Space Activities and Plans Within the United Nations: Preparing for the 21st Century

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I. Introduction

The United Nations became involved in outer space forty years ago when Sputnik-1, the first man-made satellite, was launched in 1957. The General Assembly recognized the need for a mechanism to ensure broad international cooperation in space activities. The international community was also concerned that the new technology would lead to the colonization of space, and the arms race would be exported to this new frontier. Therefore, in 1959, the Assembly established the Committee on the Peaceful Uses of Outer Space (COPUOS) to be the focal point for international

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cooperation in the peaceful uses of outer space.[1)]

The Committee began its work by reviewing the scientific trends and developments that could be expected in the peaceful uses of space. In its first report,[2)] it highlighted some of the problems that the international

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1) In 1958, the General Assembly initially established an 18-member *ad hoc* Committee: see, G.A. Res. 1348 (XIII) of 13 December 1958, by which the General Assembly, "[c]onsidering that an important contribution (could) be made by the establishment within the framework of the United Nations of an appropriate international body for co-operation in the study of outer space for peaceful purposes", set up the *ad hoc* body. The Committee was requested to report to the General Assembly on, inter alia, the following: The activities and resources of the United Nations, of its specialized agencies and of other international bodies relating to the peaceful uses of outer space; the nature of legal problems which may arise in the carrying out of programmes to explore outer space; and, the future organizational arrangements to facilitate international cooperation in this field within the framework of the United Nations.
In 1959, G. A. Res. 1472A (XIV) of 12 December 1959 set up the Permanent Committee, and also increased its membership to 24 member-States.
Gradual increases over the years has brought the membership of COPUOS to 61 States: see G.A. Res. 1721 E (XVI) of 20 December 1961 increased the number to 28; G.A. Res. 3182 (XXVIII) of 18 December 1973 increased it to 37; and G.A. Res.32/196 of 20 December 1977 increased it to 47. The General Assembly, by Resolution 35/16 of 3 November 1980 and by its decision 45/315 of 1990, increased the membership to the Committee to 53 Member States. At its 49th Session in 1994, the General Assembly, by Resolution 49/33 of 9 December 1994, increased this number to 61. Thus, the following States are members of COPUOS (the italics indicate the 8 States that became members in 1994. The Turkey-Greece and Portugal-Spain rotating membership scheme ceased when the current "sitting" members, Greece and Spain and their alternates, Turkey and Portugal, got "full" membership status in 1994): Albania, Argentina, Australia, Austria, Belgium, Benin, Brazil, Bulgaria, BurkinaFaso, Cameroon, Canada, Chad, Chile, China, Colombia, Czech Republic, Ecuador, Egypt, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Japan, *Kazakhstan*, Kenya, *Korea*, Lebanon, Mexico, Mongolia, Morocco, Netherlands, *Nicaragua*, Niger, Nigeria, Pakistan, *Peru*, Philippines, Poland, *Portugal*, Romania, Russian Federation, *Senegal*, SierraLeone, *South Africa*, Spain, Sudan, Sweden, Syrian Arab Republic, *Turkey*, Ukraine, United Kingdom of GreatBritain and Northern Ireland, United States of America, Uruguay, Venezuela, Viet Nam and Yugoslavia. Korea and Nicaragua will alternate, every three years, with Malaysia and Cuba, respectively.

2) *See*, UN Doc. A/4141 of 14 July 1959, Report of the *Ad Hoc Committee* on the Peaceful Uses of Outer Space [hereinafter *Doc.* A/4141].

community could face in the coming years, in its use of outer space. A lack of adequate knowledge of space technology and its applications, a growing gap between the developed and developing nations and the need to share information were some of its concerns. The Committee also expressed the view that space activities should be conducted in an open and orderly manner, to encourage mutual trust and confidence, and thus facilitate progress on disarmament.

Ⅱ. The UN and Space Law: The Past

The Committee, and its Scientific & Technical and Legal Subcommittees,[3] immediately began to address these scientific, legal and other concerns. Among the legal problems examined, were the questions concerning the freedom of outer space for exploration and use, liability for injury or damage caused by space vehicles and the allocation of radio frequencies. Other issues included the identification and registration of space vehicles, the re-entry and landing of such vehicles, the question of determining where outer space begins, protection of public health and safety, the exploration of celestial bodies, and the problem of avoidance of interference among space vehicles.

Thus, no sooner had the space age begun, than the international community

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3) The Committee, at its second session in 1962, created two sub-committees, the Legal Subcommittee and the Scientific & Technical Subcommittee, to assist it in the study of the "many specific proposals and suggestions concerning scientific, technical and legal studies ... made by members of the Committee for the development of international co-operation in the field of space exploration for peaceful purposes": *See*, the Statement by the Chairman of the Committee, made on 29 March 1962: U.N. Doc. A/5109 of 30 March 1962, at para. 4 and U.N. Doc. A/5181 of 27 September 1962, at Annex I. The Scientific and Technical Subcommittee held its first session in May/June 1962: *see, Report of the Scientific and Technical Sub-Committee on the Work of its First Session* (28 May-13 June 1962), U.N. Doc. A/AC.105/5 of 3 July 1962. The Legal Subcommittee also held its first session in this period: *see, Report of the Legal Sub-Committee on the Work of its First Session (28 May-20 June 1962)*, U.N. Doc. A/AC.105/6 of 9 July 1962 [hereinafter *LSC 1st*].

began to formulate international rules and regulations for the conduct of human activities in outer space, so as to bring the uses of this new technology within the bounds of international law.

The link between law and technology was quickly bridged by an imaginative and innovative effort at international legislation within the United Nations, that laid down, through the Committee on the Peaceful Uses of Outer Space, a framework of multilateral Treaties and Principles for the regulation of space activities.

Over the years, the United Nations has formulated five multilateral treaties, which were drafted and signed within a short span of 12 years.[4] All the treaties, except the Moon Agreement, have been well accepted by the international community.[5] In addition, the General Assembly has adopted five sets of legal principles relating to outer space. These are the "Declaration" of space legal principles, and the Direct Television Broadcasting, Remote Sensing, Nuclear Power Sources[6] and the Outer Space

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4) These are: (i) *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, Opened for signature at London, Moscow and Washington on 27 January 1967, 610 UNTS 205; 18 UST 2410, TIAS 6347; (1967) 6 ILM 386 [hereinafter *Outer Space Treaty*]; (ii) *Agreement on the Rescue of Astronauts, The Return of Astronauts and the Return of Objects Launched into Outer Space*, Opened for signature at London, Moscow and Washington on 22 April 1968, 672 UNTS 119; 19 UST 7570, TIAS 6599, (1968) 7 ILM 151 [hereinafter *Rescue Agreement*]; (iii) *Convention on International Liability for Damage Caused by Space Objects*, Opened for signature at London, Moscow and Washington on 29 March 1972, 961 UNTS 187; 24 UST 2389, TIAS 7762 [hereinafter *Liability Convention*]; (iv) *Convention on Registration of Objects Launched in Outer Space*, Opened for signature at New York on 14 January 1975, 1023 UNTS 15; 28 UST 695, TIAS 8480; (1975) 14 ILM 43 [hereinafter *Registration Convention*]; and (v) *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, Opened for signature at New York on 18 December 1979, (1979) 18 ILM 1434 [hereinafter *Moon Agreement*].

5) The Outer Space Treaty with 93 Parties; the Rescue Agreement, 83 Parties; the Liability Convention, 76 Parties; the Registration Convention, 38 Parties; and the Moon Agreement has only 9 Parties. Each of these instruments, with the exception of the Moon Agreement, has been signed by over 100 countries.

6) These are:(a) *The Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*, adopted on 13 December 1963 [G.A. Res.

Benefits Principles. The last of these, the Declaration on Outer Space Benefits, was adopted by the General Assembly recently, at its session in December 1996.[7]

In recent years the space-law making process in the United Nations has gradually slowed down. The development of various factors has made it a very complex matter. For example, operational areas that now require regulation have become extremely technical in nature. Space technology has proliferated, due, in part, to the realization that space exploitation and use benefit not only a small minority of States, but the entire family of nations. There has been a dramatic shift from the emphasis on the use of space for civilian, as opposed to military, uses that has been caused, in part, by the end of the cold war. There has been a tremendous world-wide increase of private entities using space for their own commercial ends. The developing countries are becoming increasingly involved in the use and exploitation of outer space. The resulting overall effect of having a greater number of nations participating, often on very technical issues, in the law-making process of the United Nations - some of whom have to take cognizance of the large financial stakes of their private entities involved in space activities - has led to the process of law-making becoming tedious and time-consuming, with long, drawn-out negotiations and debates.[8]

1962 (XVIII)]; (b) *The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting*, adopted on 10 December 1982 (G.A. Res. 37/92); (c) *The Principles Relating to Remote Sensing of the Earth from Space*, adopted on 3 December 1986 (G.A. Res. 41/65); and (d) *The Principles Relevant to the Use of Nuclear Power Sources in Outer Space*, adopted on 14 December 1992 (G.A. Res. 47/68). The 5 Treaties and these four sets of Principles are reproduced in U.N. Doc. A/AC.105/572/Rev. 1, of April 1996, *United Nations Treaties and Principles on Outer Space.*

7) *See*, G.A. Res. 51/122 of 12 December 1996.

8) For a detailed review of the space law-making process in the United Nations, see, N. Jasentuliyana, "A Survey of Space Law as Developed by the United Nations" in N. Jasentuliyana, ed., *Perspectives on International Law* (London: Kluwer Law International, 1995) at 349.

Ⅲ. The UN and Space Law: Preparing for the 21st Century

The question is: now that there is a basic international space law framework in place, what is the United Nations doing to prepare for the 21st Century, to meet the legal needs of these more commercial, more technical, and more down-to-earth new realities?

In answer, it may be said that, first, it is possible that existing space law can be modified to accommodate these changing circumstances. Second, perhaps discussions currently underway in law-making fora such as the United Nations, may provide a solution. And, third, the international community could quickly act and formulate the regulations needed to cope with these and upcoming issues.

(a) *New Agenda Item for Legal Subcommittee*

To prepare for the next millennium, the Legal Subcommittee, at its 1997, session agreed to add a new item to its agenda.[9] The new item, "Review of the Status of the Five International Legal Instruments Governing Outer Space", was suggested by the delegation of Mexico. The agenda item is aimed at achieving the widest and fullest adherence to the treaties relating to outer space. As part of the review, States will be requested to submit reports making it possible to identify the reasons for not having achieved ratification of the treaties. On the basis of this information, the Legal Subcommittee will be able to propose mechanisms towards achieving the fullest adherence to the five outer space treaties.[10]

The expected duration of the item is three years. Although the end result of the discussions will not lead to reopening of substantive debate on the

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9) *See, Report of the Legal Subcommittee on the Work of its Thirty-sixth Session* (1-8 April 1997), UN Doc. A/AC.105/674 of 14 April 1997 [hereinafter LSC 36th].

10) *Ibid.* at 23.

treaties, or any proposals for their revision or amendment, it is hoped that the three-year debate would highlight deficiencies in the treaties that could ultimately be remedied by COPUOS, by consensus, in the early years of the next century.

There are many other questions whose resolution would facilitate international co-operation in space. Among the emerging subjects, concerns about the safety of space activities, including the questions of space debris and protecting the space environment, have already attracted significant attention.

(b) *The Space Debris Issue*

The problem of space debris poses an increasing hazard to the exploration and utilization of space.[11] After many years of discussions, in the Committee, the item of space debris became a separate agenda item for the S&T Subcommittee, at its 1994 session.[12] The Subcommittee developed a multi-year work in 1995.[13] It began to implement this plan the following year, and it worked on the topic of measurements of space debris.[14] In 1997, the Subcommittee concentrated on the modelling of the space debris environment and risk assessment.[15] Its technical report on space debris would be updated each year, leading to an accumulation of advice and

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11) *See, generally*, H. Baker, "Current Space Debris Policy and its Implications" (1989) 32 *Coll. L. Outer Space* 59; I.H.Ph. Diederiks-Verschoor, "The Increasing Problem of Space Debris and their Legal Solutions" (1989) 32 *Coll. L. Outer Space 77* [*hereinafter Space Debris Solutions*] and, C.Q. Christol, "Scientific and Legal Aspects of Space Debris" (1993) 36 *Coll. L. Outer Space* 368.

12) *See, Report of the Scientific and Technical Subcommittee on the Work of its Thirty-First Session*, UN Doc. A/AC.105/571 of 10 March 1994 at 12-13.

13) *See, Report of the Scientific and Technical Subcommittee on the Work of its Thirty-Second Session*, UN Doc. A/AC.105/605 of 24 February 1995, at para. 83.

14) *See, Report of the Scientific and Technical Subcommittee on the Work of its Thirty-third Session*, UN Doc. A/AC.105/637, at 15-25.

15) *See, Report of the Scientific and Technical Subcommittee on the Work of its Thirty-fourth Session*, UN Doc. A/AC.105/672, at 17-32.

guidance, in order to establish a common understanding that could serve as the basis for further deliberations of the Committee on the matter.

Other international bodies have also been concerned with the problem of space debris and have been actively discussing the issue. For example, the International Law Association, through its Space Law Committee, worked on the problem for several years. In 1995, at its session at Buenos Aires, it adopted a Final Draft *International Instrument Concerning the Protection of the Environment from Damages Caused by Space Debris*. These also will prove useful when, as expected, the Legal Subcommittee of COPUOS takes up the matter, after the Scientific and Technical Subcommittee has completed its report in the next couple of years.

c) *Establishing International Standards and Recommended Practices*[16]

The five outer space treaties lay out general legal rules without providing specific standards or procedures by which the treaties are to be implemented and by which space activities can be controlled. In doing so, they create technical and legal weaknesses in the treaties. To give just two examples: in the Outer Space Treaty, Article IX requires States to "adopt appropriate measures" so as to avoid the harmful contamination of the Earth and outer space environments while conducting space activities. However, the Treaty does not recommend the measures that are to be taken. Further, the Article establishes no standards or criteria as to what constitute "harmful contamination", "adverse changes", or "harmful interference" to the Earth or space environments. In the Liability Convention, procedures for rendering assistance as provided for in Article XXI (which deals with the

16) *See*, N. Jasentuliyana, "Celebrating Fifty Years of the Chicago Convention Twenty-Five Years after the Moon Landing: Lessons for Space Law" (1994) XIX-II *Annals of Air and Space Law* 429, a detailed discussion on the issue of formulating international standards and recommended practices for space law, based on those of the International Civil Aviation Organization (ICAO).

large-scale danger to human life by damage caused by a space object on Earth) are not established.[17]

More importantly, there are also new technical issues such as N.P.S., on

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17) Other examples are: (i) In the Outer Space Treaty, 1967, *Art. V* calls on States to render astronauts assistance in the event of an accident, distress, or emergency landing, without giving the procedure to be followed for doing so; (ii) In the Rescue Agreement, 1968 the procedures to be followed in case assistance is rendered to astronauts in distress, in case of search and rescue operations, and for other actions that may be taken under the treaty, are not elucidated; (iii) In the Registration Convention, 1974, *Art. VI* would become more practical if standards had been established for the provision of assistance called for in the Article; further, the lack of registration of space debris and chemical and other pollutants and effusions released by space objects during or after launch, is a serious weakness in the Convention; (v) In the Moon Agreement, 1979, in *Art. 7*, the "measures" to be taken to prevent the disruption of the Moon environment are not spelt out; further, no criteria defining the "harmful" contamination of the Moon are provided; Standards and procedures for activities under *Arts. 8 and 9* (the pursuit of activities on the Moon and the establishment of stations on the Moon, respectively) are not given; the "practicable measures" for safeguarding life on the Moon, under *Art. 10* should be standardized; *Art. 11* would have had more meaning if the international regime and the "appropriate procedures" in paragraph (5) had been more technically detailed. If the technicalities of the international regime of *Art. 11* had been furnished, the Moon Agreement could have become more acceptable to States; the consultation procedure envisaged in *Art. 15* is not prescribed.

It could be said, however, that the Registration Convention does made provisions, to an extremely limited extent, for what may be called international space standards. These international "standards" are found in *Art. IV* of the Treaty, which reads as follows:

1. Each State of registry shall furnish to the Secretary-General of the United Nations, as soon as practicable, the following information concerning each space object carried on its registry:
   (a) name of launching State or States;
   (b) an appropriate designator of the space object or its registration number;
   (c) date and territory or location of launch;
   (d) basic orbital parameters, including:
      (i) nodal period,
      (ii) inclination,
      (iii) apogee,
      (iv) perigee;
   (e) general function of the space object.
   [rest omitted]

which principles have been adopted but work is continuing in COPUOS, and space debris, already under consideration in the S&T Subcommittee, which would need not only a high degree of technical work but also where pace would have to be kept with rapidly advancing state of technology. This rapid development of space technology is one primary reason why the evolution of space law has been affected, and the momentum of space law legislation slowed down.

To take account of these and other factors the time has perhaps come to look for new and innovative ways in space-law making. For instance, the international community might want to begin to earnestly look at the formulation - with the strong support of scientists and other specialists - for subjects of a more technical nature, of easily amendable technical standards and recommended practices for space activities. This will not only allow the law to keep pace with rapidly changing technology, but it will also fill gaps and weaknesses in, and supplement, the existing space law treaties and principles. The United Nations, through COPUOS, could follow the example set by international organizations such as the International Civil Aviation Organization (ICAO),[18] W.H.O. and I.M.O., and adopt international standards and practices for topics such as space debris, the outer space and Earth environments, safety of space operations and launch services, manned space flight, space navigation, search and rescue, operation of spacecraft, materials processing in space, aerospace planes, space navigation, and so on. One major benefit in the space law-making process that would result from this would be that the political and technical aspects of space technology would be separated, and the future use of space science and technology would not be hindered by protracted political discussions. More importantly, this procedure would allow the law not only to keep up with the rapidly evolving technology connected with space

18) For the setting of standards and recommended practices by ICAO, see Arts. 37, 38, 54(l), 57, and 90 of the *Convention on International Civil Aviation* (the "Chicago Convention"), Opened for signature at Chicago, Illinois, on 7 December 1944, 15 UNTS 295; ICAO Doc 7300/6. Over 180 States are Parties to the Chicago Convention.

science, exploration and use, but also to up-date it consistently, and keep it in line with the latest technology. Standardization would help nations as well as private entities operating in space to provide the required certainty in procedures and limits on liability.

(d) *Commercial Use of Outer Space*

Another topic that could be subject to international regulation by the United Nations is that of international space commerce, which is rapidly proliferating. The legal implications of matters such as international commercial launch services,[19] the liability aspects of such services, intellectual property rights,[20] insurance,[21] product liability insurance and materials processing, could one day be subject to regulation.

Further, laws formulated in an era when the word "privatization" had not even been coined cannot contain potential problems caused by the increasing commercialization of outer space. In 1995, TRW Corporation was granted a patent for its mobile phone satellite scheme.[22] In May 1996, TRW launched a lawsuit against the Inmarsat affiliate ICO Global Communications for infringing its patent and its intellectual property rights.[23] TRW claimed, *inter* alia that its patent on the "invention of a global, medium-Earth orbit-based satellite cellular phone system" that was issued by the U.S. Patent Office in July 1995 had been infringed. TRW's suit was dismissed by the court in April 1997. ICO has now filed suits both in American and

19) *See, e.g.*, P. Nesgos, "Commercial Space Transportation: A New Industry Emerges" (1991) XVI *Annals of Air and Space L.* 393.

20) *See, e.g.*, Loriot, "Propriélé intellectuelle et droit spatial" (1979) IV *Annals of Air and Space L.* 553.

21) *See, e.g.*, J.-L. Magdelénat, "Spacecraft Insurance" (1982) 7 *Annals of Air and Space L.* 363 and I.H.Ph. Diederiks-Verschoor, "L'assurance des satellites" (1985) *X Annals of Air and Space L.* 319.

22) *See*, "Clash Over 'Patent on Space' Looms for Telecoms Groups", Financial Times, 8 May 1995, at 1.

23) P. Seitz, "Patent Dispute over Global Phone System Escalates: TRW Files Injunction against ICO Global", Space News, 20-25 May 1996 at 5.

British courts requesting that TRW's patent be invalidated. These lawsuits could raise a fundamental international law issue, that of the national appropriation of a part of outer space, something that is forbidden under the 1967 Outer Space Treaty. It would be of interest to see how the courts deal with the matter.

This dispute is a good example of the uncertainty that lies ahead, in the absence of clear legal guidelines in the area of space commercialization, and that should be urgently discussed in international fora dealing with space matters, such as the ITU and COPUOS.

(e) *International Space Telecommunications*

Among the most important space activities and plans within the UN, in preparing for the 21st Century, are being carried out by the International Telecommunications Union, in its regulation of international space telecommunications law.

Rapid changes in satellite communication technologies and service trends have created many new policy, legal, economic and technical problems that need to be solved in order for these proposed systems to operate effectively.

One of the most important issues that will dominate the minds of telecommunications policy- and law-makers into the 21st century is that of mobile satellite services.[24] More and more people are demanding "on-the-move" communication services. By the year 2000, the number of mobile telephone users worldwide may increase to more than 400 million. Global personal mobile satellite services provide the missing link, overcoming the inherent local or regional nature of terrestrial mobile services.

Although plans made to set up global mobile telephone systems have reached the implementation stage,[25] the legal aspects of these systems are

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24) *See in particular*, B. Gallagher, ed., *Never Beyond Reach: The World of Mobile Satellite Communications.*

25) Small satellites in Low-Earth Orbits (LEO)or Middle-Earth Orbit (MEO) will be utilized to provide various types of services ranging from low-speed data

yet to be fully explored. This new trend in satellite communications has created many new policy and legal issues that need to be addressed.

One aspect of this problem was discussed at ITU's World Administrative Conference held in 1992.[26] Some decisions on frequency allocation were made enabling at least two global Low Earth Orbit (LEO) systems to begin operations in 1997 or 1998. This would, of course, be subject to international coordination in order to avoid interfering with other services. It is clear that the possibility of having hundreds of LEO satellites in orbit has raised many legal, economic and technical issues such as adequate frequency allocations, interference between LEO and existing geostationary satellite systems and the bypassing of terrestrial communications systems.[27]

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transmission to voice communications, especially for cellular telephony; "[L]ittle LEOs [are] constellations of small satellites in low Earth orbit, designed to offer low-cost, two-way data messaging services. The bigger, more expensive services known as big LEOs will allow transmissions of phone calls or larger packages of data a few years later": *See* Foley, "Big and Little LEOs Face Off", Aerospace America, September 1995, at 36 [hereinafter *Foley*]. LEO satellites are located between 700km-1500km from Earth. MEO satellites are located at 10,000km from Earth. This interest has been generated because of the increasing cost and long lead-time cycles involved in the use of geostationary satellites. Small satellites launched in low-altitude circular orbits are often a better alternative because of the lower cost of the satellite itself and lower launch cost. Some LEO and MEO systems could be used, for example, for emergency alert, alarm signals, position location for fleet movement, remote sensing, telemetry, data collection and environment monitoring, paging, short recorded message formats, radiodetermination and data networking.

The "big" LEO systems, such as the sixty-six satellite Iridium constellation, the forty-eight satellite Globalstar system, Odyssey with twelve satellites and ICO Global Communications' ten-satellites (a MEO system) would have a space segment composed of 12-66 satellites providing voice and high-speed data, relay, radiodetermination and a wide range of other services. Teledesic Corporation's LEO system plans to have 840 satellites in orbit, to focus mainly on providing a high-speed wireless network for personal computers. In fact, the Inmarsat 3 mobile satellite system is already operational. Although not hand-held, its phone sets are small. The system also does not offer walk-while-you-talk capabilities, promised by the other systems.

26) *See, Use of Low Earth Orbit Satellites for Voice Communications*, U.N. Doc. A/AC.105/564 of 21 December 1993 at 2.

ITU's 1994 Kyoto Conference discussed frequency coordination and planning frameworks for such satellite networks.[28] A consensus was reached on the review of the current mechanisms used for coordination and planning of satellite networks given the increasing globalization and diversification of telecommunication systems, particularly satellite network s.[29] At ITU's 1995 World Radio Conference (WRC-95) held in Geneva, the big LEO's - Iridium Inc., Globalstar and Odyssey - all got enough spectrum to implement their global mobile voice services systems.[30] Although the little LEO global messaging systems gained virtually no new allocations, it is expected that WRC-97, in October 1997, will make allocations for these systems.[31]

The most recent development with regard to mobile satellite networks took place at the ITU's First Telecommunications Policy Forum, held from 21-23 October 1996. The Forum focused on policy and regulatory issues regarding Global Mobile Personal Communications by Satellite (GMPCS), i.e. mobile satellite systems.[32] The end result of the meeting was the production of a "ITU Memorandum of Understanding on New Global Satellite Services", covering the arrangements to facilitate the world-wide circulation of GMPCS terminals, through simplified licensing, type approval and customs regulations.[33]

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27) *Ibid.* at 8.

28) *See* ITU Press Release 94-19 of 14 October 1994.

29) *Ibid.* The review, to be undertaken by the Director of the Radiocommunication Bureau in consultation with the Radiocommunication Advisory Group and with input from the Radio Regulations Board, would aim at ensuring the integrity of ITU procedures and agreements and ensuring equitable access to the radio frequency spectrum as well as meeting the needs of all administrations in establishing their satellite networks while at the same time safeguarding the interests of other radio services. A final report is expected to be submitted to the 1997 World Radio Conference.

30) Boeke, *Via Satellite*, January 1996 at 10.

31) *Ibid.* at 10 and 13. *Also see*, UN Doc. COPUOS/LEGAL/T.599 at 8 (1997) [hereinafter *T.599.*].

32) For full details, *see*: http://www.itu.int/pforum/.

33) "First Signatories to ITU Memorandum of Understanding on New Global Satellite

Further, the global trend of the deregulation and privatization of telecommunications services markets is expected to lead to vigourous growth in international trade in these services.[34] These changes were addressed recently by the World Trade Organization at its Group on Basic Telecommunications negotiations. In February 1997, after months of difficult negotiations, sixty-eight countries agreed to a WTO-sponsored agreement to open the world's telecommunications market to competition.[35] This international trade agreement would bring services such as satellite systems and cellular telephones under the aegis of the WTO. In the words of the EU Trade Commissioner Sir Leon Brittan, the "pact would slash telephone costs for ordinary people and businesses around the globe" and would give a "powerful lift to the globalization of telecom markets."[36]

A problem that is growing is that of so-called "paper satellites". The recent ITU "Resolution 18" review process concluded that one of the most important problems with regard to the use of spectrum orbit resources was that of the reservation of orbit capacity without actual use, i.e. the phenomenon of paper satellites.[37] Paper satellites have so been called

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Services", ITU Press Release ITU/97-3 (9 April 1997) at http://www.itu.ch/PPI/press/releases/1997/itu-03.html. For the text of the MOU see: http://www.itu.int/pforum/gmpcsmou/moue.htm.

34) For more information, *see* "ITU to Release Report on Trade in Telecommunications", ITU Press Release ITU/97-2 (14 February 1997) at the Internet site: http://www.itu.ch/PPI/press/releases/1997/itu-02.html.

35) *See*, "Telecom Trade Deal Struck", Reuters news release, 15 February 1997 at the Internet site: http://www.news.com/News/Item/0,4,7985,00.html. Also see, Zarocostas, "WTO Brings Down the Barriers", ICO Magazine, No. 1, Spring 1997, at 12.

36) *Ibid.* at the Internet reference cited.

37) T.529, supra note 32 at 7. Also see, R. Jones, "Finding Solutions", Space News, 17-23 February 1997, at 19 [hereinafter *Jones*]. Mr. Jones, the director of the Radiocommunication Bureau of the ITU, writes that, "Under the existing procedures, it costs nothing to make a filing with the Radiocommunication Bureau, apart from resources required to fill in the forms. Therefore administrations can, in effect, reserve orbital positions they do not intend to implement. They can even contemplate transferring these reserved slots to others. They also can reserve more resources than needed and then use only the most convenient or easiest to coordinate. They can even reserve resources for up to nine years (and beyond by

because they exist only on paper. They come about when a country files multiple applications for satellite orbital slots and frequencies, with the ITU. At the end of the co-ordination process, held under the aegis of ITU according to its rules and regulations, the country may succeed in ending up with at least one or two slots that are now registered in its name, and therefore may not be occupied by the satellites of other countries. Unfortunately, more often than not, these "reserved" slots are never used. Often the satellites meant to occupy them are never launched, due to financial, technical or other constraints. The orbital slots and frequencies that are reserved remain un-utilized, to the possible detriment of other operators who may have actually been able to make use of them.

These paper satellites thus pose a very real problem, because they ultimately slow the coordination process by reserving frequencies and orbital slots on a first-come, first-served basis for up to nine years or more, and deprive satellite operators the use of the registered orbital slots and frequencies. In order to solve this problem, Australia, for example, recommended that an application for an orbital slot should be accompanied by a U.S. $5 million refundable deposit, in order to show good faith.[38] Initially, the ITU refused to consider this solution, but is now re-thinking its position because of proliferating filings for orbital slots.[39] It has also been suggested that the ITU begin to separate serious applications for orbital slots by asking for proof from applicants that they have credible satellite design and adequate initial funding.[40]

The situation is the most critical in Asia, where applications for C-band capacity covering East Asia "represent more than seven times the available

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make use of sequential requests), even though the original need might have long since disappeared: *ibid.*

38) French, "Shredding Paper Satellites: Australia Proposes Deposit to Deter Frivolous Filings", Space News, 4-10 March 1996, at 4. Also see the editorial, "End the Paper Satellite Glut", Space News, 11-17 March 1996, at 12 [hereinafter *Editorial*].

39) "ITU Considers Seeking Deposits for Orbital Slots", Space News, 21-27 October 1996, at 2. Also see, Jones, *supra* note 38 at 20, for a more detailed examination of this problem.

40) Editorial, *supra* note 39.

orbital slots", and it where, has been alleged, that many applications for slots are filed "merely for speculative reasons".[41]

Another major issue that has been identified by ITU is that of un-coordinated use of spectrum and orbit resources. There is great concern about cases of satellites launched or repositioned before the ITU coordination process is properly concluded. This makes subsequent bilateral negotiations between administrations extremely difficult, in the face of such a *fait accompli* situations.[42] There is thus the danger that the so-far well-established coordination processes could ultimately breakdown and ITU regulations being by-passed, as satellite operators launch uncoordinated satellites in order to be the first to claim a slot.[43]

(f) *Satellite Telecommunications: Case Law & Potential Disputes*

Space law disputes are bound to arise more frequently since an increasing number of countries and private entities are becoming actively involved in the utilization of space and the number of States with launch capabilities is growing.

So far, nearly all disputes have been related to communications satellites, and most of these have been United States-based.[44] These include the case of *Martin Marietta v. INTELSAT* which arose due to the failure of the launch of an INTELSAT satellite by a Martin Marietta Titan III rocket;[45]

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41) P. De Selding, "Satellite Allocation System Faces Collapse", Space News, 16-22 September 1996, at 4. Also see, McCaffery, "Crowded Orbital Slots Test ITU's Influence: Dispute at 134 Degrees East Highlights Problems", Space News, 27 January-2 February 1997 at 3.

42) T.599, *supra* note 32 at 7.

43) P. Seitz, "Satellites Clog Asia Pacific", Space News, 22-28 January 1996, at 20, quoting Kim Degnan, managing director of Satellite Opportunities & Solutions consulting firm [hereinafter Asia-Pacific].

44) *See*, in particular, S. Gorove, *Cases on Space Law: Texts, Comments and References* (1996).

45) See for details, K.-H. Böckstiegel, "Case Law on Space Activities" in N. Jasentuliyana,

Appalachian Insurance Co. v. McDonnell Douglas Corp., and *Lexington Insurance Co. v. McDonnell Douglas Corp.*, both which arose when Payload Assist Modules developed by McDonnell Douglas failed to place communications satellites in geostationary orbit;[46] *Hughes Galaxy Inc. v. US Government*, in which Hughes sued the US Government for compensation due to breach of contract, following the 1986 Challenger disaster;[47] and, the more recent case of *AT&T v. Martin Marietta,* concerning the loss of AT&T's Telstar 402 communications satellite, due to the failure of the satellite to attain its proper trajectory, after its launch, in 1994.[48]

A problem that is growing is that of the increasing shortage of suitable orbital slot positions for satellites, especially in the GSO. For example, in 1996, INTELSAT refused to allow Columbia Communications continued use of an orbital location that is to be vacated by the latter in 1997, pursuant to a 1991 agreement.[49] The satellite slot is a prime location that makes it possible for a satellite to serve customers on four continents. Columbia thus asked the US government to intervene.[50] The Federal Communications Commission sided with Columbia, calling INTELSAT's action "anti-competitive", and granted the company special temporary authority to operate at the disputed orbital location, beginning in 1998.[51] It is not

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ed., *Space Law: Development and Scope* 204 at 208. *See also,* I.H.Ph. Diederiks-Verschoor, *An Introduction to Space Law* 142 (1993).

46) Böckstiegel, *ibid.* at 211. For details on the *Appalachian Case, see also,* Diederiks-Verschoor, *ibid.* at 139.

47) For details, *see* Diederiks-Verschoor, *ibid.* at 140, and the case note by Gorove in 21 *J. Space L.* at 166 (1993).

48) *See* for details of the case, Bostwick, "AT&T v. Martin Marietta: Further Reallocation of the Risk of Loss in Commercial Space Agreements" (1995) 23 J. *Space* L. 177.

49) *See*, P. Seitz, "INTELSAT Rejects Columbia's Use of Satellite Slot", Space News, 22-28 April 1996, at 1. Columbia claims that Intelsat "pressured" it to sign the deal.

50) *See*: "Yes, Columbia, a Deal is a Deal", Space News, 29 April-5 May 1996, at 18 and K. Gross, "When a Deal is not a Deal", Space News, 6-12 May 1996, at 13 (Colombia's response to the Space News editorial of 29 April).

51) P. Seitz, "FCC Might Bar Comsat from Intelsat 8 Series: Columbia Receives

difficult to see similar disputes arising in the future.

(g) *The UNISPACE III Conference*

In order to deal with this spectrum of issues and to fully prepare the international community for a 21st Century world in space, the United Nations General Assembly has convened, in 1999, the third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, UNISPACE III.[52]

The first of these world space conferences was held in Vienna, in 1968. UNISPACE, as the Conference came to be known, reviewed progress in space science, technology and applications and called for increased international cooperation.[53]

An updated review of the progress in space activities was conducted at the Second UNISPACE Conference, also held in Vienna, in 1982.[54] Much has changed since then. Dramatic developments have occurred in the international political arena and, in particular, in space technology. The most significant change to have taken place has been the end of the cold

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Temporary Permit for Orbit Slot", Space News, 13-19 May 1996, at 1. Mr. Scott Harris, the then chief of FCC's International Bureau, stated in the order granting Columbia the temporary permit that, "We believe this matter goes beyond a dispute over an orbital location and the use of certain frequencies. ... The issue here is whether a large intergovernmental organization born of privilege, benefiting early in its development from U.S. taxpayer-funded research and development, and nurtured by years of [FCC] regulatory policies designed ... to insure its commercial viability can be permitted to destroy a small private company trying to implement U.S. policy favoring competition in satellite communications": *ibid.* at 27.

52) G.A. Resolution 51/123 of 13 December 1996, at para. 28.

53) *See*, "Space Exploration and Applications: Papers Presented at the United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 14-27 August 1968" (United Nations, Sales No. E.69.I.16, vols. I and II). Also *see Documentation on the United Nations Conference on the Exploration and Peaceful Uses of Outer Space* UN Doc. A/AC.105/L.44 of 20 September 1968.

54) *See, generally*, UN Doc. A/CONF.101/10, and Corr. 1 and 2, Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 9-21 August 1982.

war.

The ways in which Member States approach space activities have also shifted dramatically.[55] Space activities prior to 1982 were conducted mainly by Governments pursuing national objectives. While there was a significant amount of bilateral cooperation in space activities, international cooperation, when pursued, was often undertaken in conjunction with political and ideological goals.

Today, there is significantly more awareness of the potential of space technology for improving life on Earth, and more widespread use of space technology, than in 1982. For example, space communications continues to develop rapidly. Space technology has been instrumental in bringing about considerable reductions in the cost of telecommunications, and has thereby made modern telecommunications accessible to many more people.

Satellite broadcasting has made major strides since UNISPACE 82. Space meteorology has greatly improved weather forecasting. Remote-sensing and environmental monitoring have made rapid progress. Space technology applications aside, there has been significant progress in space science and exploration. Space has an important role to play in the sphere of health. Space systems to monitor environmental changes have become critically important.

All these factors taken together have made it necessary to hold a third UNISPACE Conference, to enable the international community to prepare for a more promising 21st Century.[56] After several years of debate, the UN General Assembly, at its session in 1996, agreed that a Third UNISPACE

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55) *See, generally, Matters related to the possible holding of a Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space: Report by the Secretariat*, UN Doc. A/AC.105/575 of 9 May 1994 and 575/Add. 1 of 1 December 1994.

56) *See, generally, United Nations Seminar on Space Futures and Human Security: Information Note* UN Doc. A/AC.105/C.1/1997/CRP.3 of 17 February 1997. This information note contains the summaries of the Rapporteur General and the Chairpersons of the Seminar, co-sponsored jointly by the UN Office for Outer Space Affairs and the Government of Austria, that was held at Alpbach, Austria, from 27-30 January 1997.

Conference could be held in 1999, as a special session of the Committee open to all member States of the United Nations.[57]

The conference will provide an agenda for Member States and international organizations for the 21st Century, in using space technology applications for economic and social development and the preservation of the environment, and it is expected to work out a Plan of Action and provide further directions.

The primary objectives of the UNISPACE III Conference would be to promote effective means of using space technology to assist in the solution of problems of regional or global significance, some of which were discussed above; and to strengthen the capabilities of Member States, in particular developing countries, to use the applications of space research for economic, social and cultural development.[58]

UNISPACE III, which has the theme, "Space Benefits for Humanity in the 21st Century", will be held from 19 to 30 July 1999, in Vienna. The more important aspect of the Conference is its preparatory phase at the national, regional and global level that is already underway.

An innovative aspect of this U.N. Conference is that it will engage not only governments but international organizations both governmental and non-governmental, and for the first time in U.N. negotiations, the space industry itself.

In addition to the main Conference, workshops will be organized, as part of the Conference, by international organizations, one of which will be on space law, to be organized by the International Institute of Space Law (IISL). As President of the IISL, let me take this opportunity to invite those of you who are not yet members to join the Institute.

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57) *Supra* note 53.

58) *Matters Relating to the Planning of the Special Session of the Committee on the Peaceful Uses of Outer Space (UNISPACE III): Report by the Secretariat*, UN Doc. A/AC.105/662 of 13 December 1996.

Ⅳ. Conclusions

Space activities and plans within the United Nations, in preparing for the 21st Century are concentrated on the issues currently under discussion and negotiation in the U.N., such as space debris, the expected review of the space treaties beginning next year and, above all, the Third UNISPACE Conference.

Developing countries, which are most in need of assistance that can be provided by space technologies, are the least equipped to acquire and use space services. A great deal more technical assistance and training is needed, especially since it has been estimated that 75 percent of the world's population produces only 16 percent of the world's GNP. Moreover, this 75 percent has a very rapidly increasing population and is prone to accelerated urban concentration, inefficient agriculture, poor water management and inadequate education. The sum of these factors is that the gap between the "haves" and the "have nots" will widen, if left to itself. This is one of the major problems that UNISPACE III will seek to address.

Today, the need for international cooperation in space is greater than ever. There are world-wide problems and space technology provides world-wide reach. Thus far, governments in both developed and developing countries have not all been made sufficiently aware of the extent to which space technology can help to resolve their problems. Moreover, there is an absence of appropriate structures to ensure the exploitation of space technology. Space agencies have certainly tried to be helpful, but they tend to cling on to the applications, instead of pushing for them to be taken over by those better able to exploit them operationally.

Space can safeguard and promote human security in all its many dimensions despite the many areas of concern. It is hoped that all countries, working through the United Nationsand particularly at UNISPACE IIIwill draw fully from the promise of space in the new millennium.

Finally, in light of the fact that deregulation-privatization-globalization, that have drastically changed the world's economic environment, are here

to stay for the foreseeable future; the fact that private entities have become major players in space exploitation and use; and, the fact that the extremely lucrative mobile telecommunications services are slated to become a common feature of everyday life in the not-too-distant future, all make it important that the international community, especially the developing world, have a serious look at their current policies and practices in the national and international telecommunications areas, and thereby adapt themselves to a more flexible, more technological and more commercial world.

The future outlook for space activities is considered bright. There are many challenges and some problems, but the opportunities and the potential are far greater. Never before have the practical benefit of space technology and the resulting applications touched so many lives around the globe. The challenge for the United Nations will be to continue its efforts in helping all nations, in particular developing countries and the non-space faring States, to obtain and use these tools for economic, social and political growth and sustainability.