] See Report of the ILA Space Law Committee to the 70th Conference of the ILA, New Delhi 2002, entitled ***REVIEW OF THE SPACE TREATIES IN VIEW OF COMMERCIAL SPACE ACTIVITIES - CONCRETE PROPOSALS,*** pp. 192-226, and Conference Resolution on pp. 13-16.

The Hedman Introductory Report provides a thorough, in-depth study of the various legal and political issues surrounding remote sensing in the present time. The underlying question is the validity of the 1986 Principles today in light of the recent discussions at the Legal Subcommittee of Copuos and other institutions dealing with the topic. The Report highlights the ever-growing application of remote sensing technologies in recent years, ranging from the possibility of viable solutions to a number of environmental and development problems to the monitoring of treaty compliance, as pointed out earlier. The issues are complex due to the "long chain of components" involved from the first steps of information collection to the final ones of processing and disseminating the data. Reference is made in this regard to the 2002 Johannesburg Summit where the many applications of remote sensing were examined, and to the recent European initiative on **Global Monitoring for Environment and Security (GMES),** with ENVISAT as an important tool.

It may be added that the British Institute of International & Comparative Law has joined efforts with the European Commission and appointed a team of experts to work together in a joint project concerning these specific questions. Other academic institutions have followed this initiative, such as the University of Buenos Aires within the Ubacyt Scientific Programmes[16] and the Ibero American Institute of Air and Space Law (Madrid) which, as a UN Consultative institution, intends reporting its findings to the forthcoming meetings. Other contemporary experiences, like EOPOLE and APERTURE, are as well of unquestionable value in this field.

The general conclusion of Mr. Hedman's Report is that there are five provisions in the UN Principles that ought to be enlightened, as follows:

- The definitions in Principle I and their applicability to present and future activities in the field of remote sensing.
- The implications of the phrase "legitimate rights and interests of the sensed state" in Principle IV.
- The scope of Principles XII and XIII when stating "taking into account the territoriality, the principle of non-discrimination and the cost of obtaining data".
- The scope and implications of state responsibility as laid down in Principle XIV.

The Special Rapporteur suggests that the ILA Space Law Committee formulate guidelines for the interpretation of certain aspects related to the Principles, a procedure in line with the recommendation of **Project 2001** (Working Group on Remote Sensing). In additon, he proposes to analyse the Protocol, adopted by the ILA New Delhi Conference in 2002, to the 1967 Treaty and its possible link to the UN Principles and the 1967 Treaty in light of the 1996 "Benefits Declaration" of the UN General Assembly.

Mr. Hedman also includes suggestions on the use of satellite imagery in court proceedings. This will be addressed under a separate subtitle at a later stage in this Report.

I shall pause on some of the issues brought up in the Hedman Report.

In the first place, the very topical issue of validity. The Special Rapporteur considers that, in the set of Principles, there is a balance of interests between the sovereignty of the sensed state and the interest of the sensing state in carrying out remote sensing activities without prior consent. He points out that, in those days, the Principles had "common utility" in mind rather than private commercial purposes. This balance, in the view of developing countries, is still far from perfect.

The Special Rapporteur believes that, due to their great flexibility, the Principles are still valid as an instrument for international cooperation. Indeed, as observed earlier, most of them reflect customary international law, which enables them to survive the times. But there are controversial areas as well. For instance, definitions, jurisdiction, access to data and commercialisation thereof, and international responsibility. Let us elucidate further.

For Mr. Hedman Principle I, defining the objective of remote sensing, i.e. the improvement of natural resources management, land use and the protection of the environment, is clearly outdated. Remote sensing applications go nowadays far beyond these initial purposes. For example, the use to be made of the analysed data remains unresolved.

---

[16] The Committee chair has just concluded the conduction of a Project entitled ***INTERNATIONAL LAW AND THE COMMERCIAL ASPECTS OF SPACE ACTIVITIES*** (Ubacyt D015, 2001-03).

The foregoing issues are related, in turn, to Principle XIV on state responsibility, clearly linked to Article VI of the Space Treaty. States operating remote sensing satellites are thereby made internationally responsible for their "activities". The meaning of this term is questioned by Mr. Hedman who doubts whether it applies to remote sensing activities in the sense of the Principles or, rather, to space activities *lato sensu* as established in Article VI of the 1967 Treaty. He observes, in addition, that the use of remote sensing data by third parties seems to be excluded.

This brings to mind Bin Cheng's[17] position on the question. Our former distinguished member considers that the sensed state would be more effectively protected by relying on Article VI of the Space Treaty - which makes states internationally responsible for national activities in outer space- than by Principle XIV which limits the scope of that Article to "states operating remote sensing activities".

On this point Mr. Hedman recalls the discussions in the LSC of Copuos in 2003, concerning a Working Paper submitted by Brazil [18] and from which it would result that developing countries are not so worried by the collection, storage, processing and distribution of the processed data but by the use made of the analysed data. This indicates that Principle XIV should be read together with Principle IV which declares that remote sensing activities should not be conducted in a manner detrimental to the legitimate rights and interests of the sensed state. The Special Rapporteur finds an acceptable balance in Principle IV as it recognises the freedom of exploration and use of outer space on the one hand and, on the other, it provides that remote sensing activities shall be conducted on the basis of respect for the principle of full and permanent sovereignty of all states and peoples over their own wealth and natural resources, with due regard to the rights and interests, in accordance with international law, of other States and entities under their jurisdiction.

We shall now have a look at Principles XII and XIII. The former concerns access to data on the part of the sensed state and, at first sight, does not recognise any special treatment for the sensed state in connection with data distribution [19]. It is supplemented by Principle XIII envisaging consultations between the sensing state and the sensed state, at the request of the latter, and making a call for international cooperation with special reference to the needs of developing countries.

The Special Rapporteur has some initial trouble with the interpretation of the term "territory under its jurisdiction", with regard to the access to data in Principle XII, and "territory" in Principle XIII, which limits the consultation possibility to the territory of the sensed state". In the end, as Mr. Hedman observes, they should be taken as synonyms on the basis of the drafting history of the Principles revealing a compromise between states advocating territoriality and states interpreting "national jurisdiction" in a broader sense.

Finally the author draws attention to the importance of remote sensing in the implementation of the recommendation of Unispace III -known as Unispace III plus 5- and the value of the work of the action teams set up by Copuos to this end. In this sense Hedman refers the Committee to the Note by the Secretariat entitled "Input from the action teams for the report of the Committee on the Peaceful Uses of Outer Space Space to the General Assembly at its fifty-ninth session for its review of the implementation of the recommendations of Unispace III"[20].

1.2 The Monserrat Introductory Report

Dr. José Monserrat Filho, from Brazil, has provided the Space Law Committee with a most complete outlook of the topic reflecting, to a great extent, the stance of developing countries and the reasons - solidly grounded in his Report- to move towards the adoption of a binding instrument, a goal for which he has struggled for years both on the private and intergovernmental level.

Underlying Dr. Monserrat's position on the need of a convention on the subject are two basic reasons, viz.
(a) the commercialisation of remote sensing services, and
(b) the preservation of the right to access data without discrimination

---

[17] Op.cit. in note 9, p. 596-7.
[18] A/AC.105/C.2/L.244, Working Paper by Brazil cited by Hedman.
[19] See Williams, ***REFLECTIONS AND SUGGESTIONS ON REMOTE SENSING AND INTERNATIONAL LAW***, ZLW 50.Jg.3/2001, pp.409-418, at p. 415.
[20] Doc. A/AC.105/L.247 of 23 May 2003.

The Special Rapporteur's point of departure is the confrontation of traditional principles which, quoting the present Committee chair [21], he depicts as follows:

- Freedom of exploration and use of outer space (Article I of the 1967 Outer Space Treaty) on the one side, and the principle of sovereignty which, when applied to this field, may be seen as the principle of non-intervention in the internal affairs of States or principle of exclusive jurisdiction enshrined in Article 2.7 of the UN Charter, on the other, and

- Freedom of information as applied to the collected data, on the one hand, and the prior consent of the sensed State resulting from the principle of state sovereignty over natural resources repeatedly proclaimed by the UN General Assembly, on the other.

In support of his contention to convert the UN Principles into a binding convention, Dr. Monserrat draws from a variety of sources amongst which Manfred Lachs, Bin Cheng, Carl Christol, Sridhara Murthi, Joanne Gabrynowicz, Shaida Johnston, Joseph Cordes, Winter Gerd, Wulf von Kries, Sir Arthur Watts, Nandasiri Jasentuliyana, H. L. Van Traa Engelman, Nico Krisch and others are mentioned.

On these bases and coupled with sound personal reasoning, the Special Rapporteur states in no uncertain terms that the 1986 UN Principles are today insufficiently regulated. Nothing is said, for example, about the role of the private sector in carrying out the Principles. In other words, whereas remote sensing technology has rapidly evolved, law-making has come to a halt. Commercial remote sensing companies operate today in a global market place devoid of specific regulation. This, in his view, is a matter of great concern.

Hereunder some of the shortcomings of the UN Principles in the view of our Special Rapporteur Dr. Monserrat Filho.

- Principle I: the definition of remote sensing is very limited and does not include observation, reconnaissance and monitoring activities of productive areas (agricultural, industrial, etc.), transportation (railways, motorways, ports and airports), and services (meteorological services and tourism, for example), nor does it include the verification of compliance with international treaties. There is an undesirable vacuum here.
- Principles II and III: they highlight the importance of the availability of remote sensing to all countries. Hence these activities should also be considered "the province of all mankind" and should have a legal system to match such objective.
- Principle IV: on the protection of the rights and interests of the sensed state. It is essential to outline those rights and duties, undefined in the Principles.
- Principle V: international cooperation and participation of the sensed state in remote sensing activities. The Principle is restricted by the words "such participation shall be based in each case on equitable and mutually accepted terms". This implies that cooperation will be usually dependent on the will of the countries carrying out the activity.
- Principle XII: access to data on a non-discriminatory basis and on reasonable cost terms should equally include access to the available analysed information on the territory of the sensed state. The drafting of this Principle is too vague and flexible, especially in the formula "non-discriminatory basis and on reasonable cost terms" which is left open to interpretation.
- Principle XIV: it limits the application of Article VI of the Space Treaty and creates confusion (responsibility for remote sensing activities vis-à-vis responsibility for outer space activities).

All in all, Dr. Monserrat Filho's main goal is to have a fair and equitable convention to ensure equilibrium between the technological and economic power of sensing states and the legitimate rights and interests of sensed states which, in this relationship, are the weaker side.

The Special Rapporteur therefore concludes and recommends the following:

1. Satellite remote sensing activities must be regulated by a special and comprehensive convention elaborated by the Legal Subcommittee of Copuos on the basis of the UN Principles.

---

[21] Williams, Maureen, ***Observing the Earth from Space in Light of the Principle of Sovereignty,*** Revista Brasileira de Direito Aeroespacial, N° 82, April 2001, and from the same author ***Reflections and Suggestions on Remote Sensing and International Law,*** ZLW 50, Jg. 3/2001.

2. The Convention should clarify, detail and develop the existing Principles and elaborate new ones, if necessary, in order to create a contemporary and effective legal instrument, regulating the international use of the most advanced remote sensing technology for the benefit of all nations and, in this way, harmonising the legitimate rights and interests of the sensing and sensed states.
3. The convention should encourage effective and sound cooperation between public and commercial interests in remote sensing activities, which should be organised as a public service.
4. The freedom of remote sensing by satellites must be preserved, and the right of access by sensed states to data concerning their territory and natural resources must be guaranteed in clear terms. This means, *inter alia,* defining the term "access to data on a non-discriminatory basis and on reasonable costs".

1.3 Comments from Committee members on the UN Principles

Professors Christol, Kerrest, Venturini and Dr. Rajan promptly reacted to our request for comments and sent in useful suggestions on the matters of reference. What follows is a summary of their contributions.

Professor **Christol** considers that, on general lines, the UN Principles may today be seen as part of international custom. Therefore it would be appropriate to start thinking of a future treaty which would "memorialize the customary law". This author puts forward a few suggestions concerning Principle 1, namely that the definitions should be revised and the term "remote sensing" enlarged to cover commercial space activities. Likewise Christol remarks that the issue of the right of the sensing state to engage in this activity without the prior consent of the sensed state remains unresolved by the Principles. He feels it is perhaps too late now to impose treaty restraints on those practices. Regarding the concern shown in the Monserrat Introductory Report on the thorny issue of access to data by developing countries and the principle of non-discrimination, Christol suggests extending the meaning of the word "data" in Principle I both to primary and processed data.

At a later stage Christol mentions the US Commercial Space Act of 1998 (H.R. 1702) which specifies that space science data shall be considered a commercial item and that the focus of US statutes dealing with remote sensing is on commercial subjects. As to the possibility of updating the UN Principles, either with the objective of drawing up a binding international instrument or a set of guidelines, this writer asks himself whether all remote sensing issues should be addressed or would it be more realistic to identify specific issues on which consensus would be more easily achieved? The question is left open for discussion.

Professor Kerrest, in his comments**,** uses the word "obligation" as applied to the provisions laid down in the Principles, which provides an interesting feature when addressing the validity thereof. He observes, *inter alia*, that the obligation of international cooperation in Principles V and VII is not easy to define and that, in practice, it amounts to an obligation to negotiate but not one to reach agreement which, naturally, weakens the strength of that commitment. The obligation "to inform" (Principle X) is, in the view of the writer of reference, not a very hard one for the sensing state to implement. Another outstanding question is the access to data on the part of the sensed state and the meaning of the term "reasonable costs" (Principle XII). Both are left to interpretation with the ensuing uncertainties involved in this procedure. For example, does the reasonable cost requirement refer to the market value? Should the term "reasonable" be applied having in mind the possibilities of developing countries? If not, the advantages recognised by sensing states to developing countries would be meaningless. The expression "taking due account of the needs and interests of developing countries" in that same Principle would be useful -albeit rather vague- Kerrest observes, to argue in favour of the developing world.

Professor Kerrest is in full agreement with the Monserrat Report as to the weaknesses and imprecisions of the 1986 Principles which have not been correctly applied in practice. He quotes, in this respect, an article in ***Space News*** (14 April 2003) where the Imagesat Chief Executive Officer, Menashe Broder, observes that "the customer tasks the satellite to image what it wants and downloads the image without anybody - including this company- knowing what it is doing".

The option of drafting an international convention on this subject is, in Kerrest's view, somewhat of a "mission impossible" given the present political scenario. As to Principle XIV, he agrees with our Special Rapporteur, Frans von der Dunk, in the sense that state responsibility is clearly dealt with, particularly if read together with the obligation of state supervision embodied in Article VI of the Space Treaty.

Dr. Rajan draws from his valuable experience at Copuos during the negotiation of the 1986 Principles, referring to the many difficulties involved in reaching consensus on the text and observing that, unlike contended by many publicists, the main purpose of the Principles was to enable commercial remote sensing satellites to come into being. However, the possibilities of economic applications of this technology in 1986 are no longer valid. The taboos about high resolution satellite imagery have now disappeared in spite of some governments still having archaic laws to restrict them. Similarly, the concept of sovereignty has undergone considerable changes, especially under the WTO régime. Traditional sovereign rights like intellectual property have been substantially curtailed as a result of the progress in technology.

For these reasons, and to be practical, this specialist recommends that this Committee deal with immediate problems. Furthermore, he states, a single unified law may be a utopia. In this respect he agrees with the opinion of Wulf von Kries, quoted by Monserrat in his Introductory Report, which is questioned by the latter. As to Monserrat's idea of remote sensing being a public service, Rajan coincides in principle provided due care is taken to balance the commercial and public service in order to facilitate funds from the private sector for innovation purposes. Likewise, in commenting on Dr. Monserrat's Report, Dr. Rajan refers to the importance of having in mind the fact that commerce is basically competitive and does require a certain degree of secrecy. Indeed, most creative actions in the world do not take place in "transparent openness".

Similarly, Dr. Rajan includes comments on some ideas outlined by Niklas Hedman in his Introductory Report. For instance, in connection with the views expressed at the LSC by some delegations on the high costs of the activity and the possibility of compensating the sensed states for the sensing of their territories. On this point Rajan is openly against any kind of subsidies as such practice would be detrimental to the whole system as well as, in the long run, to the sensed state. As in the cases of Christol and Kerrest, a brief comment is added by Rajan on the use of remote sensing data in legal proceedings. This will be addressed in the following chapter of this Report.

Professor Venturini refers to the importance of having a definition, consistent with the present time, on remote sensing activities. After recalling the many obstacles to be sorted out on the way to consensus within the LSC of Copuos, this author pauses on Monserrat's suggestion that the use of "analysed data" be included in that definition. In her view this idea appears extremely difficult to put in practice as, once the sensed data has been purchased and distributed in accordance with the 1986 Principles, it is doubtful whether their use would need special regulation. Instead this writer suggests filling the gap with national legislation and specific regional or international agreements. Regarding intellectual property questions and patents for satellite sensed data, the rules within the WIPO system may provide useful guidelines.

A concern for privacy as an individual human right stems from Venturini's comments. This question, she holds, should not be overlooked in any international instrument regulating remote sensing. Principle XIV is considered quite realistic as it confines responsibility to the operation of remote sensing satellites and not to the use of data obtained thereby. A conclusion to the contrary would only be acceptable when the use of the data is a wrongful act under international law.

Interesting information is added by Venturini as regards the situation in Italy where no comprehensive legislation on space activities was ever enacted nor, in fact, drafted. The Italian Space Agency (ASI) was set up in 1988 and is involved in the conduction of research programmes (thus devoid of commercial purposes). As in the case of the previous contributions from Committee members Professor Venturini includes a paragraph on the use of satellite imagery in international proceedings, which will be considered under the following specific heading.

C. REMOTE SENSING DATA IN INTERNATIONAL LITIGATION

This question came to the limelight on the threshold of the new millennium following a number of cases submitted to the ICJ and some arbitration procedures where maps based on data collected by earth observation satellites were produced as evidence.

The problem was outlined by the Chair in the New Delhi Report of this Committee[22], on the basis of an experience carried out by the British Institute of International & Comparative Law in 2001 (BIICL, London) which set up a study group of lawyers and experts in the interpretation of satellite data and digital mapping to share their experiences in this field. The group produced a report on the matter which was submitted to the Annual Conference of the BIICL on 22 June 2001, and extensively discussed on the occasion[23].

The various issues involved were however not addressed during the Committee's Working Session in New Delhi, where it was deeply immersed in rounding up the concrete proposals to be made to the Conference in accordance with its terms of reference[24]. The questionnaire mentioned at the outset of this Report, which marked the beginning of our work for Berlin, revealed that the topic was gaining momentum. It was therefore decided to begin the analysis of its scope and implications within the general topic of remote sensing.

At the root of the problem is the fact that even though digital mapping allows little margin for human error in the production of a satellite image, there is plenty of space for error in the interpretation of the image. Which in practice, as observed in the BIICL Report, means that it is the opinion of the expert and not the earth observation data which is used in court.

Let us recall the different stages in the collection of data from space.

1. Earth observation satellites collect the raw data which they send to ground stations. In this primary state the data has no real value and must be processed.
2. The first step -known as preprocessing- is to rectify radiometric and geometric distorsions.
3. Next, the raw data becomes available in digital form and certain aspects of the picture may be enhanced, at the user's request, by means of computers.
4. The user may then ask for the classification of the information gathered, bringing together, for instance, similarities and differences.
5. Ancillary information, such as maps, may de added to prove the results of the satellite image [25].

Therefore, as Niklas Hedman points out in his Introductory Report[26], the remote sensing image submitted to the court is the result of a long chain of measures open to different interpretations. This situation calls for caution in the evaluation by the court of the satellite data provided. Moreover, when analysing the issue of remote sensing data in court proceedings, the fundamental question is the ***legal value of the satellite data*** in court proceedings (italics added). Hedman rightly points out that the proof presented by a party, whether a map, a chart, an aerial photograph or a satellite image, could be argued as having the same basic value as evidence as such, the only difference being the degree of precision. Thus the conclusion that the value of satellite images as evidence could be guided by the position of the ICJ concerning the value of maps. In this sense Hedman refers to the Frontier Dispute case[27], way back in 1986, between Burkina Faso and Mali, where the Court considered that maps could not constitute a binding document or a territorial title by themselves, whatever their accuracy and their technical value, unless the parties concerned had expressed their acceptance.

Eighteen years on, however, the advances of science and technology have led to a completely different international context which indicates the need for further studies on the topic, along the lines of the above-mentioned EOPOLE and APERTURE projects in Europe and other research groups of the kind. The problem, as described by the BIICL Working Group and quoted in the New Delhi Report of the Committee was, *inter alia,* clearly illustrated in the boundary disputes decided by the ICJ in recent years

---

[22] See ***Report on The Review of Space Law Treaties in View of Commercial Space Activities - Concrete Proposals, New Delhi 2002, pp. 192-226, at p. 212.***

[23] The BIICL Final Report is entitled ***Earth Observation Data in the Legal Sector*** and may be found on the BIICL website (www.biicl.org).

[24] Resolution 1/2002 was adopted by consensus at the Plenary Session of the Conference (see p.13 et seq., op. cit. in note 23 supra).

[25] See *inter alia,* Harald Ginzky***, Satellite Images as Evidence in Legal Proceedings relating to the Environment - A US Perspective***, Air and Space Law, Vol. XXV, Kluwer 2000, at p. 115. The problem is addressed by the author from an almost exclusively US perspective and frequently linked to the Fourth Amendment and the right of privacy to establish compatibilities with the use of remote sensing technologies.

[26] See Chapters 5 and 6 of the Hedman Introductory Report circulated to the Space Law Committee members in the second half of 2003.

[27] ICJ Reports 1986, paragraphs 54-55-56.

between Nigeria/Cameroon (judgment of 10 October 2002), Botswana/Namibia (13 December 1999) and Qatar Bahrein (23 March 2001), as well as in the the Yemen/Eritrea arbitration (award of 17 December 1999). In Nigeria/Cameroon, for example, Nigeria used a recent satellite image of a certain area to show its location to the ICJ. The interpretation of the image made by the parties was conflicting and, instead of having a clarifying effect for the Court, it increased confusion. Hence, what Nigeria saw as a very clear way to prove a straightforward point to the Court had the contrary effect [28].

The BIICL Study Group, the Special Rapporteur and the present writer appear to coincide on the need for international standards relating to the methods of production of satellite imagery at court. The pillars upon which these standards are built should have in mind a three-tier criterion as advanced in the BIILC Report, as follows:

- Accuracy of the image or any other end product provided by earth observation data
- Verification of the method by which the satellite data was interpreted so as to confirm the accuracy of the end product, and
- the possibility of satellite imagery interpreters to act as expert witnesses in a court of law [29].

Indeed, the above-listed requirements would have to be coupled with a list of renown international experts from where the parties and the court would be able to draw.

The Space Law Committee members have equally advanced their opinions on this topic. Hereunder a summary of theirviews.

Professor Christol has in mind the possibility of a model statute including provisions to preserve the integrity of the end product of remote sensing. To this effect penalties for the wilful or negligent misrepresentation of facts established by the raw data or analysed information should be included. In this manner a high probative value would exist in future judicial proceedings, both national and international. Proof of harm, he adds, would have to show that a wrongful dissemination of raw data or analysed information was the true reason for subsequent harms. In the drafting of the suggested standards, Christol underlines, work should be carried out in active consultation with the International Organization of Standarization, including the Scientific and Technical Subcommittee of Copuos, to ease the way for widely accepted rules or guidelines.

Professor Kerrest does not entirely agree with Mr. Hedman's position whereby a higher degree of precision would be the only difference between the provision of evidence by satellite data and that supplied by more traditional means (aerial or terrestrial). The reason is that the difficulties concern the very nature of satellite imagery which mainly consists of data and not photographs proper. This point is essential where evidence is concerned. A photograph cannot be modified unless an expert, at a later stage, can prove the falsification.This is not the case when dealing with numbered images that are merely a list of data which can be modified without possibility of detection. On this assumption, and taking into account the presently available techniques, it is imperative to supervise the process of obtaining the image from the moment it is collected right upto the time it is used in court.

Dr. Rajan is of the opinion that the use of remote sensing in national and international litigation will come about in a not distant future. Consequently the international community should start developing some basic rules on the topic to make the transition smoother.

Professor Venturini considers this topic of high interest for the ILA Space Law Committee, and suggests developing internationally recognised standards in order to validate the data and its interpretation. The existing practice in US and European administrative and judicial proceedings reflects the crucial aspects and the key needs underlying the use of satellite data. A reference to internationally agreed standards -the author points out- would help to support the value of satellite imagery when resorted to for different purposes. By way of example Venturini mentions a bill submitted to the Italian Parliament in 2000-2001 concerning the certification of satellite data and its use in court. Even though the bill never went through, it should be seen as an important precedent.

[28] See note 24 supra.
[29] Ibid, p. 75.

D. COMMENTS AND CONCLUSIONS FROM THE COMMITTEE CHAIR

In meeting the terms of reference of the Committee, the scholarly work carried out by the Special Rapporteurs on Remote Sensing and the sound contributions made by Committee members to the elucidation of this topic have certainly provided food for thought and reflection. In the following draft conclusions I shall attempt to draw some common denominators from the views and proposals submitted during the last two years.

1. The UN Principles on Remote Sensing (1986) are, at global level, the only international instrument providing specific rules and criteria on the subject. Most of them are nowadays declarative of customary international law and therefore binding .
2. Given that remote sensing technologies are today a commercial activity *par excellence*, and that space activities carried out by private entities are unrelentingly growing, it appears appropriate to begin the drafting of guidelines to cover certain gaps in the Principles and provide interpretation criteria to shed light on some of the general principles.
3. The definitions laid down in Principle I are not consistent with the present international context. The Principles are silent on significant aspects of remote sensing in today's world, *inter alia*, the distribution, dissemination and commercialisation of data collected by earth observation satellites and subsequently processed.
4. The Principles make no mention of the scope and implications of certain terms embodied therein such as, for example, "access to data on the part of sensed states", "needs of developing countries", "reasonable costs", "consultations" and "state responsibility".
5. There is no consensus within the Space Law Committee -nor within the doctrine at large- on the need to have a binding international instrument on remote sensing.
6. The general feeling, particularly at the inter-governmental level, is that premature solutions should be avoided , especially as no serious claims have been raised so far.
7. Consequently the political arena does not appear favourable for drawing up binding rules.
8. Thus a realistic course of action at this time would be the enactment of domestic law on remote sensing coupled with a revision by governmental bodies and private institutions of the most controversial and/or incomplete aspects of the UN Principles.
9. Domestic legislation should address, in a first stage, issues relating to the protection and distribution of data and licensing procedures, with a view to giving greater transparency to remote sensing activities.
10. Industrialised and developing countries provide today examples of national space legislation and bilateral and regional agreements on remote sensing, addressing issues on which the UN Principles remain silent.
11. As to the protection of data obtained by remote sensing it seems advisable that national laws, in the light of Article VI of the 1967 Space Treaty, deal with questions relating to the authorisation and supervision of private activities in space.
12. Having in mind the high number of States Parties to the 1967 Space Treaty, Article VI thereof may be seen as part of the domestic legislation of a good number of members of the international community.
13. International cooperation is called upon to play a major role in carrying out remote sensing activities, particularly in the ironing out of differences between industrialised and developing countries.
14. It appears timely, within the framework of commercial space activities and their various applications, to start considering guidelines and suggestions on the value of data collected by earth observation satellites and its value as evidence in international and national litigation. In this way the International Law Association would be making an important contribution to a debate which, in the first years of this millennium, is gradually gaining momentum.

E. FUTURE WORK OF THE SPACE LAW COMMITTEE

The proposal is to continue work on (a) remote sensing, with special reference to the discussion of the most controversial UN Principles (1986), and the value of satellite data in international litigation, and (b) national space legislation. The main objective for the 2006 Toronto Conference is to establish the pillars for concrete proposals to be submitted to the 2008 ILA Conference.

In addition, and given the fact that the foregoing topics are closely linked to registration issues - a matter which the Legal Subcommittee of Copuos has now added to its agenda - the Space Law Committee

believes it important to resume the treatment of this question in the course of the next two years, with emphasis on state practice in the field.

Following the practice of this Committee, the issues of space debris and dispute settlement shall continue under permanent review on the basis of the 1994 ILA International Instrument on Space Debris (adopted in 1994) and the ILA Convention on Dispute Settlement related to Space Activities (adopted in 1998).

P A R T II

NATIONAL SPACE LEGISLATION

by

Professor Dr. Stephan Hobe
General Rapporteur

I. Background of the Current Work

The Space Law Committee of the International Law Association finalised its work on the topic of "Review of Space Treaties in View of Commercial Space Activities" at the 70th International Conference of the International Law Association in 2002 in New Delhi. In ILA Resolution 1/2002, the Committee had recommended, with a view to clarification, certain changes to the space treaties in force, to be implemented by means of separate instruments keeping the original text of the treaties intact.

The mandate of the Committee now concerns the study of the "Legal Aspects of Privatisation and Commercialisation of Space Activities with Special Reference to Remote Sensing and National Space Legislation".

The following report will be dealing with the Introductory Reports as well as comments by other members of the Committee, focusing on questions of national space legislation.

II. Results of the Reports by the Special Rapporteurs

All the introductory reports were of excellent quality and provided a great deal of relevant information on the general subject. However, in this specific part of the general report, the special report by Dr. von der Dunk was most relevant as it was almost solely based on questions of national space legislation. Therefore, in the following paragraphs, special attention will be given to the paper by Dr. von der Dunk.

1. Comments by Members of the Space Law Committee

In his comment on the reports by the Special Rapporteurs, **Prof. Carl Christol** (US Branch) highlighted the importance of the existing international legislation on remote sensing activities and briefly explained the United States legislation in this field.
Dr. Rajan (Indian Branch) commented on the papers by **Dr. Monserrat Filho** and **Mr. Hedman** giving useful insights on the matter and by sharing his experience from the drafting of the United Nations General Assembly Resolution 41/65, in the negotiation of which he had actively participated.
Finally, **Prof. Armel Kerrest** (French Branch), although somewhat skeptical concerning the prospects of elaborating an international convention on remote sensing, stressed the importance of national space legislation vis-à-vis the heavy international legal obligations which could be imposed on States in cases of failure or damage caused by national space activities.

2. The Report by Dr. von der Dunk

As already indicated, the report by Special Rapporteur Dr. Frans von der Dunk focused particularly on problems of national space legislation. After having considered the international legal rules that, like Art. VI of the Outer Space Treaty, expressly permit activities by private entities, this author engages in the description of existing national laws concentrating on national laws on remote sensing. Apart from the United States, Sweden, the United Kingdom, the Russian Federation, South Africa, Ukraine and Hong Kong possess specific national space legislation. Only the United States has enacted national space legislation on the specific topic of remote sensing.

The report focuses first on the US legislation.. After this country had enacted, in 1984, the Land Remote Sensing Commercialisation Act, it replaced this Act with the Land Remote Sensing Policy Act of 28 October 1992. The Remote Sensing Act applies to any private person "subject to the jurisdiction or control of the United States" (Sec. 202 (a)). As a consequence, even persons only remotely linked to the US come under the legal regime of the Remote Sensing Act. A non-US citizen who undertakes a private remote sensing activity outside the United States territory would come under the scope of this Act if the US has control of this territory. Thus, a US licence would be required for such an activity.

Sweden's 1982 Space Activities Act covers "activities carried on entirely in Outer Space as well as the launching of objects into Outer Space and all measures to manoeuvre or in any other way affect objects launched into Outer Space". This would clearly include remote sensing activities. This Act applies to all activities undertaken from Swedish territory and/or by Swedish legal and natural persons "anywhere else".

The 1986 United Kingdom Outer Space Act applies to the launching or procurement of launching of a space object or "any activity in Outer Space". Therefore, remote sensing activities by private persons would be covered.

The 1993 Law on Space Activities of the Russian Federation covers explicitly, in Art. 2, para.3, remote sensing activities. Russian law, however, provides that for this specific activity other specific laws and normative acts shall follow.

The 1993 South African Space Affairs Act covers explicitly remote sensing activities.

The 1996 National Law on Space Activities of the Ukraine introduces a licensing and certification requirement for any space activity of a private entity. Any subject willing to provide space activities in the Ukraine or in territory outside the Ukraine but under its jurisdiction, must obtain a license from the National Space Agency of the Ukraine.

Finally, Hong Kong's 1997 Outer Space Ordinance, because ofthe particular situation of Hong Kong, ensures compliance of any licensed activity with international obligations of the Peoples Republic of China. Otherwise, it follows the model of the British Space Activities Act.

Dr. von der Dunk concludes that, so far, only six States have established national laws dealing specifically with satellite remote sensing activities. Some States have a licensing system. but only related to launching activities. The author therefore raises the question of whether or not all private remote sensing activities are covered by the existing legislation. National space legislation would mainly cover issues of international State responsibility based on Art. VI of the Outer Space Treaty. Questions of liability would, at the international level, still be linked to the launching States and thus to the launching activity. It would, as far as the procurement of the launch is covered, mean that liability arrangements would become directly relevant for private remote sensing operators.

Moreover, the Rapporteur identifies as a further relevant research point the problem of whether or not, under a system of licensing being implemented by national space legislation, it would be at the discretion of the licensing authorities to ensure the inclusion of a certain activity to be carried out by the appropriate licencees. In his view it would be crucial for future research to strike a balance between private and commercial interests in remote sensing, on the one hand, and the interests of the public, on the other.

III. Conclusions and Recommendations

1. The Reports

The three Special Reports have given an excellent overview of the current problems of the existing international *lex lata* relating to remote sensing activities, with references to problems embodied in the 1986 Remote Sensing Principles adopted by UNGA Resolution 41/65. With regard to national space legislation, the specific topic entrusted to this General Rapporteur, some interesting observations have been made which open the door to further investigation.

It is a fact that, so far, only a few States have implemented national space laws. In this respect, the question by Committee member Ms Venturini (Italian Branch) has raised an interesting point when stating that the .reluctance of States to implement their international legal obligation according to Art. VI of the Outer Space Treaty, namely to enact national space legislation, means a wilful disregard of this international legal obligation.

Moreover, as to the development of international law, it should be borne in mind that, until now, there has not been much State practice concerning national requirements for private space activities. Taking into account the international legal obligation, stated in Art. VI of the Outer Space Treaty, to enact national space legislation, particularly for cases of private activities in Outer Space, and also considering the strong need for national space legislation due to the increased privatisation and commercialisation caused by globalisation, the search for practical solutions by ILA Space Law Committee seems of great importance. Accordingly, also in the framework of the work of the Committee, it should follow the pattern of "building blocks". This procedure seems indispensable and should be observed when enacting national space legislation. Such "building blocks" should also include, with regard to remote sensing activities, *inter alia*:

- an obligation on States to continuously authorise and supervise space activities,

- an obligation on States to register space objects,

- some regulation on compensation from the State who is held responsible, according to international law, for an action or space activity of a non-State entity and is, at the same time, seeking recovery from this non-State entity, and

- a compulsory insurance requirement for non-State actors, as a necessary consequence.

2. The Berlin Workshop of Project 2001 Plus of the University of Cologne on "National Space Legislation"

These "building blocks" - resulting from a conference of Project 2001 in May 2001 in Cologne[30] - have been further elaborated on in a workshop jointly hosted by the Institute of Air and Space Law of the University of Cologne and the German Aerospace Center (DLR) in January 2004 in Berlin within the framework of the new Cologne Project 2001 Plus. The aim of Project 2001 Plus is to analyse the consequences of globalisation and Europeanisation for future commercial space activities, in particular in the scope of the growing commercialisation and privatisation[31].

The Berlin Workshop took into account the findings of Project 2001´s Workshop "Needs and prospects for national space legislation", the findings of the French study on "Evolution of space law in France" and recent developments of national space legislation. The "building blocks" set up at the Munich Workshop were especially used as a basis for further discussion. They were considered essential corner stones for future space legislation in view of the international law obligations of any State as indicated by the Outer Space Treaty and the Liability Convention.

The first "building block" deals with the *authorisation* of space activities, including issues on the interpretation of the concept of space activities, the application to activities with regard to territory and persons, the observance of the principles, the sharing by governments

[30] See Karl-Heinz Böckstiegel (ed.), 'Project 2001' – Legal Framework for the Commercial Use of Outer Space, Köln/Berlin 2002.
[31] See for a brief description of Project 2001 Plus S. Hobe/J. Hettling, Challenges to Space Law in the 21st Century – Project 2001 Plus, IISL Proceedings of the 45th Colloquium on the Law of Outer Space, Houston 2002, 2003, 57-62.

and non-governmental actors of financial liability risks and the observation of the obligation of cooperation and mutual assistance.

The second "building block" concerns the *supervision* of space activities, a by no means unimportant aspect. Here, the manner in which information is gathered must be considered. Supervision can be carried out by means of periodical information either provided by the holder of an authorisation or gathered by the public authority in accordance with the terms of the authorisation. Moreover, in the case of non-observance of the terms of the authorisation it can be put in practice by means of sanctions and, in the case of violation of its terms, by the revocation or suspension of the authorisation.

The third "building block" deals with *registration* of space objects. This includes the application and interpretation of the concept of space object, the setting up of a national space registry and the determination of the supervisory registration authority. Registration must provide information as required by Art. IV (2) of the Registration Convention and additional information, e.g. the mass of the space object. Moreover, a safety assessment in case a nuclear power source is involved must be included. Furthermore, issues concerning the registration of objects re-entering the Earth atmosphere, the possibility of changes to the registered information and the access to the registry must be addressed.

The regulation of compensation is the fourth "building block". A right to recourse (against the private entity) in case a launching State has paid compensation to another State, according to Art. VII of the Outer Space Treaty and the Liability Convention, must be included. This right to recourse should be made effective even when the damage has been caused solely by a non-governmental entity. It must, however, be limited to a certain fixed sum beyond which the State can guarantee its payment. State support, for all claims, should also be considered.

Additional regulation is considered necessary in connection with insurance and liability issues, patent law and other intellectual property issues, export control regulation, financial security, transport law and dispute settlement. These questions are strongly connected to the problem of fair competition and should be approached accordingly. The issue of financial security also need dealt with, but regulations should not yet be implemented at national level as the UNIDROIT discussion on interests in space property is underway.

The Workshop was organised according to the "building blocks" in order to fill in and complete the framework. As to the first and second "building blocks", administrative procedural aspects and the topic of technical safety evaluation were focused on. The issue of compensation was discussed in detail and so were the insurance and liability related aspects. Finally, methods of harmonisation became an issue.

Concerning the administrative procedure, discussion focused on the length of the authorisation, problems of authorisation fees and the question of acceptance of foreign authorisations, and a number of recommendations were made. On the subject of authorisation procedures, it was observed that in Europe they take from two to six months and a reminder was made in the sense that they should not exceed this time period. Also, as authorisation fees differ from country to country, it was recommended that they be limited to a specific sum, depending on the purpose and the applicant to the space activity.

By comparing the various national space acts it became clear that only the United Kingdom and Australia have acts including the acceptance of foreign authorisations. It was therefore recommended that foreign authorisations be accepted if the authorisation in question complies with similar conditions to those required by a "model law" yet to be elaborated.

On the question of safety, a technical safety evaluation is necessary and might minimise damage caused to contractors and third parties. For most legislations, the technical safety evaluation is therefore an essential requirement. In this regard, industry made a claim for less regulation, especially concerning technical safety. It was held, however, that the methods and criteria used by authorities who are responsible for the evaluation of technical safety need to be harmonised. The authorisation requirements should therefore include quality standards as part of the evaluation. Moreover, it was considered recommendable that the technical safety evaluation be based on documents submitted by the applicant. States should be in touch with standardisation organisations, such as ECSS, in order to agree on certain common goals.

Concerning compulsory insurance, it became evident that there existed major differences in legislation and practice among the European countries. As was recommended, national space legislation should regulate third party insurance liability for the whole duration of the activity, including the re-entry of space objects into the Earth atmosphere. The scope of the coverage should be defined according to the special features of the space activity, but should be limited to a certain amount. The cover note should be determined concerning its suitability in order to provide third party protection from damages caused by space activity. The government should be expressly included as an additional insured person, thereby referring to its liability under international law.

As to matters of liability, three aspects were examined more closely: the limits of a compensation provision in favour of the launching state against a private actor, the statutory regulation / acceptance of cross-waivers and a State guarantee to pay for third party liability claims settled before a foreign court. Concerning the limitation of compensation, there were major differences among the various countries. The recommended practice hereto is that the States should take recourse against a private entity that caused the damage for which the launching state is held liable. The final sum in case of recourse should be limited to a certain amount. The duration should also be limited and the recourse should be drafted taking into account the maximum insurance coverage required. In case of infringement of the law or violation of the authorisation requirements, wilful misconduct or gross negligence, the recourse should be unlimited. The States should also validate cross-waivers of liability since these are widely accepted.

Although the European Union does not, so far, have explicit competence to harmonise national space legislations there are, however, harmonising competences in certain areas relevant to space law, such as environmental issues and transport. Apart from these provisions, a further competence could also be derived from Art. 3 para 1 lit. h of the EC Treaty in order to prevent distortion of the common market. So far, States had to engage in formal or informal consultations and coordination among themselves in order to achieve harmonisation.

The results, described above, of the Workshop are an important step forward towards a harmonised approach for national space legislation in Europe.[32] The next step would arguably be to produce a model law for national space legislation.

3. Recommendation to the Committee

As seen in this perspective, it is recommended that the Committee discuss the “building blocks” and to draft concrete proposals setting the framework and cornerstones for a model law. Such a law should cover all commercial space activities and would set the example for the enactment of national space legislation by States.

[32] See for a brief summary of the discussion at the Berlin Workshop K. Moll, in: Zeitschrift für Luft- und Weltraumrecht 2004 (forthcoming); the proceedings will appear in the course of 2004 as volume 4 in the publication series of Project 2001 Plus.