The resolution of the issue of definition and/or delimitation of outer space appears to be the least pressing at the present time. The development of what may be regarded as a customary rule of international law that regards the area where satellites orbit the earth as outer space appears to make a precise physical determination no longer of immediate urgency. Such determination may entail or revive the troublesome question of where airspace ends and also raise the issue of the precise status of the area between airspace and outer space, should airspace not extend to the lowest boundary line of outer space.

Finally the issue of equitable access to the geostationary orbit/spectrum resource may well have a better chance for resolution by consensus in the scientific/technical setting of the 1985 World Administrative Radio Conference which is expected to consider the problem in detail.

LAW AND SECURITY IN OUTER SPACE
INTERNATIONAL REGIONAL ROLE - FOCUS ON THE EUROPEAN SPACE AGENCY +

*Roy Gibson**

Europe's combined space efforts started in 1960 with the separate establishment of the European Space Research Organisation (ESRO)[1], and the European Launcher Development Organisation (ELDO).[2] Both organisations were the result of international conventions, but, regrettably, with somewhat different sets of signatories. It took fifteen years before ESRO and ELDO could be fused to form the European Space Agency (ESA).[3]

Thus in May 1975 the ESA Convention[4] was signed, and eleven European countries became Member States. Those countries were Belgium, Denmark, Federal Republic of Germany, France, Ireland, Italy, Netherlands, Spain, Sweden, Switzerland and the United Kingdom. In recent years, Austria and Norway became Associated Member States of the Agency, bringing the total to thirteen. Austria and Norway had in fact signed the preparatory ESRO Convention in 1960, but at the last moment they failed to become members. Their present association is therefore a welcome homecoming to the European space community.

It is relevant to the present subject to point out that ESA groups together all the members of the European Community (with the exception of Luxembourg) and the four traditional "neutrals" - Spain, Sweden, Switzerland and Austria. There are few other European organisations which are actually concerned with high technology programmes and which have such a wide membership. Desirable as this characteristic may, in general be, it complicates the task of reconciling individual national, foreign and security policies to the point where the Agency can be given clear operating instructions. To be complete it must be added that ESA also has an important non-European element: Canada. In December, 1978, Canada signed a memorandum[5] of association with the

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+ The views expressed in this article are those of the author and not necessarily those of any organization with which he has been or is connected.

[1]European Space Research Organization (ESRO) was set up by the Convention for the Establishment of a European Space Research Organisation, Paris, June 14, 1962, 58 U.N.T.S. 35 (1965).

[2]European Launcher Development Organisation was set up by the Convention for the Establishment of a European Organisation; for the Development and Construction of Space Vehicle Launchers, with Annexes, Financial Protocol and Protocol Concerning Certain Responsibilities in Connection with the Initial Programme, London, March 29, 1962, 507 U.N.T.S. 177 (1964).

[3]European Space Agency (ESA): Basic Texts of the European Space Agency, Vol. 1 at A-6 (Paris, Sept. 1, 1977).

[4] *Id.*

[5]The Memorandum of Association between Canada and ESA was signed on December 9, 1978 and has an initial period of validity of five years.

Agency, and now plays a significant role in ESA's affairs. In fact, only the geographical location of Canada - which was difficult to alter - prevented it from being formally accepted as an Associate - with a capital "A" - member.

ESRO, ELDO and ESA are all organisations with a strong legal basis, not to say bias. Quite apart from the basic Conventions, the three organisations - and in particular ESA - have produced a veritable mountain of legal arrangements, memoranda of understanding and such, and these have often become the butt of both critics and wits. They are, however, the natural product of the complicated legal world in which ESA was born and operates. The Agency has a legal personality and is therefore under continual obligation to define its responsibilities and those of its Member States, not to speak of the many important international arrangements to which ESA is a party. The Agency therefore, perforce, built up a considerable expertise in the practical application of traditional juridical techniques to space problems, and this became extremely useful when the Agency became involved in international space law affairs outside Europe.

The 1967 Space Treaty[6] places responsibility on the signatories - sovereign states - but the subsequent international agreements negotiated through the United Nations, although still not open to international organisations as signatories, enable their provisions to be extended to cover international organisations engaged in space activities. This provision was introduced largely at the prompting of the UN members of ESRO and ELDO, and it in fact obliges members of a relevant international organisation to take the necessary steps to extend to the international organisation such UN agreements as they are signed. This extension requires that the majority of Member States of the organisation in question have signed, and ratified both the 1967 Space Treaty and the specific agreement, and that the organisation itself makes a formal declaration accepting its rights and obligations under the agreement.

The Council of ESA, the governing body consisting of two delegates from each Member State, is invited to approve each accepting declaration, which is thereafter sent by ESA's Director General to the Secretary General of the United Nations. ESA activities are thus not directly but indirectly affected by the 1967 Space Treaty through its Member States who remain responsible for its implementation. The subsequent UN agreements are directly applicable to the Agency. They impact both on the Agency's external relations and on relations between Member States.

The Agency's acceptance of the UN Convention on the registration of Space Objects[7] shows that an international organisation can maintain a register of the satellites it launches and can acquire the responsibility for notifying such launches to the Secretary General of the United Nations. This is logical though not always a criterion, because the Agency is legally the owner of the "space objects" which it develops and launches for its Member States, although the Agency cannot, of course, itself directly assume the governmental responsibilities for these space objects as envisaged under the Space

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[6]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 [1967], 18 (3) U.S.T. 2410, T.I.A.S. 6347, 610 U.N.T.S. 205 (effective Oct. 10, 1967).

[7]Convention on Registration of Objects Launched into Outer Space, January 14, 1975, [1978], 28 U.S.T. 695, T.I.A.S. 8480 (effective Sept. 15, 1976).

Treaty. It is clear, however, that the Agency cannot launch its satellite or spacelab or have them launched by others without creating a regime to cover its legal responsibility. This is contained in a Resolution approved by the ESA Council in 1977.[8]

Although perhaps rather more academic in nature, at least for the present, ESA has also formally accepted the UN Convention on the rescue of astronauts,[9] and in so doing has specifically accepted that she considers herself a "launching authority" as defined in the Convention.

All of this has been provided to sustain the thesis that since ESA's activities - present and future - can be affected by the UN's legal activities, the Agency needs to be directly associated with the discussion and resolution of these problems in the UN committee framework.

The Agency in fact seeks at two levels to participate in the formulation of new international space regulations. The first level of participation is through encouraging and organising a consultation between its Member States. The second level is by direct representation at meetings of COPUOS and other international meetings.

Internal coordination on space matters being discussed in the United Nations has long been a tradition in Western Europe. Before the formation of the European Space Agency, Western European governments used a somewhat ineffectual body, known as the European Space Conference,[10] as a mechanism for discussing important space questions at ministerial level. This Conference established a Working Group to discuss matters being dealt with from time to time in the United Nations committees. With the establishment of ESA, the new Convention provided the possibility for the ESA Council to meet at ministerial levels and therefore the European Space Conference ceased to exist, and with it the UN Working Group. In the latter's stead was established the International Relations Advisory Group (IRAG)[11] which the ESA Council made responsible for consultation between Member States on all matters related to the United Nations' family and, in particular, the Outer Space Committee and its sub-committees.

The presence of the word "Advisory" in IRAG's title will come as a surprise to no one, for, although the ESA Convention makes the Agency responsible for coordination in European space affairs generally, the creation of the Agency has in no way reduced the value which each Member State places on national sovereignty. Nowhere is this felt more strongly than in the field of international relations and international regulation. Once its advisory nature is accepted, however, it is surprising and gratifying to see how frank and constructive many of the IRAG debates have been. One needs contantly to incant that the IRAG deliberations are not a substitute for national policy declarations, and even more firmly and frequently to stress that the Agency cannot have the pretension of speaking collectively for its Member States. Inspite of such, IRAG has

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[8]Resolution ESA/C/XXII/Res. 3 of 13 Dec., 1977.

[9]U.S. Dept. State Treaties in Force; A List of Treaties and Other International Agreements of the U.S. in Force on January 1, 1983, p. 202 (1982).

[10]The European Space Conference, April 1975, 1 E.S.A. B [8] (June 1975).

[11]The International Relations Advisory Group (IRAG) was set up by a decision of the ESA Council. Such decisions are not published beyond the ESA delegations.

proven a most valuable instrument. It brings together the representatives of thirteen European countries, plus Canada, and there is no other formally constituted consultative committee which can bring influence to bear on such a large number of members of the UN committees in which space matters are debated. More recently IRAG has had its title and status changed, and it is known now as IRAC,[12] The International Relations Advisory Committee, and it reports directly to ESA Council.

It is true that there are many questions on which there are strong disagreements between Member States, but in comparison with the whole range of opinions which one finds in the UN, ESA's International Relations Advisory Committee is a relatively homogenous group. This group contains both Sweden and Canada, whose delegations have together been active in the UN Space Committee in trying to find compromise solutions.

The ESA influence, through IRAC, is particularly important because the very concrete interests of the European Space Agency tend to concentrate attention on real and practical problems and to discourage debating club type discussions. The relevance of these international discussions to every day space activities is becoming increasingly obvious. One particularly good example of ESA's activity in this field of cooperation was in the preparations for the 1979 World Administrative Radio Conference (WARC). In this instance ESA acted as a focal point for Member States and was able to undertake a great deal of preparatory work which might have been difficult for at least some Member States to have carried out with their own resources. As is the case with the UN Space Committee meetings, the Agency also provided a sort of European Secretariat during the WARC and acted as a clearing house and source of technical advice to Member States.

In 1971 the ESRO's Director of Administration, who was responsible for international and juridical matters, had limited sympathy for those who wished to put more effort into following closely the work of the United Nations Outer Space Committee. One could perhaps try in retrospect to fabricate a respectable justification for such a barbaric attitude by pleading that we were at that time overwhelmed by the problems of building up the necessary infrastructure for the European space efforts, and with the novel complexities connected with multi-national programmes with a high technological content. The truth is, however, that the subjects under international discussion seemed far-removed from the realities of the space business and the ritualistic nature of the debates encouraged one to believe that the Space Agency's priorities lay elsewhere. This was wrong. May it not be that the debates at that time suffered from a rather general feeling that the process did not warrant high priority or effort?

Whether or not this was the case, it is astounding that so much has been done by way of international regulation. Some items appear on the agenda with the regularity of turkey at Thanksgiving, but this is inevitable when one is looking for international agreement. Our concern should be to ensure that the regulation making keeps pace not only with technological progress, but also with practical needs. The coming of space stations and of international projects which will take the NASA/ESA/Canadian Shuttle programme cooperation a significant step farther, will create a maze of legal problems to

[12]The International Relations Advisory Committee (IRAC) was established by a decision of the ESA Council. Such decisions are not published beyond the ESA delegations.

which we presently have no answers. Such advances must not be delayed or shelved because we are not smart enough to organise ourselves in time.

There is perhaps something to be learned from the development of international law in the field of nuclear energy. There are, in fact, many resemblances between the developments in nuclear energy and in space. Twenty years ago there was a flourish of international activity within the nuclear energy field because of the acknowledged need to transport radioactive materials beyond national boundaries and the absence of acceptable safety regulations. The division of responsibility which evolved, was approximately as follows:

> the International Commission for Radiological Protection (ICRP) provided the necessary acceptable level of exposure to radiation and contamination;
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> the International Atomic Energy Agency (IAEA) arranged first specialist panels to build up codes of practice based on the current practices of those Member States with nuclear energy programmes, (this often necessitated very expensive supporting research work by the major national atomic energy agencies), and later governmental conferences were convened and invited to approve model sets of regulations, and
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> international transport organisations, such as IATA, IMCO and European railways (CIM), then convened their traditional regulatory bodies to transform the IAEA model regulations into specific regulations for the transport of radioisotopes, nuclear fuel, etc. by land, sea and air.

Few people sitting in a commercial aircraft are bothered today by the possibility that they are positioned a few feet above a container of radiation-emitting radioisotopes bound for some hospital or factory. Nor do trainloads of nuclear fuel arouse the same passions that were evident in the early 60's.

The whole exercise was discreetly orchestrated by the IAEA, and, as is so often the case in these things, was highly dependent on the initiative and far-sightedness of a single IAEA officer, Dr. Jacques Servant. This same orchestration is very must needed now in space law, and a reinforced Secretariat of the UN Outer Space Committee would be the best place for this to be done. Using the nuclear energy analogy, the UN Secretariat could draw more on the expertise not only of Member States but also international governmental and non-governmental organisations, as indeed is already being done in connection with the 1982 UN Space Conference - UNISPACE [13] - to be held in Vienna in August this year. But the Secretariat urgently needs additional qualified staff in order to service the committees and to provide an active liaison with the other bodies such as ITU and others who will rightly wish to become involved in the space aspects of their traditional work as we progress down the road to the general exploitation of space techniques.

There is renewed talk of creating a global space agency, but one view is that we need first to prove that we are prepared to use and reinforce the existing UN machinery,

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[13]This Conference was held in Vienna, August 9-21, 1982. *See* Report of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (hereinafter "UNISPACE"), U.N. Doc. A/CONF. 101/10 (1982).

before we launch a new agency. Without universal support and encouragement, an international space agency would be doomed to failure and would do more than provide an alibi for those space powers who tend to find international cooperation irksome anyway. We must first use the existing organisations. ESA, because of its technical competence and its wide membership, could be used to a greater extent as a catalyst in identifying those problems and areas which are on the critical path.

One worry is that in these particularly delicate political times, there may be a temptation for the UN committee to occupy themselves with further intellectually titillating analyses of such fascinating subjects as the difference between "the province of all mankind" and "common heritage". But the practical problems connected with direct broadcast satellites, remote sensing, use of geostationary orbit are upon us now, and they require pragmatic rules if the space nations are not to be encouraged politely to ignore international regulation. In many cases we can hope for - and indeed need - only international coordination and codes of practice, rather than full-blown treaties, but the urgency is great. If we cannot deal with the present problems, we have no hope of being able to tackle the even greater complexities surrounding the next generation of programmes such as international space stations, solar power satellites, multi-purpose antenna farms. The jurists have been exceedingly active and far-sighted, but they cannot (or, at least, should not) carry the burden alone because there are complex technical problems involved, plus serious political conundrums. Delegates to the UN committee must understand the situation and must be prepared to lend their support to working out practical solutions. The European Space Agency has a direct interest in seeing these problems tackled. It seems that it also has a role to play. One which could well be increased, and could help to direct attention to the problems on this critical path of future technological development.

INTERNATIONAL COOPERATION AND COMPETITION IN SPACE: A CURRENT PERSPECTIVE +

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From its inception, the United States civilian space program has been conducted with a high degree of international involvement. The 1958 National Aeronautics and Space Act (NASA)[1] specifically charges NASA to conduct its activities "so as to contribute materially to . . . [c]ooperation by the United States with other nations and groups of nations . . . ."[2] In fulfillment of this mandate, and in pursuit of its own objectives, NASA has entered into over 1,000 agreements with over 100 countries. These relationships have covered a full spectrum of collaborative endeavors, ranging from major space hardware exchanges to the sharing of mission data among scientists around the globe. Two particularly visible examples of international cooperation associated with the Space Shuttle are the Remote Manipulator System (RMS) built by Canada at a cost of about $100 million and the Spacelab system produced by the European Space Agency (ESA) for around $1 billion. Today, virtually every major NASA program incorporates international contributions.

Benefits of International Involvement

It is important to emphasize that NASA's commitment to international cooperation is grounded solidly in self-interest. NASA enters into joint programs only after ascertaining that the United States' space program will benefit from each undertaking and assumes that its prospective partners do likewise. The advantages accruing to the United States from its international space agreements are significant.

Foreign contributions to NASA programs reduce the costs of these programs to the United States and/or permit a more expansive effort. Financial benefits already realized by NASA through international cooperation are substantial; the value of foreign contributions to NASA programs to date exceeds $2 billion.

The United States gains access to first-class foreign science and technology relevant to its programs. In some cases, foreign assistance, such as through NASA's worldwide tracking system, has been essential to the success of United States missions.

International involvement helps to demonstrate support for proposed programs, easing their acceptance and helping to sustain subsequent domestic political and financial sustenance during their multi-year development phase.

International space collaboration also serves broader national foreign policy goals aimed at retaining positive, productive relationships with the many countries, both developed and developing, which are benefiting from the space programs.

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+ The views expressed are those of the author and not necessarily those of NASA or of any organization with which he is connected.

[1]National Aeronautics and Space Act of 1958, Pub. L. No. 85-568, 72 stat. 426 (1958).

[2]National Aeronautics and Space Act, § 102(c)(7), 72 stat. at 427.