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Legal Implications of Remote Sensing*

The right to sense from space and the open dissemination of data are major issues.

INTRODUCTION

A SIGNIFICANT REVIEW of the legal implications of remote sensing of the Earth from outer space recently has been undertaken by the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space.[1] Since 1974 that Subcommittee has devoted a substantial portion of time at each of its annual sessions to an examination of the legal issues and questions which are raised as a growing number of States, other organizations, and individuals become involved in a burgeoning range of remote sensing programs and applications.[2]

The incentive for this review has come from many sources; the strongest initial impetus, however, seems to have been a concern on the part of some about what the rapid growth of remote sensing activities, dramatic technological progress, and increasing practical applications would mean for the ability of a State to control the development and exploitation of its natural resources. Although natural resource identification is but one of many possible data applications, and the role that those data play in that process may be great or small, the coincidence between the development of remote sensing technology and an intensification of international concern about a shortage of natural resources has focused considerable political attention in particular on the natural resources aspects of present and future remote sensing programs.

The spectrum of issues discussed in the Legal Subcommittee's review has expanded gradually as that group has attempted to integrate into its analysis an understanding of the technical and organizational characteristics of remote sensing systems. That integration, essential to a useful analysis of the legal implications, has been slow and at times quite uncertain.[3] Frequent personnel changes in the participating delegations and assignment by some States of representatives without either professional expertise in the remote sensing area or familiarity with past discussions of the subject within the United Nations continue to inhibit the progress of this analysis. On the other hand, however, the Legal Subcommittee has adopted a thorough and constructive pattern of work in this area, and the Outer Space Division of the United Nations Secretariat has produced a number of extremely useful and informative studies which should substantially assist the Subcommittee in its work.[4]

STATUS OF WORK IN THE LEGAL SUBCOMMITTEE

In addition to the international agreements relating to activities in outer space already in force,[5] the Legal Subcommittee has before it three specific sets of draft principles, one in the form of a draft treaty,[6] and a wide range of comments representing different points of view suggested by members of that body. The Subcommittee is using these texts and comments to facilitate its examination of the legal implications of remote sensing.

The result of this examination is likely to be the elaboration of a series of principles expressly dealing with remote sensing, prin-

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ciples which the UN General Assembly, upon the eventual recommendation of the Outer Space Committee, will be requested to endorse as guidelines which States should respect in conducting such activities. The outlines of five general and noncontroversial draft principles were initially formulated by a working group of the Legal Subcommittee in May 1976, and work was begun on the more controversial issues at the Subcommittee's 1977 session in March.

Since its first session in March of 1963 the Outer Space Committee and each of its Subcommittees have worked on the basis of a genuine consensus, namely, that no decision is made if any participating member raises an objection. Therefore, the issues addressed by the initial draft principles are naturally those on which it has been easiest to obtain unanimous agreement. Efforts to identify and develop common views on the more complex issues have, of course, been undertaken and are continuing.

The Key Issues

THE RIGHT TO SENSE

When the Legal Subcommittee began a serious examination of remote sensing, a number of members announced their beliefs that there was no extant international law which governed remote sensing of the Earth from outer space, that such law should be developed promptly, and that any such law should prohibit sensing the territory of any other State for natural resources data without the consent of the sensed State.[7] In addition, it was suggested by some that the data obtained by such sensing should not be disseminated to any third States or other third parties without the consent of the sensed State.[8] Indeed, it was briefly even argued that Earth-oriented remote sensing would be illegal until international law affirmatively and expressly sanctioned it.[9]

The first question which needed to be clarified, therefore, was the present status of international law in this area. The view of the United States was, and remains, that there is no provision of applicable international law which restricts or inhibits remote sensing of the Earth from outer space. Quite to the contrary, the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies expressly proclaims in Article I 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. . . ." That Article goes on to assert that "There shall be freedom of scientific investigation in outer space . . ." and that "States shall facilitate and encourage international cooperation in such investigation."

In addition, a review of the relevant records of the Legal Subcommittee, of the Outer Space Committee, and of the General Assembly reveal no intention by those bodies to exclude activities such as remote sensing of the Earth from the broad endorsement of the freedom of exploration and use of outer space.

A second question which arises is whether recent technological advances in remote sensing have in any way introduced an activity so fundamentally different from those conceived at the time the 1967 Outer Space Treaty was negotiated and so apparently inconsistent with its basic principles that such an activity could not reasonably be considered to be covered by that treaty. In fact, there has been a long history of multinational participation in publicized and uncontested remote sensing of the Earth, including sensing related to natural resources, from the time of the earlier meteorological satellite programs and manned space flights, which well preceded the adoption of the 1967 Outer Space Treaty. Both the increase in sophistication of sensors and the wider proliferation of practical applications of the data derived have been widely predicted evolutionary advances on earlier capabilities, and hence neither would seem to constitute any basis for a legal distinction between modern remote sensing activities and the universally accepted class of activities in the peaceful exploration and use of outer space.

Recent discussions in the Legal Subcommittee have evinced virtually no significant continuing support for the idea that remote sensing is an activity outside the scope of the Outer Space Treaty, or for the idea that such sensing can be undertaken only with the prior consent of the sensed countries. Although one may reasonably conclude from this a general acceptance that the conduct of remote sensing is unrestricted and uninhibited by present international law, one should not conclude also that such acceptance has quieted the anxieties which gave rise to the discussion in the first place, namely, whether a State's control over development of its natural resources would be diminished by the growth of remote sensing activities.

DISSEMINATION OF DATA

Because it appeared that restrictions on the conduct of sensing did not presently exist and were neither generally feasible nor acceptable, the thrust of the discussion in the Legal Subcommittee turned primarily to the question of the dissemination of data in any future operational remote sensing systems. Of all the issues raised during examination of the legal implications of remote sensing thus far, the most interest, whether legal, political, economic, or technical, and the most diversity of opinion have focused on the questions of how data and information from remote sensing should be disseminated and handled.

In this instance, as well, there has not emerged any consensus that present international law would impose any inhibition or restriction on open dissemination to any interested party of available data relating to any place on Earth. However, as opposed to the question of sensing itself, the Subcommittee has proceeded to examine in considerable detail whether any such restrictions should be applied in the future to data dissemination.[10] As with the question of sensing, the primary incentive of those advocating such restrictions can fairly, if not fully, be described as a concern to protect the ability of States to control activities within their respective territories, principally those activities relating to the development and exploitation of natural resources.

The right of States to exercise such control consistent with relevant principles of international law has repeatedly been supported by virtually all members of the Subcommittee.[11] The principal differences of opinion have emerged over the question of whether remote sensing activities threaten such control in any way, and, if so, at what point protective measures would be useful, feasible, and desirable.

The United States, among others, has consistently taken the position that open data dissemination to all interested parties is in fact more likely to enhance than to diminish the ability of States to control their natural resources.[12] As a practical matter, the adoption of a restricted dissemination policy probably would establish a privileged class of countries, technologically advanced enough to have their own remote sensing programs and therefore capable of obtaining worldwide or broad regional data directly, and a class consisting of most other countries which could obtain only limited portions of the available data possessed by others. Further, restricting data dissemination in order to protect local control over natural resources would seem to be an unnecessary and counterproductive legal overkill, particularly in light of the fact that neither the dissemination nor the analysis of the data could affect that control; only at the point that someone attempts to apply that information to implement an actual plan for development or exploitation of particular natural resources is the question of State control affected.

In this context it has from time to time been argued that sovereignty over natural resources includes the right to exercise sovereign control over all information regarding those resources, regardless of where that information may be gathered or located.[13] This theory appealed to the imagination of a few delegations, but the fact that it never received broad support has allowed the Legal Subcommittee to avoid extensive debates on the definition and scope of national sovereignty over natural resources, a concept much discussed in other forums.

During its 1976 session the Legal Subcommittee for the first time addressed the fundamental but complex distinctions among raw data, processed data, and information derived from the analysis of data. There now seems to be emerging a general understanding, and perhaps agreement, that data dissemination restrictions could in fact significantly reduce the range of benefits available to non-sensing countries and might well be unnecessary to protect their interests.

The thoroughness and detail of the Subcommittee's examination of the legal implications of remote sensing seem to have helped clarify not only the state of present law in this area, but also the nature of the concern which some States continue to feel about their abilities to maintain control over their own resources. A more precise definition of that concern might reasonably be expressed as an anxiety among certain countries that others, whether governments, corporations, or individuals, may be able through superior technology to learn more about the resources of a country than can the government and people of that country. As a consequence it is feared that the advantages of such foreign entities over those of the local authorities in negotiations for the exploitation of natural resources could be extraordinarily enhanced, even to the point of serious detriment of those who originally posess the resources.

As a gradual refinement in the analysis of the legal implications of remote sensing has evolved, two new types of approaches have been suggested in order to accommodate the strong desire of most States to encourage the development of remote sensing, while guarding against the disadvantages of a State knowing less about its own resources than does some foreign entity. The first of these suggestions is that data with a resolution higher than a specified number of meters should not be disseminated without the sensed country's agreement, while all lower resolution data would be unrestricted.[14] The underlying, if unproven, theory is that only data of high resolution would have relevance to natural resources exploitation. A key assertion in this proposal is that the dissemination of high-resolution data or the equivalent can somehow threaten or undermine the sovereignty of a State over its natural resources. The integrity and factual basis of such an assertion obviously must be very closely examined, because neither seem to appear on the surface of the argument.

The second approach suggests, among other things, the possibility of certain constraints on the handling of "processed information or analysis concerning the natural resources" of a sensed State, with a view to "respecting the confidentiality of, or the need for prior access of the sensed State to, such information, to the extent necessary to avoid detrimental effects on the intests of the sensed State."[15] Although this proposal needs considerable clarification, the nature of the initial response it received seems to indicate that many delegations which in the past have been advocating data dissemination restrictions may now be moving toward a realization that their basic concerns do not in fact arise from open data dissemination.

In this context, it would seem that proposals for agreements on regulation of the dissemination of information gained from analysis of data might be more appropriately the subject of bilateral or perhaps regional consideration among trade, commodities, or economic development experts than the subject of a multilateral declaration of legal principles relating to the peaceful uses of outer space.

Such agreements may well prove quite desirable; for example, the United States and Canada have a long-standing agreements on the simultaneous release of government estimates of certain agricultural crop yields. However, an analysis of the feasibility of such regulation quickly demonstrates its complexity and the unlikely prospect that it could be based primarily on the use of data derived from remote sensing. Just as one must understand the integration of economic, political, institutional, and technical, as well as the legal, characteristics of the various aspects of remote sensing in order to develop useful guidelines for the conduct of such activities, one must be aware also of the integration of data and information from many different sources which is generally essential to the production of useful analysis and knowledge such as that contained in those crop forecasts.

In such a synthesis, data from remote sensing satellites may play a major or a very minor role. The difficulties of deciding first, how to measure that role and, second, why it should make any difference in the handling of the end product of the analysis (namely, the user knowledge) are apparent. In addition, one must consider the difficulties inherent in regulating the dissemination of such user knowledge in a world of diversified legal systems in which in some cases such knowledge would be held only by the governments, and in others it would be developed and held by either or both government and private organizations or individuals. Because such differences are fundamental to the political structures of those various systems, a single, comprehensive, and universal regulatory formula would probably be most difficult to develop.

Future Considerations

If this is indeed the essence of this concern, it raises a fundamental question of whether the constructive and effective answer might well lie in the direction of expanding data dissemination and technological capabilities throughout the world, rather than restricting them. Pragmatically one must assume that such sensing, analysis, and negotiations will continue to occur. If this is the case, it would seem that local governments are best protected at a minimum by an assurance that they are able to obtain at least the same data about their resources from such remote sensing systems as any third party might be able to obtain.

Because an ability to analyze the data is obviously an integral part of useful access to them, emphasis on the proliferation of such capabilities would seem to be called for. There are numerous vehicles through which this might be accomplished, regional cooperation appearing to be the most generally attractive in many parts of the world for economic and technical reasons. Although

realistically no system can guarantee an absolute equality in analytical skills, nevertheless a great deal can be done to help ensure that the potentially vast benefits of modern remote sensing technology are shared by all interested countries, rather than adding to the separation between those which are technologically advanced and those which are not. Significant steps in this direction should reduce substantially the concerns of developing countries that the widespread growth of remote sensing activities might disadvantage them. To the contrary, significant steps in this direction, coupled with an expansion in such activities, are likely to redound to their substantial benefit.

If this assessment of the interests represented and of the evolution evinced in the Legal Subcommittee's review of remote sensing proves correct, the solution to what has been the most complex and controversial of the many issues discussed may in fact lie in the formulation of guiding principles which further encourage the worldwide development and sharing of remote sensing capabilities rather than principles which would inhibit them. Confidence that one is an active and capable participant in the use of this new technology would go far toward minimizing fears of disadvantage, and such participation would also presumably bring substantial benefits to those who become involved. That confidence does not always come easily; it would require a continuation and probably an expansion of present bilateral and multilateral training and assistance programs. It could reasonably be presumed, however, that such efforts, coupled with progressive, positive guiding principles and an institutional network of open international cooperative ventures would generate substantial benefits both to nations individually and the international community as a whole.

The elaboration of recommended guidelines, for the conduct of remote sensing activities, which were based on the open and cooperative principles contained in the relevant provisions of the Outer Space Treaty would seem to be the most constructive contribution which the Legal Subcommittee could make in this area. It is probably unnecessary, and in any case premature, to attempt to formulate any additional comprehensive multilateral treaty or convention or remote sensing at this time. However, the elaboration of such recommended guidelines might well prove helpful as present experimental remote sensing programs are gradually replaced by more permanent operational systems. A wide range of issues in addition to those discussed above still await examination by the Legal Subcommittee, and could constitute the basis of a useful set of principles by which States should be guided in the conduct of remote sensing activities.

Footnotes

[1] The matter of the legal implications of remote sensing of the Earth from outer space has been on the agenda of the Legal Subcommittee since 1972, but that Subcommittee did not address that question in any detail until its 13th Session in May 1974. The full Committee is hereinafter referred to as the Outer Space Committee.

[2] Forty-five countries and five international organizations are actively participating in the Landsat remote sensing program. See Aeronautics and Space Report of the President: 1975 Activities, H.R. Doc. No. 94-541, 94th Cong., 2d Sess. 22 (1976).

[3] See Statement by the United States Representative to the Legal Subcommittee of the Outer Space Committee, 24 May 1976; summary in U.N. Doc. A/AC.105/C.2/SR.260 (1976).

[4] "Available Studies, Reports and other Material Relevant to the Consideration of Remote Sensing From Satellites", U.N. Doc. A/AC.105/176, 15 October 1976.

[5] (a) Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 18 UST 2410; TIAS 6347; 610 U.N.T.S. 205 (entered into force October 10, 1967).

(b) Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched Into Outer Space, 19 UST 7570; TIAS 6599; 672 U.N.T.S. 119 (entered into force for U.S. December 3, 1968).

(c) Convention on International Liability for Damage Caused by Space Objects, TIAS 7762; 24 UST 2389 (entered into force re U.S. October 9, 1973).

(d) Convention on the Registration of Objects Launched Into Outer Space (entered into force September 15, 1976; not yet proclaimed.

[6] (a) French-Russian working paper: U.N. Doc. A/AC.105/C.2/L.99 of 27 May 1974.

(b) Brazil-Argentina draft treaty: U.N. Doc. A/C.1/1047 of 15 October 1974.

(c) United States working paper: U.N. Doc. A/AC.105/C.2/L.103 of 19 February 1975.

[7] Brazil-Argentina draft treaty, *supra* note 6(b).

[8] *Id;* and French-Russian working paper, *supra* note 6(a).

[9] Statement by the Brazilian Representative to the Working Group on Remote Sensing of Earth by Satellites, of the UN Outer Space Committee, New York, 19 February 1974. Printed by the Brazilian Mission to the United Nations, 19 February 1974.

[10] See summary records of the 14th (1975), and 15th (1976) Sessions of the Legal Subcommittee,

U.N. Docs. A/AC.105/C.2/SR.226-245 (1975) and A/AC.105/C.2/SR.246-265 (1976).

[11] For example, even the most outspoken advocate of open data dissemination, namely the United States Delegation, has consistently supported this right. See United States Mission to the UN Press Releases USUN-10/75) of 19 February 1975 and USUN-116(75) of 13 October 1975.

[12] See USUN Press Releases, *supra* note 11; and U.N. Doc. A/AC.105/C.2/SR.260 (21 May 1976).

[13] See, for example, Statement by Brazilian Representative, *supra* note 9, at p. 6; also Statement by the Indian Representative to the 15th Session of the Legal Subcommittee, U.N. Doc. A/AC.105/C.2/SR.249 at p. 6 (6 May 1976).

[14] Proposal by the Soviet Union; See Report of the Scientific and Technical Subcommittee [of the UN Outer Space Committee] On the Work of Its Thirteenth Session, U.N. Doc. A/AC.105/170 (12 April 1976) at pp. 15-16.

[15] Proposal by the Canadian Representative to the 15th Session of the Legal Subcommittee, U.N. Doc. A/AC.105/C.2/SR.257 at p. 5 (18 May 1976).