

INTERNATIONAL LAW GOVERNING THE ACQUISITION AND DISSEMINATION OF SATELLITE IMAGERY

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I. INTRODUCTION

A. Definition and Technology

Satellite imaging or space remote sensing denotes the collection of data (images, information) acquired, in photographic or digital form, by space-based devices, instruments or sensors without any physical contact with the sensed object(s), but using electromagnetic radiation (radio waves).¹ Before the space age began on 4 October 1957, human beings gathered information, on any part of the Earth, on the ground or from air using balloons and aircraft carrying cameras. However, the way humans gathered information on the surface of the Earth changed radically when the first artificial Earth orbiting satellite was launched on 18 August 1960 specifically designed to photograph the Earth's surface. Since then, the technology has advanced considerably both in the military as well as the civil domain.

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¹ See The UN Principles Relating to Remote Sensing of the Earth from Outer Space, G.A. Res. 41/65, U.N. GAOR, 41st Sess. 95th plen. mtg., princ. I. (a), U.N. Doc. A/RES/41/65 (adopted without vote on 3 December 1986) [hereinafter The UN Resolution on Remote Sensing] (defining the term "remote sensing" as "the sensing of the Earth's surface from space by making use of the properties of electromagnetic waves emitted, reflected or diffracted by the sensed objects, for the purpose of improving natural resources management, land use and the protection of the environment"); and The US National Oceanic and Atmospheric Administration (NOAA) General Regulations of the Environmental Data Service, 15 C.F.R. § 960.3 (2000) (defining "remote sensing space systems" as "any device, instrument, or combination thereof, the space-borne platform upon which it is carried, and any related facilities capable of actively or passively sensing the Earth's surface, including bodies of water, from space by making use of the properties of the electromagnetic waves emitted, reflected, or diffracted by the sensed objects").

Remote sensing satellites are of two types, which correspond to the functioning characteristics of their sensors; i.e. passive and active. While passive satellites (with optical sensors) observe merely radiation emitted by the sensed object, active satellites (with radar sensors) emit radiation toward the object being sensed and measure the energy reflected or "backscattered" by that object.² Currently both types of sensors are being used for various applications. However, active satellites using radar or synthetic aperture radar (SAR) sensors are becoming popular because of their advantages as they can take images or "see" at night and through clouds. The "seeing" capability of a satellite is described in its spatial resolution, which corresponds to the size of the smallest object that can be observed by that satellite. For example, a satellite image of one meter (m) resolution indicates that objects measuring one-meter across or more are depicted in that image. This means the higher the resolution of satellite imagery the more detailed and precise information of the sensed objects.³

However, high resolution or quality of satellite images cannot exclusively and automatically result in high quality of and readily useable information. Operating space systems and taking images, which essentially occur in outer space, must be supplemented by ground-based activities for appropriate data processing and interpretation in order to make the satellite imagery practically useful. Satellites collect first imagery in the form of

² Passive sensors like optical imagers measure emitted radiation at any wavelength producing high spatial resolution images and multispectral sensors, using several radio frequency bands, can produce false colour images. On the other hand, active sensors, like radars or synthetic aperture radars, using "backscattered" radiation can measure distance, altitude or velocity and produce high-resolution images. See David H. Staelin & John Kerekes, *Remote Sensing Capabilities*, in HEAVEN AND EARTH: CIVILIAN USES OF NEAR EARTH Space 163, 165 (Dorinda Dallmeyer & Kosta Tsipis eds., 1997).

³ John Pike, *Resolution Comparison*, FEDERATION OF AMERICAN SCIENTISTS, INTELLIGENCE RESOURCE PROGRAM (Dec. 30, 1997), at <http://www.fas.org/irp/imint/resolve3.htm> (last visited June 11, 2000). Comparing satellite resolutions, Pike indicates that "1-meter resolution imagery permits the identification of buildings, and the recognition of vehicles. 2.5-meter resolution imagery is marginally adequate for the identification of buildings, and the detection but not recognition of vehicles. 5-meter resolution imagery permits the recognition but not the identification of buildings, but not the detection of vehicles. 10-meter resolution imagery is marginally adequate for the detection of larger buildings, but not the detection of vehicles." *Id.*

raw data, which is also known as unprocessed data. "Primary data" or "unenhanced data", derived from raw data after some processing, consists of radio signals that have been pre-processed or not yet processed enough to make them useable images or other products.⁴ Primary data is processed with the use of sophisticated computer and other technologies and expertise to produce useable products.⁵ Data interpretation techniques are used to obtain information from images that convey ideas or impressions. Therefore, the term "analysed information" is used to indicate the facts and figures, which result "from the interpretation of processed data, inputs of data and knowledge from other sources".⁶ The degree of accuracy and completeness of the information depends largely upon the interpreter's experience and the knowledge of objects being analysed and their surroundings, which are collected from the material in literature, such as maps, books, articles and reports.

B. Satellite Systems and Their Capabilities: Commercial Opportunities and Security Threats

Since the launch of the first remote sensing satellite in 1960, significant technological advances have been made as active satellites are routinely launched and used, imagery of one-meter resolution is readily available and highly accurate infor-

⁴ The terms "primary data" and "unenhanced data" are synonymous. The UN Resolution on Remote Sensing, *supra* note 1, at princ. I (b) (defining the term "primary data" as "the raw data that are acquired by remote sensors borne by a space object and that are transmitted or delivered to the ground from space by telemetry in the form of electromagnetic signals, by photographic film, magnetic tape or any other means"); 15 C.F.R. § 960.3 (2000) (defining "unenhanced data" as "remote sensing signals or imagery products that are unprocessed or subject only to data pre-processing"). Data pre-processing may include rectification of system and sensor distortions in remote sensing data as it is received directly from the satellite; registration of such data with respect to features of the Earth; and calibration of spectral response with respect to such data. *Id.* It does not include conclusions, manipulations, or calculations derived from such data, or a combination of such data with other data. It also excludes phase history data for synthetic aperture radar systems or other space-based radar systems. *Id.*

⁵ The UN Resolution on Remote Sensing, *supra* note 1, at princ. I (c) ("Processed data means the products resulting from the processing of the primary data, needed to make such data usable").

⁶ *Id.* at princ. I. (d).

mation is being derived by using sophisticated data interpretation techniques and expertise. A large number of remote sensing satellites are currently in orbit and more are expected to be launched in the near future by several countries like Brazil, China, Canada, France, India, Israel, Japan, Russia and the US. They currently provide and will continue providing imagery at various details for numerous civil and military applications.⁷ For example, it is recently reported that by tripling its military space spending Canada will be enhancing its "intelligence-gathering and surveillance of and from Space".⁸ Canada's RADARSAT-1 remote sensing satellite was launched in 1995 and is currently being used for civilian and military applications. It will be replaced possibly in 2003 by RADARSAT-2, which will produce images with 3 m resolution and RADARSAT-3 is also expected to be planned soon.⁹

The Indian Space Research Organisation (ISRO) currently markets worldwide 5.8 m resolution imagery from its Indian Remote Sensing (IRS) satellite series. It has also planned to launch in 2003 its new remote sensing satellite called CARTOSAT, which will produce 2.5 m images and help meet growing demand for satellite imagery in India and abroad.¹⁰

An Israel-US private joint venture called ImageSat will launch and operate the company's Earth Remote Observation Satellite (EROS) which would be derivatives of Israel's OFEQ-3 surveillance satellites. ImageSat, which replaced West Indian Space Company of Cayman Islands, is incorporated in the Netherlands Antilles. The company plans to complete by 2005 the launch of all its satellites, two of which will have 1.8 m resolu-

⁷ For a detailed information about numerous remote sensing satellite systems belonging to various countries, visit: <http://www.fas.org/spp/guide/index.html> (date accessed: 6/11/00).

⁸ L. Pugliese, *Canada Plans to Triple its Military Space Spending*, SPACE NEWS, Nov. 6, 2000, at 3.

⁹ *Id.*

¹⁰ K.S. Jayaraman, *Indian Imagery Business Expected to Boost Profits, and, Antrix Sets Sights on Commercial Satellite Market*, SPACE NEWS, Aug. 7, 2000, at 36. (http://www.skyrocket.de/space/index_frame.htm http://www.skyrocket.de/space/doc_sdat/frs-p5.htm)

tion capability and others would take images with 0.82 m resolution for commercial purposes.¹¹

The US Government's LANDSAT-7 remote sensing satellite, launched more than a year ago, produces 18 m resolution imagery, which is distributed globally.¹² An American private company, Space Imaging, has launched in September 1999 the world's first commercial remote sensing satellite, called IKONOS, that takes black-and-white images with 1 m resolution and colour with 4 m resolution.¹³ For its extensive global commercial operations, Space Imaging has already established business offices in Athens, Tokyo, Seoul and Dubai. It has entered into an agreement with a Turkish company to sell high-resolution images to Turkish industry and to Turkish military, which could buy "intelligence and mapping data at world commercial sale prices".¹⁴ A similar agreement has been concluded with India's Antrix Corporation, the commercial arm of the ISRO, under which IKONOS's 1 m resolution data will be distributed in India.¹⁵ If approved by the US Government, Space Imaging is planning to launch in 2004 its second satellite that will take images with half-meter resolution.¹⁶

The French SPOT (*Système Probatoire d'Observation de la Terre*) satellite has a 10 m resolution. The European Space Agency (ESA) has also launched two Earth Remote Sensing (ERS1 and 2) satellites carrying a SAR. Russia has also been marketing its remote sensing products. At present the best quality data are obtained from the Russian sensor KVR1000 on board some of the Cosmos satellites, which have photographic resolution of about 2 m (or an equivalent of about 1 m pixel size). This is considerably better than that acquired from either the French or the Indian satellites.

¹¹ Barbara Opall-Rome, *ImageSat International Plans Initial Public Offering*, SPACE NEWS, Aug. 14, 2000, at 16.

¹² Ben Iannotta, *Landsat 7 Satellite Maintains Resolution Quality*, SPACE NEWS, Aug. 7, 2000, at 34.

¹³ Burak E. Bekdil & Umit Enginsoy, *U.S. Satellite Operator Offers Imagery to Turkey*, SPACE NEWS, Sep. 11, 2000, at 4.

¹⁴ *Id.*

¹⁵ K.S. Jayaraman, *India, U.S. Firm Agree to Sale of 1-Meter Imagery*, SPACE NEWS, July 17, 2000, at 1.

¹⁶ B.E. Bekdil & U. Enginsoy, *supra* note 13.

Historically, remote sensing was exclusively developed and used for military purposes prior to the launch of the first civilian the American LANDSAT-1 in 1972. It has been estimated that at least 75 per cent of all satellites are launched for military purposes, mainly to increase the effectiveness of terrestrial forces by utilising advanced photographic, electronic and ocean surveillance satellites employed to acquire information on military targets. The early warning, meteorological and highly accurate navigation systems together with the ability to communicate via satellites providing rapid, efficient and reliable capabilities have enhanced the sophisticated modern weapons systems. Such satellite capabilities have been employed in actual wars, e.g. in the Persian Gulf area and Yugoslavia.¹⁷ The most significant impact in the military field has been the application of reconnaissance technology to verification of compliance with the terms of arms control treaties and confidence building measures. Only the US and Russia operate early warning spacecraft. The Russian satellites use the Molniya orbits, in which a satellite takes about 12 hours to go round the Earth once. In contrast, the US early warning spacecraft are put into

¹⁷ In the Gulf War, the US and allied powers had extensively relied on space capabilities, which included (a) seven military remote sensing making 12 passes a day over the area of war, (b) civilian remote sensing satellites like SPOT and US Landsat, (c) 15 – 20 signal intelligence satellites, (d) 3 weather satellites, (e) 4 military communications satellites, and (f) 16 navigation satellites (GPS). According to the US Air Force Chief of Staff, Merril McPeak, "Desert Storm was the first space war, since it was the first occasion on which the full range of modern military space assets was applied to a terrestrial conflict," quoted in Ivan Vlasic, *Space Law and the Military Applications of Space Technology*, in PERSPECTIVES ON INTERNATIONAL LAW 385 (1995); "The successes of DESERT FOX and, for that matter all future military operations, are directly linked to on-orbit assets that are operated by my Component Commanders. Space capabilities are so integral to successful operations that we will never again execute a contingency operation or war plan without the benefit of the space-based systems providing weather, warning, navigation, communication, and intelligence information." *Testimony on National Security Space Programs and Policies, in Review of the Defense Authorization Request for the Fiscal Year 2000 and the Future Years Defence Program, Hearing Before the Strategic Subcomm., Senate Armed Forces Comm., 106th Cong. 1st Sess. (1999)* (written testimony of General Richard Meyers, USAF, Commander-in-chief of U.S. Space Command), available at <http://www.spacecom.af.mil/ussspace/speech14.htm> (last visited Oct. 4, 2001); and Denise N. Shorb, *Space Technology Enhances Allied Force Bomber Missions (in Yugoslavia)*, AIR FORCE NEWS, Apr. 14, 1999, at http://www.fas.org/man/dod-101/ops/docs99/n19990414_990673.htm (last visited Oct. 4, 2001).

the geostationary orbit. The new generation of the US photographic reconnaissance satellites are capable of resolution between 0.10 m and 0.15 m. France has also developed a reconnaissance satellite called HELIOS with a resolution of about 1 m.¹⁸ Germany's interest in photoreconnaissance satellites was revived in April 1989 as Chancellor Helmut Kohl said that: "European observation satellites could enable us, in the future, to monitor compliance with arms control agreements using our own resources."¹⁹

Since the end of Cold War, military remote sensing technology and techniques are being increasingly applied for civilian applications. Consequently, the capabilities of civil remote sensing satellites are increasing to such an extent that they could now be applied to military tasks to a large extent. Besides better resolution of modern systems on board satellite, another significant improvement has been the ability to point the camera side ways. For example, the French SPOT satellite can tilt its optics 30 degrees on either side of its ground track to observe any site within a 950 km swath. This reduces the revisit time of the spacecraft to 2.5 days compared to 16 days. In this way an object could also be viewed from different angles enabling the acquisition of stereoscopic images and, thus, facilitating interpretations. Other recent developments in the remote sensing field include (a) advanced commercial data interpretation techniques and fast distribution channels,²⁰ and (b) better and long-lasting cameras and sensors.²¹ The US military satellites have

¹⁸ *France Begins Work on Helios Reconnaissance Satellite*, 141 AEROSPACE DAILY, Feb. 20, 1987, at 270; *ARIANE SENDS FRENCH SPYSATS INTO ORBIT*, at <http://www.spacedaily.com/spacecast/news/ariane-99x.html> (date accessed June 12, 1999).

¹⁹ Dr. Helmut Kohl, Address in 58 EUROPEAN SPACE AGENCY BULLETIN, May 1989, at 22.

²⁰ Recently, Eastman Kodak Co. declared that it would enter into remote sensing commercial market in order to provide, via Internet, information which it will extract from satellite imagery. Jason Bates, *Kodak Aggressively Chasing New Market in Remote Sensing*, SPACE NEWS, Aug. 28, 2000, at 26.

²¹ *Id.* See also J. Singer, *Sensor May Lengthen Life of Missile Warning Satellites*, SPACE NEWS, Nov. 6, 2000, at 10 ("The US Air Force is developing a new type of infrared sensor that could lengthen the life of missile-warning satellites while reducing their weight and cost").

the capability to provide remote sensing imagery on a very short notice, but such data were not available to the public for civilian applications.²² Recently, the Canadian and European experts developed a new system to prove that "commercially available remote sensing and communication satellites can be used together in a challenging, real-world application" like fighting forest fires with a response time as little as 10 to 15 minutes.²³

There are numerous applications of satellite imagery both for civilian and military purposes. Civilian uses could include: meteorology and weather forecasting, crop monitoring, pollution monitoring and environmental protection, cartography and land use, marine and Earth resources discovery and management, natural disaster assistance, news gathering etc. Military applications of satellite imagery include: reconnaissance, missile launch detection, arms control treaty verification, strategic and tactical planning etc. Increased capabilities of civilian remote sensing satellites and readily availability from commercial sources of satellite imagery are fast developing new applications and a huge worldwide market. However, these developments have started giving rise to security concerns as well. It has rightly been pointed out by Colleen Hanley that:

As the commercial availability of detailed, unclassified imagery increased, so did the concern that commercially available imagery would be used for non-sanctioned military or terrorist activities. High-spatial resolution imagery can reveal the precise location of roads, railways, airport layouts, military installations, and other structures. It can be used to gather intelligence, assist in battlefield mapping, or, in some cases, used in conjunction with cruise missile technology for precise weapons delivery.²⁴

²² Ben Iannotta, *Remote-Sensing System to Help Fight Forest Fires*, SPACE NEWS, Aug. 28, 2000, at 28.

²³ *Id.*

²⁴ Colleen Hanley, *Regulating Commercial Satellites Over Israel: A Black Hole in the Open Skies Doctrine?*, 52 ADMIN. L.R. 423, 427 (2000); General Richard B. Meyers, *Moving Towards a Transparent Battlespace*, DEFENCE REVIEW MAGAZINE, Spring 1999, available at, <http://www.spacecom.af.mil/usspace/defrev.htm> (last visited Oct. 4, 2001). "The proliferation of near real-time, militarily-significant imagery is a major concern for

In view of the increasing security concerns, various countries have started changing their traditionally held regulatory policies on the acquisition and distribution of the remote sensing satellite imagery.

This paper discusses the relevant issues of international law with respect to the following three aspects:

1. Right to acquire remote sensing imagery: right to launch remote sensing satellites
2. Right to disseminate remote sensing imagery (without the prior consent of the sensed State)
3. Right to seek remote sensing satellite imagery (from the sensing State)

In addition, the paper will discuss and examine newly adopted regulations and policies to determine whether or not they are consistent with the applicable principles of international law.

II. INTERNATIONAL LAW

A. *Right to Acquire Remote Sensing Imagery: Right to Launch Remote Sensing Satellites*

Even before the launch of Earth's first artificial satellite on October 4, 1957, legal scholars were advocating that it would not be logical and desirable to extend a State's sovereignty beyond the air space above its territory. Moreover, after the launch of first satellites both by the Soviet Union and the US, no State protested the passage of these satellites over its territory. Such a failure to protest was considered to be a "tacit or implied consent or agreement" among States to allow the free passage of satellites over their territories. This "consent or agreement" was given a formal recognition in the United Na-

us, a concern that would have to be magnified in times of crisis. The debate over distribution of commercial imagery during periods of national crisis is an issue that will take on increasing importance." *Id.*

tions General Assembly (UNGA) Resolution No. 1721 XVI of 1961 and also Resolution No. 1962 XVII of 1963. These Resolutions are viewed as having enunciated legally binding principles (including the freedom of outer space principle) as they have been incorporated *in toto* in the 1967 Outer Space Treaty.²⁵ Article I paragraph 2 of the Treaty clearly specifies that: "Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law."

Although the terms "exploration" and "use" are not defined in the Outer Space Treaty, they are generally understood to include exploitation of outer space for all scientific, military and commercial purposes. The phrase "all States" does not mean that only "States" are allowed to explore and use outer space. This freedom extends to States, their private natural or legal persons under their authority and supervision, and to the international organisations of which they are members.²⁶ However, the freedom of use of outer space is not absolute, but rather an attribute of State sovereignty which may be referred to as freedom of action.²⁷ Since this sovereignty is not outside or above the law, freedom of action can thus be exercised only within the limitations prescribed and to the extent allowed by law.²⁸ As noted earlier, the Outer Space Treaty entitles all States to freedom of action, but such freedom is allowed to be exercised only "without discrimination of any kind", "on a basis of equality", and "in accordance with international law". The phrase "with-

²⁵ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Jan. 27, 1967, 610 U.N.S.T. 205 (entered into force Oct. 10, 1967) [hereinafter the Outer Space Treaty] (currently there are over ninety States Parties to this Treaty).

²⁶ *Id.* at art. 6.

²⁷ Thomas R. Adams, *The Outer Space Treaty: An Interpretation in Light of the No-Sovereignty Provision*, 9 HARV. INT'L J. 140, 141 (1968).

²⁸ ARTHUR LARSON & WILFRED JENKS ET AL., SOVEREIGNTY WITHIN THE LAW 433 (1965). "Sovereignty of the State consists of its competence as defined and limited by international law and is not a discretionary power which overrides the law." *Id.* See also Gerald Fitzmaurice, *The General Principles of International Law Considered from the Standpoint of the Rule of Law*, 92 RECUEIL DES COURS 49 (1957). "States are sovereign but it does not imply for them an unlimited freedom of action". *Id.*

out discrimination of any kind", read in conjunction with the Preamble and other provisions of the Outer Space Treaty, implies that if certain States are able, only at a later stage, to make use of outer space, their freedom shall not be circumscribed by those States that have already placed their satellites in orbits around the Earth. The phrase "on the basis of equality" refers to the equal rights of all States to explore and use outer space. The term "equality" must be understood to mean *de jure* equality or "sovereign equality" as recognised in Article 2(1) of the Charter of the United Nations.²⁹ Since absolute freedom of action may lead to chaos, emphasis on the equality of States serves to guarantee the protection of the rights of all States. Space activities must be carried out "in accordance with international law, including the Charter of the United Nations." One of the most important rules of international law that applies to the use of outer space is that States must exercise their rights in such a way as not to abuse their rights³⁰ and not to adversely interfere in the enjoyment of similar rights by other States.³¹ In

²⁹ "International persons (States) are equal before the law when they are equally protected in the enjoyment of their rights and equally compelled to fulfill their obligations." EDWIN D. DICKINSON, *THE EQUALITY OF STATES IN INTERNATIONAL LAW* 3 (1920).

³⁰ Under international law, the concept of "abuse of rights" provides that States are responsible for their acts "which are not unlawful in the sense of being prohibited" but cause injury to other States. IAN BROWNLIE, *PRINCIPLES OF PUBLIC INTERNATIONAL LAW* 446-447 (1998). See also *Id.* at 448 (quoting Lauterpacht). Also according to Lauterpacht, "There is no legal right, however well established, which could not, in some circumstances, be refused recognition on the ground that it has been abused." *Id.*

³¹ See Preliminary Report on Int'l Liability for Injurious Consequences Arising out of Acts not Prohibited by Int'l Law, paras. 52, 56 and 60, UN Doc. A/CN.4/334/Add.2, (1980) (opining that "a universe of law postulated that the freedom of each of its subjects should be bounded by equal respect for the freedoms of other subjects; that States engaging in an activity which might cause injurious consequences internationally should take reasonable account of the interests and wishes of other States likely to be affected"); Cf. Record of Meeting Held on Feb. 11, 1982, 4, UN Doc. A/AC.105/C.2/SR.369, (1982). See also *Fisheries* (U.K. v. Nor.) 1951 L.C.J. No.74, at 116 (Dec. 18); and MANFRIED LACHS, *THE LAW OF OUTER SPACE: AN EXPERIENCE IN CONTEMPORARY LAW-MAKING* 117 (1972). "There can be no doubt that the freedom of action of States in outer space or on celestial bodies is neither unlimited absolute or unqualified, but is determined by the right and interest of other States. It can therefore be exercised only to the extent to which as indicated it does not conflict with those rights and interests. There should therefore be no antinomy between the freedom of some and the interest of all." *Id.*

other words, the right of freedom of use of outer space by States is limited by analogous rights of other States.

It is generally considered that the legal principle of freedom of exploration and use of outer space has become a part of customary international law (in fact *jus cogens*³²) that is binding upon all States, whether or not they are Parties to the Outer Space Treaty.³³ Irrespective of the challenge posed by the so-called Bogotá Declaration,³⁴ the universal validity of the freedom of exploration and use of outer space remains unaffected.³⁵

It is pertinent to note here that remote sensing by aircraft has been carried out before the advent of satellites. Such activity has always been governed by the principles of State sovereignty over the airspace above a State's territory as recognised under international law.³⁶ Remote sensing by satellite, on the other hand, is a space activity carried out under the legal regime of freedom of use of outer space. Therefore, the use of satellites for remote sensing has not been seriously questioned because a satellite, not being an aircraft³⁷, would not be subject to the legal regime of State sovereignty. Temporary passages of satellites through air space of States while "going to" or "coming

³² Vienna Convention on the Law of Treaties, May 23, 1969, art. 53, U.N. Doc. A/Conf. 39/28, UKTS 58 (1980), 8 ILM 679. "A treaty is void if, at the time of its conclusion, it conflicts with a peremptory norm of general international law. For the purposes of the present Convention, a peremptory norm of general international law is a norm accepted and recognised by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character." *Id.*

³³ Ian Vlasic, *The Growth of Space Law 1957-65; Achievements and Issues*, in YEARBOOK OF AIR AND SPACE LAW 365, 379-380 (1965). See also NICOLAS M. MATTE, AEROSPACE LAW: TELECOMMUNICATIONS SATELLITES 30-31 nn. 60-62 (1982).

³⁴ See Declaration of the First Meeting of Equatorial Countries, Dec. 3, 1976, reprinted in 2 MANUAL ON SPACE LAW 383 (Nandasiri Jasentuliyana & R. Lee eds., 1979) (hereinafter Bogotá Declaration).

³⁵ Under the Bogotá Declaration, a number of equatorial States had declared their sovereignty over those portions of the geostationary orbit that are above their national territories. *Id.* These claims have generally been dismissed as contrary to the established principles of international law. See also Ram Jakhu, *The Legal Status of the Geostationary Orbit*, 7 ANNALS OF AIR AND SPACE LAW 333 (1982).

³⁶ Convention on International Civil Aviation, Dec. 7, 1944, art. 1, 61 Stat 1180, 1180 [hereinafter Chicago Convention]. "The contracting States recognise that every State has complete and exclusive sovereignty over the airspace above its territory." *Id.*

³⁷ An "Aircraft" is a "machine which can derive support in the atmosphere from the reaction of the air": Annex 6 to the 1944 Chicago Convention, *Id.*

from" outer space have also been accepted by States without any significant protest.³⁸

An obvious conclusion drawn from the above discussion is that every State is equally entitled to launch remote sensing satellites to acquire all sorts of imagery without discrimination of any kind. Each State is prohibited to abuse its rights and is obliged to respect the corresponding rights and interests of other States. Therefore, each State is entitled to launch remote sensing satellites for acquiring imagery for scientific, military and commercial purposes without any kind of prior authorisation or consent from the sensed State(s). Since the provisions of the Outer Space Treaty provide the general legal regime for the exploration and use of outer space, the United Nations General Assembly's Committee on Peaceful Uses of Outer Space (COPUOS) has been attempting to adopt a specific legal regime to govern the acquisition and distribution of satellite imagery. Since the freedom of use of satellites for acquiring remote sensing data imagery is generally recognised, the main focus of the debates in the COPUOS has been on the distribution of remote sensing imagery acquired with the use of satellite(s).³⁹

³⁸ See D. Goedhuis, *The Question of Freedom of Innocent Passage of the Space Vehicle of One State Through the Space Above the Territory of another State which is not Outer Space*, 2 COLLOQUIUM ON THE LAW OF OUTER SPACE 42, 42-43 (1960). See also ANDREW G. HALEY, *SPACE LAW AND GOVERNMENT* 62-63 (1963); MYRES MCDUGAL ET AL, *LAW AND PUBLIC ORDER IN SPACE* 203 (1963); JOHN COOPER, *EXPLORATIONS IN AEROSPACE LAW: SELECTED ESSAYS BY JOHN COBB COOPER 1946-1966* 274 (Ivan Vlasic ed. 1968). However, the Council of the International Civil Aviation Organisation has been of the opinion that "(d) The right of innocent passage of spacecraft through the sovereign airspace is proposal *de lege ferenda* (i.e. a legislative proposal not reflecting the existing law); such right does not exist under the present international law of the air; an unconditional right of passage through the sovereign airspace does not exist even with respect to the civil aircraft and is specifically subject to a special authorisation with respect to State aircraft and pilot-less aircraft; (e) The operation of spacecraft in the airspace may require operational co-ordination with air navigation services to ensure the safety of air navigation." (ICAO Doc. C-WP/8158 of 15/1/86 as presented by the ICAO Observer to the Legal Subcommittee of the COPUOS at its 1986 session)

³⁹ Ivan Vlasic, *Principles Relating to Remote Sensing of the Earth from Space*, 1 *MANUAL ON SPACE LAW* 303, 309 (Nandasiri Jasentuliyana & R.S.K. Lee eds., 1979) (stating, "...the principal concern of States in relation to remote sensing was not so much the lawfulness of the observation activity conducted from space, which few contested, as the question of the disposition of data gathered by remote sensing satellites.").

B. Right to Disseminate Remote Sensing Imagery (without the Prior Consent of the Sensed State)

The legality of dissemination of the satellite imagery has been the subject of controversy in the COPUOS for over two decades. There essentially were two opposing views: one stressed sovereignty in the form of freedom of action of the sensing State and the other pleaded sovereignty over natural resources of the sensed State. The first view was presented by the States (i.e. the US and some of the Western countries) that advocated the unrestricted use of satellites for remote sensing and freedom of distribution of satellite imagery. The second view, advanced mainly by the Socialist and developing countries, stressed that the reception, processing and distribution of the imagery acquired with satellites are essentially earth-based activities and thus must be governed by State sovereignty, especially the universally recognised principle⁴⁰ of permanent sovereignty over natural resources within a State's territorial jurisdiction.⁴¹ They advocated the need of prior consent of the sensed State for distribution of satellite imagery to third State(s). This view is well expressed in the following position, which was jointly propagated by the Soviet Union and France:

A State which obtains information concerning the natural resources of another State as a result of remote sensing activities shall not be entitled to make it public without the clearly expressed consent of the State to which the natural resources belong or to use it in any other manner to the detriment of such State. Documentation resulting from remote sensing activities may not be communicated to third parties, whether Governments, international organisations or private persons, without the consent of the State whose territory is affected.⁴²

This view was not shared by other delegations to the COPUOS. However, after lengthy discussions in the COPUOS,

⁴⁰ Declaration on Permanent Sovereignty over Natural Resources, G.A. Res. 1803 (XVII), U.N. GAOR, (1962).

⁴¹ This principle is considered to have become a part of *jus cogens* applicable to all States. See BROWNLEE, *supra* note 30, at 515.

⁴² UN Doc. A/AC.105/C.2/L.99 (1974).

the UN General Assembly, on the recommendation of the COPUOS in 1986, finally adopted unanimously a Resolution containing the Principles Relating to Remote Sensing of the Earth from Outer Space.⁴³ Principle IV of the Resolution recognizes the interests of the sensed State(s) as it provides that remote sensing activities,⁴⁴

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. Such activities shall not be conducted in a manner detrimental to the legitimate rights and interests of the sensed State.

However, it is nowhere mentioned in the Resolution that the sensing State should seek the consent or authorisation of the sensed State prior to the distribution of the imagery acquired with the use of a satellite. As noted earlier, the principle of full and permanent sovereignty of all States over their natural resources is a principle of customary international law. However, the information about these resources acquired by remote sensing satellite becomes the property of the sensing State, which remains free to use or disseminate this information. Moreover, it should be kept in mind that the launching State [i.e. State of Registration] retains jurisdiction, control and ownership over its satellites launched into outer space⁴⁵ and consequently over the benefits accrued, including imagery acquired with the use of satellite(s). In other words, the right of control over and ownership of satellite imagery are based on the principle of State sovereignty,⁴⁶ though within the parameters of

⁴³ The UN Resolution on Remote Sensing, *supra* note 1.

⁴⁴ The term "remote sensing activities" as defined by Principle I (para f) of the UN Resolution on Remote Sensing means "the operation of remote sensing space systems, primary data collection and storage stations, and activities in processing, interpreting and disseminating the processed data". *Id.*

⁴⁵ Outer Space Treaty, *supra* note 25, art. 8.

⁴⁶ State sovereignty implies the existence and the freedom of action of States, as limited by international law, in their international relations as well as with respect to their internal affairs; especially, the freedom of exclusive jurisdiction over their terri-

international law. Thus, a State, in its relations with others, is authorised to both positive and negative rights over its property (including property belonging to its nationals); i.e. a State can use or dispose of its property as well as not to use or not to distribute to others. It is well known that only a State is the best judge, within the parameters set by international law, of its actions and thus it may decide not to disseminate all or certain type of satellite imagery to others. In this regard, the latest regulatory policy initiatives of the US and other countries are enlightening and relevant.

In 1997, at the request of Israel, the US decided, by adopting a law, for not allowing any American satellite operator to collect or distribute a certain type of satellite imagery of Israel's territory.⁴⁷ This prohibition applies to such imagery, which is no more detailed or precise than the satellite imagery of Israel which is routinely available from commercial sources. The US has also decided not to declassify or otherwise release satellite imagery with respect to Israel unless the satellite imagery of Israel is no more detailed or precise than what is routinely

tory, their personal jurisdiction over their citizens and legal persons established under their jurisdiction, things present and matters happening in their jurisdiction.

⁴⁷ See National Defense Authorization Act for Fiscal Year 1997, S. Rep. No. 104-278, 104th Cong., 2nd Sess. (1996). Authorizing appropriations For Fiscal Year 1997 For Military Activities of the Department of Defense, For Military Construction, And For Defense Activities of the Department of Energy, To Prescribe Personnel Strengths For Such Fiscal Year For The Armed Forces, And For Other Purposes:

PROHIBITION ON COLLECTION AND RELEASE OF DETAILED SATELLITE IMAGERY RELATING TO ISRAEL AND OTHER COUNTRIES AND AREAS.

COLLECTION AND DISSEMINATION – No department or agency of the Federal Government may license the collection or dissemination by any non-Federal entity of satellite imagery with respect to Israel, or to any other country or geographic area designated by the President for this purpose, unless such imagery is no more detailed or precise than satellite imagery of the country or geographic area concerned that is routinely available from commercial sources.

DECLASSIFICATION AND RELEASE – No department or agency of the Federal Government may declassify or otherwise release satellite imagery with respect to Israel, or to any other country or geographic area designated by the President for this purpose, unless imagery is no more detailed or precise than satellite imagery of the country or geographic area concerned that is routinely available from commercial sources.

available from commercial sources. It is important to note that similar prohibitions on the collection and distribution of satellite imagery of any other country or geographical area can be imposed by the President of the US. Though the phrases like "no more detailed or precise" and "routinely available from commercial sources" are ambiguous and could create problems in the future, yet from the international law perspective it is important to note that this American decision demonstrates two points: Firstly, the sensing State controls the collection and distribution of satellite imagery and secondly, the sensing State has the right to distribute as well as not to distribute satellite imagery with or without the agreement with the sensed State(s), but subject to its obligations under international law.

In order to further expand and implement the above-mentioned prohibitions, the National Oceanic and Atmospheric Administration (NOAA) of the US Department of Commerce, has issued new Interim Final Regulations relating to the "Licensing of Private Land Remote-Sensing Space Systems."⁴⁸ These Regulations have been issued on 31 July 2000 under the Land Remote Sensing Policy Act of 1992,⁴⁹ as amended by the 1998 Commercial Space Act⁵⁰ and the Presidential Policy announced March 10, 1994.⁵¹ The Regulations provide for requirements for the licensing, monitoring and compliance of operators of private Earth remote sensing satellite systems. They also include provisions that are considered necessary for the promotion of the collection and availability of satellite imagery, while preserving US national security interests, foreign policy and international obligations.

Under Section 960.4 of these Regulations, a license is required by a person subject to the jurisdiction or control of the

⁴⁸ NOAA, 15 C.F.R. Part 960 (Docket No.: 951031259-9279-03) RIN 0648-AC64.(current through May 26, 2003, 68 FR 28646). The date for public comments on this interim final rule was extended until 30 October 2000. [hereinafter referred to as the 2000 US Remote Sensing Regulations].

⁴⁹ Land Remote Sensing Policy Act of Oct. 28, 1992, Sec. 202 (b)(2), Pub. L. No.102-555, 15 U.S.C. § 5601-5672, 106 Stat. 4163.

⁵⁰ Commercial Space Industry Act, H.R. 1702, 105th Cong. (1998).

⁵¹ Entitled, "US Policy on Foreign Access to Remote Sensing Space Capabilities" (PDD 23).

United States who operates or proposes to operate a private remote sensing satellite system, either directly or through an affiliate or subsidiary. The phrase "person subject to the jurisdiction or control of the United States" has been defined very broadly and can include foreign entities that, for example, use a US launch vehicle and/or platform; operate a spacecraft command and/or data acquisition or ground remote station in the United States; and process the data at and/or market it from facilities within the United States.⁵² Each licensee is required to comply with the Land Remote Sensing Policy Act of 1992, these Regulations and the conditions of his license. These conditions would include that:

(a) The licensee shall maintain operational control from a location within the United States at all times, including the ability to override all commands issued by any operations centers or stations. (the so-called shutter control right of the US government).

(b) The licensee could be required by the US Secretary of Commerce to limit data collection and/or distribution as determined to be necessary to meet significant national security

⁵² See 15 C.F.R. § 960.3. "Person means any individual (whether or not a citizen of the United States) subject to U.S. jurisdiction; a corporation, partnership, association, or other entity organized or existing under the laws of the United States; a subsidiary (foreign or domestic) of a U.S. parent company; an affiliate (foreign or domestic) of a U.S. company; or any other private remote sensing space system operator having substantial connections with the United States or deriving substantial benefits from the United States that support its international remote sensing operations sufficient to assert U.S. jurisdiction as a matter of common law." Furthermore, "beneficial owner" means "any person who, directly or indirectly, through any contract, arrangement, understanding, relationship, or otherwise, has or shares: the right to exercise administrative control over a licensee; and the power to dispose of, or to direct the disposition of, any security interest in a license. All securities of the same class beneficially owned by a person, regardless of the form which such beneficial ownership takes, shall be aggregated in calculating the number of shares beneficially owned by such person. A person shall be deemed to be the beneficial owner of a security interest if that person has the right to acquire beneficial ownership, as defined in this definition, within sixty (60) days from acquiring that interest, including, but not limited to, any right to acquire beneficial ownership through: the exercise of any option, warrant or right; the conversion of a security; the power to revoke a trust, discretionary account, or similar arrangement; or the automatic termination of a trust, discretionary account or similar arrangement." *Id.*

or significant foreign policy concerns, or international obligations of the United States.⁵³

The terms "significant national security" and "significant foreign policy concerns" are nowhere defined in the Regulations and thus can be used arbitrarily, depending upon the political convenience of the American Administration in power at a given time. It is not difficult to see that because of these Regulations, the US policy and law, in practice, will have an extensive extra-territorial application with respect to the collection and/or distribution of satellite imagery by not only American satellites but also by non-American systems like, the Canadian RADARSAT system.⁵⁴

In fact, Canada has already declared to follow the American approach in developing national controls on the collection and distribution of satellite imagery. On 9th June 1999, the Canadian Ministers for Defence and Foreign Affairs jointly issued a policy statement according to which Canada will develop new legislation to control commercial remote sensing satellites.⁵⁵ The new law will enable the processing, analysis, exploitation and distribution of data collected by high-performance satellites but subject to the Canadian national security and foreign affairs interests.⁵⁶

India is trying to control the distribution of satellite imagery but to its own nationals. Under a July 2000 agreement between the Government of India and Space Imaging company of the US, "sensitive Indian installations such as military bases and airfields will be blotted out of Ikonos images before they are

⁵³ *Id.* § 960.11.

⁵⁴ Jason Bates, *NOAA Lifts Cap on Foreign Investment in Satellite Imaging*, SPACE NEWS, Aug. 14, 2000, at 1. "Radarsat-2, imaging satellite also could fall under US jurisdiction. Radarsat-2 is being built by MacDonald Dettwiler and Associates, a Canadian subsidiary of Orbital Sciences Corp., Dulles." *Id.*

⁵⁵ DEPARTMENT OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE, NEWS RELEASE NO. 134 (June 9, 1999) [Hereinafter Canada News Release No. 134].

⁵⁶ *Id.* "As modern remote sensing satellites can produce imagery whose quality approaches that obtained from specialized intelligence satellites, we must ensure that the data produced by Canadian satellites cannot be used to the detriment of our national security and that of our allies."

distributed" in India.⁵⁷ The usefulness and effectiveness of this approach are questionable.⁵⁸ However, this example provides further evidence of State practice to control the distribution of satellite imagery at least about its own territory and to its own nations. India's control practice, undoubtedly, is quite limited as compared to that of the US.

Meteorological data has always been considered to be a public good to be used to benefit all. This was one of the main reasons that even the US did not privatise meteorological satellites when it opened the Earth resources remote sensing satellites for private operation. Meteorological data has always been exchanged freely on a non-discriminatory basis and without any fee. However, the World Meteorological Organisation (WMO) at its 12th Congress in 1995, for the first time in its history, adopted a Resolution that imposed a restriction, though limited, on the exchange of meteorological data among the member States of the WMO.⁵⁹ The Resolution includes a provision that allows member States to place conditions on the re-export of meteorological data for commercial purposes. It has been rightly observed that the Resolution "has hampered the free flow of meteorological data for weather services world-wide for the largest operational application of remote sensing."⁶⁰

The European Organisation for the Exploration of Meteorological Satellites (EUMETSAT), an intergovernmental European organisation, has been established with the primary objective of acquiring, maintaining and exploiting operational meteorological satellites. EUMETSAT retains "world-wide exclusive ownership of all data" produced by its satellites. Since 1994, EUMETSAT has been encrypting its satellite data with the intention of restricting the availability of the data only to those

⁵⁷ Jayaraman, *Supra* note 15. "This is a security requirement even for the 5.8-meter resolution imagery from India's own remote sensing satellites."

⁵⁸ *India's Futile Imagery Policy*, SPACE NEWS, July 24, 2000, at 22.

⁵⁹ 12th World Meteorological Congress, Res.40 (Cg-XII), (1995). "WMO Policy and Practice for the Exchange of Meteorological and Related Data and Products Including Guidelines on Relationships in Commercial Meteorological Activities." *Id.*

⁶⁰ Joanne I. Gabrinowicz, *Expanding Global Remote Sensing Services*, in PROCEEDINGS OF THE WORKSHOP ON THE SPACE LAW IN THE TWENTY-FIRST CENTURY 97, 108 (2000).

who have been specifically authorised. Thus its data distribution practice has become more restrictive.

The 1998 Agreement between EUMETSAT and NOAA provides for guiding principles for the dissemination of satellite meteorological data from the merged US and European satellite systems.⁶¹ Under these guiding principles a certain type of satellite data could be denied to an enemy country during crisis or war. The phrase "crisis or war" includes "a peacemaking or peacekeeping operation involving US and Allied personnel and resources."⁶²

A brief discussion in this section shows that (a) subject to applicable principles of international law, each State is entitled to distribute or not to distribute all or certain type of satellite imagery to others without the consent of the sensed State(s), (b) the distribution or denial of satellite imagery is essentially determined by national laws and policies of the sensing State(s), and (c) a increasing number of States have started adopting their laws and policies to restrict the distribution of satellite imagery while maintaining their right to acquire such imagery without the consent of the sensed State(s).

C. Right to Seek Remote Sensing Satellite Imagery (from the Sensing State)

A State cannot be considered legally entitled to a right to seek from the sensing State satellite imagery of a third country in view of the right of the sensing State, as discussed above, to deny to distribute such imagery. However a question arises: does the sensed State have a right under international law to seek or demand from the sensing State the satellite imagery of its own territory? In this regard, one must discuss Principle XII of the 1986 UN Principles on Remote Sensing, which provides that:

⁶¹ Agreement Between the United States National Oceanic and Atmospheric Administration and the European Organisation for the Exploration of Meteorological Satellites on an Initial Joint Polar-Orbiting Operational satellite Systems, 19 Nov. 19, 1998.

⁶² *Id.*, Annex 1.

As soon as the primary data and the processed data concerning the territory under its jurisdiction are produced, the sensed State shall have access to them on a non-discriminatory basis and on reasonable cost terms. The sensed State shall also have access to the available analysed information concerning the territory under its jurisdiction in the possession of any State participating in remote sensing activities on the same basis and terms, taking particularly into account the needs and interests of the developing countries.

Does this Principle on non-discriminatory access (i.e. open skies) entitle the sensed State to a right to demand satellite imagery about its territory? An answer to this question depends upon the legal status of the 1986 UN Resolution on Principles on Remote Sensing. However, the legal status of the Resolution still remains somewhat controversial as there are two schools of thought on the issue: one strongly believes that the Resolution has become part of customary international law, thus binding all States;⁶³ and second acknowledges its value as merely a recommendation, without any legal obligations.⁶⁴ Even if one accepts that this Resolution is not part of customary international law, one must not ignore the fact that this Resolution, particularly its Principle on non-discriminatory access, has often been cited by various nations and their entities as an authoritative principle applicable to their satellite imagery distribution policies.⁶⁵ Of particular interest here is the provision in the cur-

⁶³ Gabrynowicz, *supra* note 60, at 100-104; Robert A. Ramey, *Armed Conflict on the Final Frontier: The Law of War in Space*, 48 AIR FORCE LAW REVIEW n.501 (2000); and Philippe Gaudrat & Paul H. Tuinder, *The Legal Status of Remote Sensing Data: Issues of Access and Distribution*, in OUTLOOK ON SPACE LAW OVER THE NEXT 30 YEARS 351, 353 (Gabriel Lafferranderie & Daphne Crowther eds., 1997).

⁶⁴ Michael Bourbonniere & Louis Haeck, *Canada's Remote Sensing Program and Policies*, in COMMERCIAL OBSERVATION SATELLITES: AT THE LEADING EDGE OF GLOBAL TRANSPARENCY 263, 287 n.4 (John Baker, Kevin O'Connell & Ray Williamson eds., 2001).

⁶⁵ Gabrynowicz, *supra* note 60, at 101, n.26 (citing The US Commercialization Act, (14 U.S.C. §§ 4201-4292 (1984)), now repealed and replaced with the US Land Remote Sensing Policy Act of 1992, (5601-5642; Canadian RADARSAT Data Policy, Document no. RSCA-PR0004, Sec. 10.1 b., (Canadian Space Agency), July 13, 1994, at 11; ESA Envisat Data Policy, ESA/PB-EO (97) rev. 3, Paris, (European Space Agency), 19 Feb. 98; Principles of the Provision of ERS Data to Users, ESA/PB-EO (90) 57, rev. 6 Paris, 9

rently applicable US Land Remote Sensing Policy Act of 1992, which expresses the American position on the issue as it obliges each private remote sensing satellite operator to "make available to the government of any country (including the United States) unenhanced data collected by the system concerning the territory under the jurisdiction of such government as soon as such data are available and on reasonable terms and conditions".⁶⁶ Thus the US legislation appears to maintain its consistency with the 1986 UN Resolution, except that it adds conditions to such non-discriminatory access, as discussed below.

Principle XII of the 1986 UN Resolution under its mandatory wording (e.g. "shall have access") clearly recognises the legal right of the sensed State to seek from the sensing State satellite imagery of its own territory. This Resolution, as noted earlier, has been the result of lengthy discussions and compromises between the member States of the COPUOS and seems to have achieved a good compromise as it was finally adopted unanimously.⁶⁷ While the Resolution has accepted the position of the Western States by recognising the right of the sensing State to acquire satellite imagery without the consent of the sensed State, it has also incorporated the position taken by the Socialist and developing countries as it recognises their interests in having non-discriminatory access to satellite imagery of their respective territories. It is therefore expected of the sensing State(s) to positively respond to the requests by the sensed

May 1994, (European Space Agency, Earth Observation Programme Board), Sec. 2 General Principles, 2.1 Legal Principles, para. 2, at 2.)

⁶⁶ The UN Resolution on Remote Sensing, *supra* note 49 (The provisions of this subsection are repeated in Sec. 960.11(b) 10 of the 2000 US Remote Sensing Regulations, *supra* note 48).

⁶⁷ Stephan Gorove, *Developments in Space Law: Issues and Policies*, 10 *UTRECHT STUDIES IN AIR AND SPACE LAW* 300 (1991). "The long negotiations accompanying the drafting of Principles on Remote Sensing revealed strongly held political convictions and ideological beliefs frequently at loggerhead positions. It was quite a feat to bridge the seemingly irreconcilable views and come up with a text that the countries in the North and South, East and West could live with. The reason for the final success may be attributed to the hard work and willingness of COPUOS members to go an extra mile, resulting in a give and take.." See also Gaudrat & Tuinder, *supra* note 63, (according to whom the Principles in the 1986 UN Resolution, "which can now be considered as being part of customary international law, provide for a balance between the freedom of observation for the sensing states and the right of having access to these data by the observed state.").

States for satellite imagery of their respective territories.⁶⁸ A denial of such a request would likely be considered contrary to the provisions of the 1986 Resolution, particularly of its Principle XII. It must however be recognised that this right of the sensed State may be limited in scope because of the following reasons:

1. The UN Principles apply only to satellite imagery acquired for "the purpose of improving natural resources management, land use and the protection of the environment". This does not include imagery for meteorological and military purposes.
2. The sensed State could have access "on a non-discriminatory basis and on reasonable cost terms". This phrase is not defined and is open to several inconsistent interpretations, which could possibly make it an ineffective right.
3. As noted above, the sensing State (or its relevant entity) maintains ownership over imagery acquired by its satellites and determines the distribution or denial of such imagery, though in accordance with international law.

Therefore, the practical implementation of the right to non-discriminatory access might run into some problems. A brief discussion of the applicable US law gives us a sample of such problems. The US data policy for remote sensing satellite systems has been specified in Section 960.12 of the 2000 Regulations on Licensing of Private Land Remote-Sensing Space Systems. It *inter alia* provides that:

1. If the US government has financially supported a satellite system, the licensee will be obligated that "all of the unenhanced data from the system be made available on a non-

⁶⁸ It must also be noted that Principle XII recognises particular "needs and interests of the developing countries" with respect to non-discriminatory access to satellite imagery of their respective territories. Such recognition of legitimate or special interests of the developing countries seem to provide an extra protection of their non-discriminatory access right, which must not be constrained by the sensing State(s) since international law accommodates different interests of states and often requires an element of appreciation. BROWNLEE, *supra* note 30, at 29.

discriminatory basis except on the basis of national security, foreign policy or international obligations”.

2. If a satellite system has been funded by private sources, the licensee may provide access to its unenhanced data in accordance with reasonable commercial terms and conditions, subject to the requirement of providing data to the government of any sensed state.

3. If the U.S. Government has (either directly or indirectly) funded a licensed system, the US government reserved the right to determine, subject to national security concerns, whether widespread availability of remote sensing data on reasonable cost terms and conditions requires that some or all of the unenhanced data from the system be made available on a non-discriminatory basis.

Therefore under the US law, the sensed State may have access to unenhanced data, but non-discriminatory access may be allowed only subject to the US national security concerns, foreign policy interests or international obligations. On the basis of these restrictions (exceptions), the US may deny a sensed State the satellite imagery of its territory, but such denial would be considered contrary to the 1986 UN Resolution as it does not entitle any sensing State to such exceptions. Canada is planning to adopt a data distribution policy and law similar to that of the US.⁶⁹ Other countries, thus, could also be expected to follow a similar approach in the future. This trend would certainly upset the balance of interests that was painfully achieved under the 1986 UN Resolution and the availability of satellite imagery for all purposes, including for commercial and peace-keeping missions, could depend upon pure discretion of the sensing

⁶⁹ The following is one of the several principles that will guide the Canadian Government in the drafting and adoption of the law to regulate the distribution of satellite imagery by the Canadian remote sensing satellite operator, “The Government of Canada reserves the right to make available to the government of any country, including Canada, data acquired by its system concerning the territory under the jurisdiction of such a government (sensed state) in accordance with the United Nations A/RES/41/65 Principles Relating to Remote Sensing of the Earth from Space. However, such data shall not be provided to the sensed state if its uncontrolled release is determined to be detrimental to Canada's national security and foreign affairs interests.” Canada News Release No. 134, *supra* note 55.

State(s) rather than on an international principle of non-discriminatory access.

III. CONCLUSIONS AND FINAL REMARKS

The observing capability of remote sensing satellites is increasing and their operation is being privatised rapidly. These developments have given rise to some serious security concerns.

International law entitles all States to freely acquire satellite imagery without the consent of the sensed States. Subject to the applicable principles of international law, a sensing State is entitled to determine the distribution or denial of satellite imagery. The 1986 UN Resolution recognises the right of the sensed State to have access, on a non-discriminatory basis, to satellite imagery of its own territory. However, contrary to the provisions of this Resolution, several States have started making such access subject to their national security concerns, foreign policy interests or international obligations.

Ironically, the United States that has always and ardently advocated the freedom of acquisition and non-discriminatory dissemination of satellite imagery (i.e. open skies policies) has started imposing the most detailed, complex and extensive national legal prohibitions on the collection and distribution of such imagery. These prohibitions apply not only to the American private remote sensing satellite operators but also to almost all foreign operators and satellite imagery distributors that have any link with the US. Any unilateral application of such prohibitions universally, purely on the basis of national interests, will be contrary to the principles of the 1986 UN Resolution and will seriously impede non-discriminatory access to any satellite imagery even for peaceful commercial purposes and peace-keeping missions. Moreover, because of a close affinity between the civilian uses of remote sensing satellites and military reconnaissance, there is a strong possibility that these satellites could become the first targets for anti-satellite strikes not only during actual war or crisis but also in anticipatory attacks. Therefore, it is suggested that an international agreement be reached, at least initially amongst the satellite imagery producing States, (a) to ensure the readily and non-discriminatory

availability of satellite imagery in all forms for civilian, commercial and peace-keeping purposes, and (b) to prohibit the use of any force against all remote sensing satellites (i.e. a prohibition similar to the one under Article XII (2) of the 1972 Treaty on the Limitation of Anti Ballistic Missile Systems, which forbade interference with "national technical means of verification" that included early warning satellites). Such agreement should be negotiated as soon as possible because an unreasonable delay would seriously hinder the expansion of the satellite remote sensing industry, which currently struggles to become a commercially viable space activity.