SHOULD THE UNITED NATIONS DRAFT A TREATY ON EARTH RESOURCES SATELLITES?

A Pro and Con Analysis

*Eilene Galloway**

I. Introduction

On March 29, 1972, ceremonies were held simultaneously in Washington, London, and Moscow for the signing of the *Convention on International Liability for Damage Caused by the Launching of Objects into Outer Space.* After representatives of the United States, the United Kingdom and the Soviet Union affixed their signatures to this document in Washington, 37 nations joined in signing this new international agreement. This is the third outer space treaty drafted by the United Nations Committee on the Peaceful Uses of Outer Space, working largely through its Legal Subcommittee.

The first space treaty, ratified on October 10, 1967, is known as the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies.* By ratifying or acceding to this document, 64 States have now bound themselves to observe guidelines in the development of space activities for peaceful purposes for the benefit of all mankind. It was recognized, however, that some of the general principles would require more detailed implementation in order to provide a basis for solving problems created by advances in space science and technology.

The second space treaty, therefore, represented an elaboration of the general principles set forth in the Outer Space Treaty on the treatment of astronauts and space objects. Starting from the Treaty's Articles V, VIII and XIII, the United Nations drafted the *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space,* which was ratified on December 3, 1968. There are now 56 States which are parties to this treaty.

Similarly, Articles VI, VII, and VIII of the Outer Space Treaty provided a foundation upon which to build the detailed provisions of the Convention on Liability for Damage which has been recommended for ratification to States by the United Nations General Assembly.

A number of other space problems have occupied the Committee on the Peaceful Uses of Outer Space during recent years. The agenda has included such subjects as the

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registration of space vehicles, the definition of outer space, navigation satellites, treaty proposals concerning the moon, and direct broadcast satellites. Among the emerging problems, however, none has excited more attention than the implications for the future of earth resources satellites.

II. Earth Resources Satellites

At a time when people throughout the world have become increasingly conscious of the necessity for protecting the environment, earth resources satellites offer hope as a new tool for the management of resources. These satellites are designed to collect data by remote sensing and send it electronically to earth stations which change the signals to a type of photograph to be processed at a data center. Few such centers are needed, although the amount of data to be handled is tremendous.

Rapid sequential information can be derived from large areas of the earth and when analyzed provide an improved basis for decision making. Mineral resources can be detected and river systems measured. Pollution patterns can be mapped as they appear in air, land and water. Housing and transportation can be analyzed for urban and regional planning. From the distribution of snow, estimates can be made of the rate of melting so that floods can be predicted far in advance of their rise. The blighted parts of forests and crops can be detected so that steps may be taken to prevent the spread of insects and disease. Forest fires can be spotted before they spread beyond control. Volcanoes can be monitored and the paths of storms and hurricanes sighted long before they strike populated cities. We have already seen the benefits of meteorological satellites in saving lives and property through early storm warnings. By using remote sensing, satellites add a new perspective to knowledge because they penetrate deeply into environmental phenomena and operate with such rapidity that quick reactions can be made to any changes to objects that are being measured.

NASA will soon launch the first earth resources technology satellite, the ERTS–A, with experiments from 28 states, the District of Columbia, and 22 foreign countries. The SKYLAB spacecraft will be sent into orbit in the spring of 1973, and the ERTS-B is scheduled for launching in November 1973. An operational flight could begin as early as the end of 1975.

Fortunately, there is widespread recognition that this new space technology can have many consequences—political, economic, legal, social and cultural. Numerous problems that are likely to arise have been identified, and there is awareness on the part of many nations and international organizations that institutions must prepare themselves to keep abreast of this new development.

III. The United Nations Working Group on Remote Sensing of the Earth by Satellites.

On November 29, 1971, the United Nations General Assembly adopted unanimously a resolution on "convening of the Working Group on Remote Sensing of the Earth by Sattellites" and thereby set in motion an inquiry into substantive matters involving earth surveys by satellites. The General Assembly welcomed the establishment of a working group by the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, and Pointed out that "the potential benefits from technological developments in remote sensing of the earth from space platforms could be extremely meaningful for the economic development of all countries, especially the developing countries, and for the preservation of the global environment. . ." The General Assembly was aware that experiments on the feasibility of remote sensing would begin early in 1972 and requested Member States to submit reports, comments and working papers to the Working Group. Approval was given for the Working Group to seek the views of United Nations bodies and specialized agencies, as well as other international organizations having an interest in earth resources satellites. The Secretary General was requested to give comments and working papers to the Working Group, and, finally, the General Assembly asked to be kept "informed in a comprehensive fashion on the progress of its work."[1]

The appointment as Chairman of the Working Group was made to Dr. Franco Fiorio, a member of the Italian Delegation to the United Nations' General Assembly since 1957, and Italian Delegate in the U.N. Committee on the Peaceful Uses of Outer Space since 1958.

We are now in a period when ideas are sought in order that national and international institutions and activities may be coordinated with the development of earth resources satellites both in their experimental and operational stages. The United Nations may consider a number of alternatives, among which is the possibility of drafting a treaty on remote sensing by satellites. At a time when analyses and decisions are in the process of being made, this paper is designed as a contribution to elicit discussion on the advantages and disadvantages of the treaty approach toward dealing with problems likely to arise from the use of earth resources satellites.

IV. A Treaty on Earth Resources Satellites: PRO

1. Existing and pending treaties on outer space represent great advances but do not provide adequately for problems anticipated from an operational remote sensing system. This new space technology is worldwide in scope and will also have an impact on individual nations, particularly with regard to economic, political and legal matters. It is, therefore, a subject requiring international agreement among nations with regard to its development and control.

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[1] U. N. Doc. A/RES/2778 (XXVI), December 8, 1971.

2. The United Nations Committee on the Peaceful Uses of Outer Space, working through its Legal Subcommittee and its Scientific and Technical Subcommittee, has been highly successful in relating space science and technology to national and international space activities and in formulating treaties which have gained wide acceptance. We can, therefore, have confidence that this Committee will be able to work out the problems involved in achieving a consensus on provisions appropriate for a treaty governing earth resources satellites.

3. The idea has been accepted that the Treaty on Outer Space (October 10, 1967) contains general guiding principles which can be implemented in more detailed treaties as science and technology develop and international support is organized to meet new challenges. This is the formula used in negotiating two additional space treaties: the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (December 3, 1968); and the Convention on International Liability for Damage Caused by the Launching of Objects into Outer Space (signed on March 29, 1972). The same formula can be used in the case of earth resources satellites.

4. Some of the Outer Space Treaty's guiding principles which can serve as a point of departure in working out the details of problems involved in remote sensing are: (1) that the use of outer space shall benefit all countries "irrespective of their degree of economic or scientific development, and shall be the province of all mankind"; (2) that space activities shall be carried on in accordance with international law and the UN Charter; (3) that adverse changes in the Earth's environment shall be avoided; (4) that the UN Secretary General shall be informed of all space activities and disseminate the information immediately and effectively; (5) that equality shall serve as a basis for considering requests to observe the flight of space objects, the conditions to be determined by agreement between the States concerned; and (6) that practical questions carried on by international inter-governmental organizations shall be resolved under principles specified in the Treaty.

5. The Convention on International Liability for Damage Caused by the Launching of Objects into Outer Space also contains provisions which are applicable to situations which may arise in connection with remote sensing insofar as they fall within the definition of "damage" in this treaty. If supplementary provisions on damage are needed for remote sensing, they may be formulated in a treaty governing earth resources satellites.

6. In addition to more detailed provisions regarding principles for the conduct of space activities, a treaty on earth resources satellites could provide for an international agency to deal with problems of remote sensing as well as any other international space problems upon which a consensus can be achieved.

V. A Treaty on Earth Resources Satellitss: CON

1. It is not practical to assume that another space treaty could result in adequate methods for meeting problems incident to an operational earth resources satellite system. As far as general guiding principles are concerned, a fundamental basis has already been laid in the Treaty on Outer Space so that this new environment is recognized as the province of all mankind and its use for the benefit of all countries. The United States, as the first nation to inaugurate the experimental ERTS program, has matched international law with a national policy announced by President Nixon that "this program will be dedicated to produce information not only for the United States but also for the world community."[2] This policy is consistent with that established in the U.S. National Aeronautics and Space Act of 1958 in which Congress declared that "activities in space should be devoted to peaceful purposes for the benefit of all mankind."

2. Space programs are planned, financed, and conducted by national governments and where international cooperation is concerned, more specific guidelines and organizational arrangements are furthered by bilateral and multilateral agreements. This method, particularly for operational projects such as meteorological and communications satellites, has proved effective. Weather satellite data is shared according to workable international arrangements made by nation states, and commercial space communications are governed by the International Telecommunications Satellite Organization (INTELSAT).

3. An international agency devoted to remote sensing problems, and established by treaty outside the framework of the United Nations, could hardly expect to take over satellite activities already organized along functional lines on an international basis, and yet some of these activities are closely linked with remote sensing. Therefore, the agency would be likely to have a limited jurisdiction, still further diminished because its terms of reference would not include problems arising from direct broadcast satellites, navigation satellites, the registration of space vehicles, and other uses for space technology which might develop in the future. Such an agency would, furthermore, have to develop special relations with those parts of the United Nations which already include satellites as a tool for functional problems such as weather, health, education, natural resources, and communication.

4. An international agency established within the United Nations to deal with earth resources satellites would find it difficult to accomplish its objectives when major space functions are already an integral part of such specialized agencies as the International Telecommunication Union, the World Meteorological Organization, UNESCO, the World Health Organization, and the Economic and Social Council with its interest in natural resources satellites.

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[2]Nixon, Strengthening the Total Fabric of Peace, Department of State Bulletin, October 6, 1969, p. 301.

5. Whether organized within or outside the United Nations, an international agency would have difficulty in financing its activities. It may be anticipated that nations which finance and operate satellites for many purposes would not wish to finance an international agency set up to regulate and control a few of their programs, particularly when more flexible alternatives are open to them.

6. Proposals for an international ERTS agency overlook the fact that problems which might be solved or mitigated by this new tool also require surveying by aircraft. A team of professionals responsible for surveying natural resources needs total information of an area, regardless of whether the information is obtained by means of planes or space vehicles. This method of procuring information is not a sufficient basis for establishing an international agency, particularly, when it is considered that its authority would be limited by the fact that spacecraft operate in outer space where all claims to sovereignty have been renounced by treaty, whereas planes operate in airspace where sovereignty prevails. How could total aerospace information be achieved? Scientists and engineers are mission-minded and have been outstanding as team workers in defining projects and organizing all relevant means for attaining agreed-upon objectives. Institutional arrangements should facilitate and not hamper such functional approaches to the solution of the earth's environmental problems.

VI. The United Nations Approach to Problems of Remote Sensing

For some years the United Nations has given attention to problems of remote sensing of the earth by satellites. The Economic and Social Council issued reports on the subject in 1970 and 1971, pointing out that ". . .resources satellites are expected to complement rather than replace already conventional techniques based on aircraft surveys, ground surveys and laboratory work for mapping and natural resources development. . . . . [Such] techniques [are] employed, for example, in scores of Special Fund projects being executed by the Resources and Transport Division."[3]

The Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee have also produced a number of basic studies on remote sensing which is "defined as a system of methods for identifying the nature and/or determining the condition of objects on the earth's surface and of phenomena on, below or above it, by means of observations from airborne and spaceborne platforms."[4] Panels have been established to implement research programs in remote sensing, the first being held in Ann Arbor, Michigan from May 3-14, 1971. Between September 13 and 17, 1971, a second

[3]United Nations Economic and Social Council. Development of Natural Resources, Natural Resources Satellites. UN document E/4779, February 4, 1970. p. 2. See also UN documents E/4779/Add.1, June 17, 1970 and E/4779/Add.2, January 12, 1971.

[4]UN Committee on the Peaceful Uses of Outer Space. Report of the United Nations Panel Meeting on the Establishment and Implementation of Research Programmes in Remote Sensing. UN document A/AC.105/98. January 20, 1972, 8 p. and 5 p. annexes.

panel was held in Rome on "Technical Consultation on the Application of Remote Sensing to the Management of Food and Agricultural Resources." The third panel, held in Sao Jose dos Campos, Brazil from November 29 to December 10, 1971, paid particular attention to remote sensing based on the emission and reflection of electromagnetic radiation. This type of approach indicates an awareness on the part of the United Nations of the necessity of basing any future plans on a firm foundation of factual knowledge concerning the science and technology of remote sensing. Furthermore, the professional knowledge of experts throughout the world is being sought on research and development in this area.

In approaching its first tasks, the UN Working Group recognizes the reasons why remote sensing of the earth by satellites is needed. The projected increase in the earth's population, coupled with a decrease in natural resources, creates the necessity for accurate maps and discovery of capabilities for supporting the people of the world. Increases in the rate of energy consumption also call for the conservation of existing sources and the exploitation of new reservoirs of energy. Remote sensing can be instrumental in planning for increased agricultural production and better use of water supplies. It is known that a limiting factor in the development of ERTS satellites will be the cost of the system to those who are using the data. Satellites and space platforms are expensive, and to this investment in space vehicles must be added the cost of processing astronomical amounts of data at ground stations, as well as its dissemination to experts who know how to use the information in solving problems. Full assessment of the potential benefits and limitations of remote sensing will provide a practical base for international law.

VII. A Problem for International Law

In looking toward the future of international law concerning outer space activities, there is a question of how many space treaties should be negotiated and come into force. Is a separate space treaty to be formulated for every major space problem, or is there to be a limitation on the treaty process as a means for solving problems? Each treaty is apt to have a different membership, and only a limited number of states could be counted as members of each space treaty. Are general principles in the Treaty on Outer Space to be repeated in provisions of subsequent treaties dealing with specific problems arising from space activities? If they are not repeated, then to what extent can dependence on treaty provisions be relied upon in contributing to the solution of international problems? Are all the treaties to be codified so there is a coherent body of international law on outer space matters? What are the emerging problems which might be dealt with under existing space treaties rather than new international agreements?

In analyzing these questions, it must be borne in mind that there are four types of international law concerning outer space: (1) law which applies solely to outer space; (2) law which applies to the earth, airspace and outer space as an environment; (3) law which

applies to functions performed in outer space and occasionally including airspace; (4) law which applies essentially to activities performed on the Earth as a consequence of the exploration and particularly the uses of outer space. Earth resources survey satellites come under this fourth type of international law. They are a new technological tool which is placed in outer space for functions which are entirely earth-oriented.