

SOME CURRENT PROBLEMS  
OF INTERNATIONAL SPACE LAW

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This work is dedicated to my mother and  
father without whose help and support this  
work would not have been possible.

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BY

P. H. RICHARDS, B.A.(LAW), P.G.C.E.

Since 1957 when the first satellite was launched into space the United Nations has attempted, through its Committee on the Peaceful Uses of Outer Space, to provide regulations governing the actions of States in the environment. The Treaty of Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 1967, was the first attempt at such regulation. However, this treaty, which purported to lay down principles governing man's future use of outer space, has, it is suggested, shown itself to be inadequate. The principal reason for this is that when it was drafted the United Nations did not envisage how the use of space would develop, and therefore its provisions have failed to regulate for man's present or future presence in this environment. The result of this is that those States involved in space exploration have, by state practice, produced rules of conduct to fill in the omissions and short comings of the Outer Space Treaty. Further, in certain areas, the practice of these States has gone so far as to subvert the principles laid down in this treaty.

The object of this work is to examine the mechanisms by which state practice has developed and how it has suborned the provisions of the Outer Space Treaty. Further, it attempts to examine how state practice is continuing to undermine other outer space treaties, more particularly the Agreement Governing Activities of States on the Moon and Other Celestial Bodies, 1979. The thesis has also examined how national attitudes are preventing the United Nations from concluding new agreements which, it is suggested, give rise to the development of state practice. The effect of the rise of state practice would tend to reduce the role of the United Nations from a law making one to that of a mere monitoring agency.

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TABLE OF ABBREVIATIONS

A.B.A.J.	American Bar Association Journal
A.B.M.	Anti-Ballistic Missile
A.D.I.Z.	Air Defence Identification Zone
A.J.I.L.	American Journal of International Law
A.S.A.T.	Anti-Satellite Weapons/Systems
B.F.S.P.	British and Foreign State Papers
C.A.D.I.Z.	Canadian Air Defence Identification Zone
CMND	United Kingdom Command Papers
COMSAT	Communications Satellite Corporation
COPUOS	Committee on the Peaceful Uses of Outer Space
COSPAR	Commiteee on Space Research, International Council on Scientific Unions
DA PAM	United States Department of Army Pamphlet
D.B.S.	Direct Broadcast Satellite
D.T.B.	Direct Television Broadcasting
Ed	Editor
E.R.T.S.	Earth Resource Technology Satellite (Now known as Landsats)
F.O.B.S.	Fractional Orbital Bombardment System
G.A.O.R.	General Assembly Official Records
I.C.B.M.	Intercontinental Ballistic Missile
I.C.J.	International Court of Justice
I.F.R.B.	International Frequency Registration Board
I.L.M.	International Legal Materials
INTELSAT	International Telecommunication Satellite Consortium
I.T.U.	International Telecommunications Union
MOORE "DIGEST"	Digest of International Law
NASA	National Aeronautics and Space Administration

### III

N.W.U.L. REVIEW	North-Western University Law Review
P.C.I.J. REP	Permanent Court of International Justice Reports
RES	Resolution
SALT	Strategic Arms Limitation Treaty
S.P.O.T.	Satellite Probative D'Observation De La Terre
SYMPOSIUM (1959)	U.S. Congress. Senate. Special Committee on Aeronautical and Space Sciences. Space Law; A Symposium. 85th Congress, 2nd Session. Washington (1959).
SYMPOSIUM (1961)	U.S. Congress. Senate. Special Committee on Aeronautical and Space Sciences. Legal Problems of Space Exploration; A Symposium. 87th Congress, 1st Session. Washington (1961).
T.I.A.S.	Treaties and Other International Agreements
U.C.L.A. LAW REVIEW	University of California Law Review
U.K. MISC.	United Kingdom Miscellaneous Papers
U.K.T.S.	United Kingdom Treaty Series
U.N.	United Nations
U.N. DOC	United Nations Document
UNDRO	United Nations Disaster Relief Organisation
UNESCO	United Nations Educational, Scientific and Cultural Organisation
U.N.G.A.	United Nations General Assembly
U.N.T.S.	United Nations Treaty Series
U.S.T.	United States Treaty Series
W.A.R.C.	World Administrative Radio Conference

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## INTRODUCTION

For the past twenty-five years since the launch of Sputnik I in 1957 the world community within the United Nations has been charged with providing legal regulations for the greatest technological challenge the world has seen - man's conquest of space. Indeed, this technological challenge has, in its turn, given birth to great political, legal and social challenges, which the United Nations has attempted to meet. As is the case in all large organisations with widely divergent views some aspects of outer space have been dealt with highly successfully, others less so. However this may be an indication of the fact that general agreements may be arrived at comparatively easily, whilst those dealing with specific issues are only likely to be concluded after difficult, protracted negotiations seeking to reconcile nationalistic arguments.

The body charged with facing the challenges of outer space is the Committee for the Peaceful Uses of Outer Space (COPUOS), which was established by the United Nations under Resolution 1472 (XIV) of December 12th 1959. However this was not without a certain degree of disagreement, which in future years would be seen all too often, though to be fair there were times when remarkable successes were achieved through co-operation between the two leading space nations, the U.S.S.R. and the U.S.A.

Originally the first discussion on outer space was contained in a debate on disarmament in 1957, followed a year later by a special item on outer space being put before the General Assembly which resulted in an Ad Hoc Committee on the Peaceful Uses of Outer Space being created (1).

1. P. JANKOWITSCH, "Contributions of the United Nations Committee on the Peaceful Uses of Outer Space: An Overview". 5 Journal of Space Law, (1977), p.7.

Both the U.S.S.R. and the U.S.A. set out their respective positions regarding the use of outer space to this body. The U.S.S.R. wished to place limitations on military activity in space, whilst the U.S.A. was somewhat broader in its approach and sought to create a base for international co-operation (2). However, though negotiations took place for the rest of 1958 with a view to creating a permanent committee, no agreement was reached. The U.S.S.R. then decided to withdraw from the Ad Hoc Committee and at the same time withdrew their proposal (3), resulting in the United States' proposal being adopted (4). The effect of this was to reduce the report of the committee to a document containing mere recommendations for an outer space regime based on co-operation (5). According to J. J. Hahn the Ad Hoc Committee, realising that no ground could be made without a leading space nation being a participant, framed its proposals in such a way as to encourage the U.S.S.R. to take part in any future proposals of the General Assembly (6).

Shortly after the presentation of the report of the Ad Hoc Committee, the General Assembly decided that there was a need for a permanent organisation to consider any questions relating to outer space. The result of this decision was the setting up of the Committee on the Peaceful Uses of Outer Space (7), although this committee was only actually made permanent in 1961 (8). In 1962 two sub-committees, the Scientific and

2. 13 U.N. GAOR, 1 Annexes (Agenda Item 60), at 1, U.N. DOC A/3818 (1958) (U.S.S.R. Proposal); 13 U.N. GAOR, 1 Annexes (Agenda Item 60), at 4, U.N. DOC A/3902 (1958) (U.S.A. proposal).
3. U.N. DOC A/C 1/S.R. 995, (1958), p.15.
4. 13 U.N. GAOR, 1 Annexes (Agenda Item 60), p.6, U.N. DOC A/4009 (1958)
5. 14 U.N. GAOR, 1 Annexes (Agenda Item 25), p.1, U.N. DOC A/4141 (1959)
6. J.J. HAHN, "Developments Towards a Regime for Control of Remote Sensing from Outer Space", 12 The Journal of International Law and Economics, (1978), p.429.
7. U.N.G.A. Res 1472 (XIV), December 12th 1959.
8. U.N.G.A. Res 1721 (XIV), December 20th 1961.

Technical Sub-Committee and the Legal Sub-Committees, were set up in recognition of the interdependence of the legal implications of space exploration and exploitation with the technical means of achieving these activities. Undoubtedly these two sub-committees have played a large part in helping the full committee "to encourage continued research and disseminate information on research, and to study the legal problems arising from the exploration of Outer Space" (9). This piece of work will concentrate more on the activities of the Legal Sub-Committee rather than the Scientific and Technical Sub-Committee, because of the legal nature of the research.

The Outer Space Committee first met in 1962 when it was stated by its first chairman, Ambassador Franz Matsch, that the Committee would proceed by consensus rather than voting. However this was subject to the understanding that the General Assembly rules of procedure, making voting possible, would nevertheless continue to apply (10). The committee has used the consensus system since this date. The reason for such a departure from the normal voting system was that any agreement had to have the backing of both the U.S.A. and the U.S.S.R., the two leading space nations, and the only ones involved at that time in space exploration, since otherwise any agreement would quickly become ineffective and unworkable.

Originally the Ad Hoc Committee was composed of 18 members, the majority of whom could be said to be western nations and thus the Soviet Union, Poland and Czechoslovakia refused to take part in the early meetings of the Committee. However in 1959 the United States and the U.S.S.R. came to an understanding that the Ad Hoc Committee might be enlarged to 24 and subsequently four more states from the Socialist bloc

9. JANKOWITSCH, (1977), p.7.

10. Ibid. Note also P. DEMBLING and D.M. ARONS, "The Evolution of the Outer Space Treaty", 33 Journal of Air Law and Commerce, (1967), p.419.

were added, along with Austria and Lebanon. Since that date the membership has been continually enlarged as an increasing number of states, realising the importance of space exploration, have desired to take part in the formulation of space law and policy. Eventually, on November 3rd 1980, the General Assembly adopted a resolution that the President of the General Assembly would appoint not more than five new members to COPUOS (11). The result of this was to increase the Committee from 48 to 53 members. The effect of the Committee increasing in this manner has been to give less developed countries a substantial say in the evolution of law and policy relating to outer space, even though they may not be actively involved in space exploration. Thus the most technologically and scientifically advanced states cannot dominate the formulation of law and policy to the same extent as perhaps they were able to do in the early years of COPUOS. This is particularly true when one considers that the whole procedure within COPUOS is dominated by the consensus system. Indeed, this might explain the tendency for the gradual loss of momentum in reaching agreement on issues relating to outer space over the years from 1973 to the present day.

Since the consensus system was brought into use in 1962 the increase in the number of members has inevitably rendered total agreement more difficult to achieve. It is alleged that the consensus process has resulted in "a very patient, low key, and deliberate means for obtaining a maximum clarification of competing positions and for the final selection of words and phrases marking out the intended agreement" (12). Further R. F. Stowe has assessed the consensus process in the following manner:-

11. U.N. DOC A/RES/35/16, 3rd Nov. 1980.

12. C.Q. CHRISTOL, The Modern International Law of Outer Space, Pergamon Press, (1982), p.17.

"No decisions or recommendations are made if objection is raised by any of the members. The extensive debates which often result from this procedure are a small and worthwhile price to pay for the reliability, thoroughness and widespread acceptability of the Outer Space Committee's work. The consensus procedure has in the long run proved to be one of the most efficient and effective, if not widespread, means to develop international law" (13).

However this efficiency should be measured against the protracted negotiations and disagreements which have taken place in, for instance, the five areas of space law discussed in this work, i.e. sovereignty in space, armaments in space, the legal status of space and other celestial bodies, remote sensing and direct broadcasting by satellite. Thus, if one considers the question as to the upper limit of national sovereignty, it may be seen that discussions have now been taking place for some twenty years or more without a solution being found. Further if one examines the problem associated with the drafting of the Moon Treaty it may be found that the COPUOS itself became so impatient with its own lack of progress that the Chairman, at the beginning of the 22nd session on June 18th 1979, stated:-

"Indeed the end result of the work was not altogether encouraging, and we have to face this fact squarely ... Progress by the Sub-Committee on the outstanding issues will take place only as Member States display an active desire and, let me say, a stronger political will to achieve the necessary compromises ... In this connection the time might even have come for us to reassess our respective positions in order to see whether we cannot really bridge this gap. And if, in all honesty, we find ourselves unable to do so, the time might also have come to devote our energies - at least for the time being - to other important areas of concern which devote our attention" (14).

Clearly it must be taken from this speech that the consensus system is not "the most efficient and effective" method since it is likely to lead to excessively protracted negotiations that are hide-bound by discussions on

13. R.F. STOWE, "Statement, International Space Law", Hearings before the Sub-Committee on Space Science and Applications of the House Committee on Science and Technology, 94th Congress 2nd Session 1976, p.39.
14. U.N. DOC A/AC 105/P.V. 190, June 18th 1979, p.7-8. See also text of Chapter 2 of this work.

minutae without necessarily producing clearly defined terms. One explanation for these difficulties is that COPUOS by enlarging its membership to the present figure has lost a great deal of its homogeneity, which has resulted in States with little or no active interest in space exploration attempting to impose restrictions on States heavily committed to such activities. Thus, for instance, the equatorial States in the 1976 Bogota Declaration attempted to claim sovereignty over the geostationary orbit (15). Further examples of such activities may be seen in the terminology of the 1979 Moon Treaty in which Article XI (1) states that the "Moon and its natural resources" are to be "the common heritage of mankind" and that there is to be "an equitable sharing by all States Parties in the benefits derived from these resources" (16), indeed such clauses may also be found in the Convention on the Law of the Sea, 1982.

However it must be said that the consensus system does allow agreements to be arrived at which have the support of all the members of COPUOS since the process undoubtedly encourages a collective judgement (17). Further if agreements were reached on the basis of a simple majority then clear difficulties would arise if the major space nations find themselves having to comply with an international agreement with which they disagree or consider unworkable. Nevertheless the effect of the laborious and time-consuming consensus process tends to undermine the philosophy of its use, in that it gives rise to the development of state practice. The effect of this is to suborn existing agreements whilst the consensus

15. See Chapter 1 below for the discussions on this.

16. Article XI Paragraph 7(d).

17. E. GALLOWAY, "Consensus As a Basis for International Space Cooperation", Proceedings of the 20th Colloquium on the Law of Outer Space, (1978), p,106. Publisher: The Proceedings of the Colloquia on the Law of Outer Space of the International Astronautical Federation contain a great deal of material on the subject of the law of outer space. Over the years since their start in 1958 the proceedings have been published by several publishers and for this reason any footnotes referring to these proceedings will only refer to the particular colloquium in which that article occurred. The current publisher of these proceedings is the American Institute of Aeronautics and Astronautics.

process itself would tend to hinder the development of new ones. This process tends to take two forms. Firstly, the long drawn out deliberations based on low key negotiations has in the past produced terms which have been given little or no definition and are open to widely differing interpretations. Instances of this can be seen in the conflicting interpretations of the term "exclusively for peaceful purposes" in Article IV Paragraph 2 of the Outer Space Treaty (18), or as to the meaning of "celestial bodies" in Article IV Paragraph 1 of the above treaty (19), or further, as to the meaning of the term "equitable sharing" in Article XI Paragraph 7(d) of the 1979 Moon Treaty (20). In these and other terms to be found in current space law legislation definition is lacking, leaving states to place their own interpretations on such terms, which may or may not give effect to the spirit behind the individual term, but either way may be considered a technically correct interpretation. Perhaps the most important example of this tendency for inadequate definition may be seen by examining the arguments concerning the term "common heritage of mankind", where the Moon Treaty has purported to introduce into international law a new type of territorial status and yet has not seen fit to define what it is (21).

To some extent it may be regarded as Utopian for every term in an agreement to be defined and yet strictly speaking if the consensus system is as effective as it is claimed to be then there is no reason why the COPUOS cannot spend at least part of its generally protracted negotiations devoting itself to defining main terms. Clearly such an approach could save considerable time in preventing disagreements and preventing the practice of States from reducing the effectiveness of these not

18. See Chapter 3.

19. Ibid.

20. See Chapter 2.

21. Ibid. Though the "common heritage of mankind" principle was first discussed in the negotiations on the Law of the Sea, the Moon Treaty was the first treaty to contain the principle.

unimportant agreements. Considerable difficulties do exist in attempting to achieve this since in some areas of outer space law, notably in the areas of remote sensing and direct satellite broadcasting, agreements need to be concluded within the near future and any further negotiations on definitions of terms, which could prove extensive, may considerably delay those agreements from coming into operation. Nevertheless, unless the COPUOS attempts to solve this problem the polysemous character of the law will entitle a party to a dispute to rely on an interpretation that best serves its own position by way of auto-interpretation (22). With regard to the use of auto-interpretation Bin Cheng has summed up its position as follows:-

"... as a restraint on international behaviour, auto-interpretative law can hardly be regarded as effective - for its proper operation depends heavily, in each case, on the good will of the parties, or their relative power position. At times, it verges on lawlessness" (23).

There would appear to be a growing disenchantment with the way negotiations within the COPUOS tends to produce "soft" international law. To this extent A. Bueckling has expressed his hope that:-

"... the tendency to conceal unsolved legal problems under beautiful legal phrases will be put to an end, and that the generalised concepts will be replaced by more specific and substantial legislation which might gradually coalesce into a body of rules" (24).

Moreover he further, and more specifically, states that:-

"Space law in its present codification tries to give rules for the behaviour of states in space in the form of generalised formula. Time and time again it becomes apparent how difficult it is to provide adequately phrased rules for, and to systemize in legal language, the extremely complicated subject matter created by the technological explorations in outer space and the resulting multitude of conflicting interest.

22. B. CHENG, "On the Nature and Sources of International Law", International Law: Teaching and Practice, edited B. CHENG, Stevens (1982), p.211.
23. Ibid. at p.212.
24. A. BUECKLING, "The Strategy of Semantics and the 'Mankind' Provisions of the Space Treaty", 7 Journal of Space Law, (1979), p.17-18, 22.

Therefore, when in the search of compromise, generalised formulas are resolved to in order to accomodate such basic principles as the exploration and use of outer space ... "For the benefit and in the interests of all countries", "For peaceful purposes ..."; "...without discrimination of any kind, on a basis of equality;" ... and in the interest of ... "promoting international co-operation and understanding"; with due regard to the corresponding interests of all other states parties to the Treaty, it becomes evident that the law is bound to go off course on the ocean of facts" (25).

On this basis therefore it is apparent that the CCPUOS by way of its "soft" legislation produced by compromise, lack of definition and, moreover lack of enforcement is allowing the way open for state practice to suborn its own international agreements and, conceivably, its negotiations. The effect of this may be to create a secondary system of rules based on that state practice and possibly giving rise to a system of customary international law. While it may be argued that this always arises anyway because of treaty interpretation, the loose terminology used in certain treaties relating to outer space gives states greater opportunities to avoid their strict international obligations.

The second aspect of the consensus process within the COPUOS that gives rise to state practice is the very fact that negotiations tend to be protracted. One effect of this is that while the COFUOS is debating a technological function that might be subject to an international agreement, sometimes for many years, the technology to carry out that function will become available. Immediately therefore there might come into an operation a system of state practice which pre-empts the agreement and may in fact render the whole, or more likely, part of it defunct or superfluous. More often than not however if such an event occurs the COPUOS will still proceed with discussions for the setting up of an international agreement on a multilateral basis. However there would appear to be a trend occurring that where states have the technology to

25. Ibid. at p.17.

carry out certain activities and those activities become subject to protracted negotiations within the COPUOS, which may or may not restrict those activities in some way, they are entering into bilateral agreements with States. Thus, they may carry on with those activities in a way which is suitable to both themselves and the other party to the agreement. Normally the other state participating in the bilateral agreement will gain some benefit from entering such an agreement which they would not normally receive under a multilateral agreement. This type of development of international space law is taking place particularly in the field of remote sensing from space where there appears to be a growing disillusionment with the ability of the United Nations and the COPUOS in particular to produce a multilateral agreement (26). By the successful negotiation of bilateral agreements it is possible to proceed incrementally towards the setting up of a coherent body of law by way of state practice which in turn may lead to the successful conclusion of a multilateral agreement (27).

It is clear that with such a large number of states involved in the negotiations within COPUOS the negotiations are likely to be protracted since there are significant ideological differences between many of the states involved in the negotiations, particularly between East and West. With this regard states will take a stance that furthers their own sphere of influence or protects their own ideological position. Thus, for instance, with regard to remote sensing the U.S.A. adopts a free dissemination role whereas the U.S.S.R. wishes to prevent such an approach because of an ostensible threat to national sovereignty. Similarly with regard to direct satellite broadcasting the U.S.A. adopts a freedom to broadcast role

26. S.P. KRAFFT, "In Search of a Legal Framework for the Remote Sensing of the Earth from Outer Space", 4 Boston College International and Comparative Law Review, (1981), p.474.

27. Ibid.

whereas the U.S.S.R. seeks a protectionist approach in order to prevent an undermining of its spheres of ideological influence. It is however clear that the approach of the U.S.S.R. to remote sensing, for instance, is only its formal ideological approach since it is apparent that it is willing to disseminate information to those who fall within its sphere of influence. By such an approach there tends to develop a dual system of law - one pertaining to the formal agreement negotiated within the COPUOS and one established by state practice. The overall effect of this within the COPUOS is that it tends to produce a politically charged atmosphere rendering efficient negotiation impossible.

With the increase in the number of states within the COPUOS a third force has emerged on the outer space front - the under-developed nations. These states have in the past attempted to change existing law within the COPUOS by organising into power groups - such as the equatorial states in producing the Bogota Declaration. As individuals though their views must be consulted even though they have no or little interest in the development of outer space, bar the amount of aid it brings in developing their own states. The problem with these states is, according to Bueckling, that they are

"... often unstable and subject to wavering political allegiances. They guard their newly-formed sovereignty with extreme jealousy and are suspicious of any intrusion into what they perceive as rightfully theirs" (28).

If that statement is an accurate reflection of these states then it is easy to understand that complex negotiations between a large number of states a proportion of which might be considered unstable or unduly jealous of their positions is unlikely to be as efficient as a small homogeneous body. The effect of such an approach is bound to lengthen negotiations and lead

to disillusionment, which can only lead to a breakdown of the law making function.

With regard to remote sensing these states have taken a restricted data stance within the COPUOS, alongside Russia and France, and thus their position appears to fall into line with Bueckling's assessment of them above. However these states are clearly very poor and are desperate for foreign aid and, thus, several of them have entered into bilateral agreements with the United States to aid remote sensing of both themselves and other states in exchange for aid. Such states therefore contribute to a growth of state practice which is completely contrary to their formal negotiating position with the U.N.

One further feature of the consensus system which gives rise to protracted negotiations is the fact that a state may adopt a position that will tend to lengthen negotiations in order to prevent agreement. The reasoning behind such an attitude may occur if a state has not yet developed a particular technology, in which case it may wish to delay proceedings until it has developed its own technology. Such an attitude has been expressed of the peculiar position of France with regard to advancing the restricted data approach in the remote sensing negotiations (29).

It would appear therefore that the proceedings within the COPUOS have tended to promote the growth of state practice, which in its turn tends to subvert the negotiations within that body and to suborn the principles contained in the main space treaties - the Outer Space Treaty of 1967 and the Moon Treaty of 1979. To some extent this last point was inevitable, at least with regard to the Outer Space Treaty. The reason for this is that this treaty laid down a base for the legal order of the space environment at a time when man was only just beginning his long adventure into

29. KRAFFT, (1981), p.468.

space and therefore it could not be foreseen what developments were likely to take place. It is perhaps harder to understand why the COPUOS has devoted so much time and energy in producing a second treaty, the Moon Treaty, on the basis of predicting what form man's exploration of the moon will take, particularly when such activity is likely to be decades away and more immediate problems, such as direct satellite broadcasting, are now a reality requiring regulation.

This work has confined itself to five main areas in analysing the rise and the effect of the development (or potential development) of state practice. These areas have been chosen on the basis that they tend to be considered the most controversial issues at this moment; though this should not be interpreted as stating that other areas of discussion in the COPUOS, for instance nuclear power sources in space, are irrelevant and inconsequential.

Undoubtedly the procedures within the COPUOS need some adjusting since it must begin to react more quickly to developments in space in order to produce a coherent system of law. Further it should confine itself to the more immediate questions rather than to act as fortune-teller in order to develop new agreements which may be considerably out of tune with state practice when the activity in question becomes feasible. Additionally, it must attempt to mould itself into a homogeneous unit so that rational, coherent legislation might be produced. Conversely the difficulties within the COPUOS and its sub-committee have been summed up by E. Galloway, when referring more particularly to the Legal Sub-Committee, as follows:

"The conclusions which may be drawn from experience with negotiations on unresolved issues before the Legal Sub-Committee are that (1) issues require different amounts of time to resolve; (2) when positions are taken on the basis of different political systems, the conflicting assumptions are more difficult to reconcile in an agreed text; (3) while it is more difficult to get agreement in a large committee, a difficulty that increases with size, the increase in the

"Committee's membership from 39 to 47 is not the basic cause of lack of consensus on the pending issues; (4) when divergent views are rooted in different political and cultural philosophies, lack of agreement cannot be blamed on the METHOD of reaching that agreement whether it is by unanimous voting, majority voting, or consensus. It is the SUBSTANCE of the goal that is at stake and not the parliamentary mechanism by which the destination is to be reached" (30).

It is unlikely that anything would be gained by adopting an approach other than the consensus system since it is all too apparent that a system of voting that went against one of the major space powers could put the legal development of space almost back to 1958 when the U.S.S.R. withdrew from the Ad Hoc Committee. Additionally it should be borne in mind that the COPUOS has had its successes, notably, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, April 22nd 1968 (31), the Convention on International Liability for Damage Caused by Space Objects, March 29th 1972 (32); and the Convention of Registration of Objects Launched into Outer Space, January 14th 1975 (33), apart from the two major space treaties. However, if the COPUOS is to remain a dynamic force in the formulation of international space law, rather than to decline to a mere monitoring agency in the somewhat appropriate words of F. Morgenstern, when discussing international legislation generally:-

"... There would seem to be a need for a much wider awareness of the need of coherence in international legislation if the international law of the future is not to be cluttered, like space, with the imperfect technology of the twentieth century" (34).

30. E. GALLOWAY, "Consensus Decisionmaking by the United Nations Committee on the Peaceful Uses of Outer Space", 7 Journal of Space Law 1979, p.11.
31. 19 U.S.T. 7570; T.I.A.S. 6599.
32. 24 U.S.T. 2389; T.I.A.S. 7762.
33. 28 U.S.T. 695; T.I.A.S. 8480.
34. F. MORGENSTERN, "International Legislation at the Crossroads", British Yearbook of International Law (1978), p.117.

## CHAPTER ONE

### SOVEREIGNTY IN SPACE

On October 4th 1957 the world's first man-made satellite was launched into space by the U.S.S.R., the second following a month later. These events opened a new age in transport and to the international lawyer a cornucopia of unanswered questions as to the legal status of space. John Cobb Cooper in his article "Flight - Space and Satellites" (1) considered that the three most immediate questions were, firstly, what is the legal status of those areas of flight-space used in the launching and eventual passage of the satellite; secondly, what is the legal status of the satellite itself; and thirdly, what international questions of the future control of such flights and flight-space must be answered? In fact a fourth persistent and more fundamental question emerged very quickly, that is, to what extent does national sovereignty extend into the atmosphere? International Law could provide no answer to the problem of where airspace ended and outer space began, though two principles emerged after the first launch, namely, that space was not subject to national appropriation, and secondly, that outer space was free for exploration and use. Quite clearly these two principles were incompatible with the legal regime governing airspace and thus an artificial boundary would have to be fixed between the two regimes. Certain jurists of the day, particularly those in the West, were opposed to this and advocated an 'open skies' policy,

1. 7 International and Comparative Law Quarterly, (1958), p.82.

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"We therefore conclude that state sovereignty reaches quite as high as the state's interest could reach, the possibility of which ends at the uttermost limit of the atmosphere ... In principle the airspace belongs to the sovereign state territory, so the state has full sovereignty to an unlimited height, which sovereignty can only be abolished or restricted by treaty." (6)

The period of 1909-1919 was a time for states to establish air sovereignty over their territory, though certain states, more particularly the U.S.A., persisted in adopting the freedom of the skies policy. At the International Conference on the Regulation of Air Navigation, called for by the French, a treaty regulating the use of airspace very nearly gained recognition but this was not to be, and it was not until 1919 that international rules were developed (7). This was not to say that there was a complete lack of regulation and control since many states acted quickly and forcefully by adopting unilateral controls, either by legislation or decree, though in 1913 an agreement was reached between France and Germany which severely restricted flights between the two countries. Such unilateral decrees were enforced particularly vigorously by neutral states against belligerent aircraft during the 1914-1918 war (8).

In 1919 during the Versailles Peace Conference the U.S.A. again called for a freedom of the skies policy but this was rejected with the adoption of the Paris Convention 1919, in which Article I stated that "every Power has complete and exclusive sovereignty over the airspace above its territory." The U.S.A. however did not completely accept the convention, in that it criticised the adoption of such a principle and at the 1929 International Air Conference it continued to attempt to re-introduce the concept of freedom of the skies, this time with the backing of Britain,

6. LYCKLAMA NIJEHOLT, Air Sovereignty, the Hague, (1910), p.46.
7. J.C. COOPER, "The International Air Navigation Conference, Paris 1910", 19 Journal of Air Law and Commerce, (1952), pp.127-143.
8. J.C. COOPER, "State Sovereignty in Space: Developments 1910 to 1914", Beiträge Zum Internationalem Luftrecht, Festschrift für Alex Meyer, Dusseldorf, (1954), p.41.

Sweden and Holland, without success. It eventually abandoned the idea when severe competition thrust America into a protectionist role, though at the Chicago Convention 1944 the U.S. delegate explained that the U.S. believed that there should be a general system of rights for aircraft to travel. This policy was not adopted, and the principle remains, that "every state has complete and exclusive sovereignty over the airspace above its territory." (9)

After the Second World War when rocket flight became a reality (culminating eventually in Sputnik I) it was soon apparent that some limitation of sovereignty of airspace was required, and the question began to be asked, "what is airspace?". John Cobb Cooper attempted to define airspace by talking in terms of "flight" and "flight-space". "Flight", he maintained, included "any movement through space of man-powered or man-controlled devices or instrumentalities (to be known as 'flight-instrumentalities') such as balloons, dirigibles, airplanes, rockets, guided missiles or space-ships". He went on to define "flight-space" as "so much of universal space above and beyond the surface of the earth as is now used or may hereafter be used as the area in which flight takes place" (10). Professor Cooper in attempting to avoid the term "airspace" appeared to give too broad a definition when he included spaceships in his explanation of "flight", since if this is read with "flight-space" it would tend to suggest that a right of sovereignty would exist in space itself - something which is certainly denied today. In fact Professor Cooper appears to have recognised this mistake since later he stated:-

"I am convinced that the term airspace, as used in the Paris Convention in 1919, was there meant to include only those parts of the atmosphere above the surface of the earth where gaseous air is sufficiently dense to support balloons and airplanes, the only types of aircraft then in existence." (11)

9. Chicago Convention 1944 Article 1 (CMD 8742).
10. J.C. COOPER, "Air Law - A Field for International Thinking, 4 Transport and Communication Review, (1951), pp.1-7.
11. J.C. COOPER, "Flight Space and Satellites", International and Comparative Law Quarterly, (1958), pp.84 & 85.

Cooper believed that since the Chicago Convention 1944 contained no definition of airspace it followed the Paris Convention from which it was derived, and thus it dealt only with that part of the atmosphere that could support balloons and airplanes. He concluded from this that there was nothing to preclude a state from extending its sovereignty by international agreement. Such a conclusion may be reached on the basis that whilst the act of delimitation itself is of necessity a unilateral municipal act, its validity with regard to other states is dependant on international law as contained in custom or treaty (12). So far no agreement has been concluded, and in the absence of any customary international rule there appears to be no basis for such an argument. Cooper was not the only writer who attempted to delimit space by reference to its nature. Dr. Bin Cheng also tried to distinguish between "airspace" and "outer space", as he termed the different parts, again without success since his definition that "airspace is space where air is normally to be found" was too vague to be of any value (13) since traces of air may be found hundreds if not thousands of miles from the earth. These attempts to determine airspace by virtue of its nature have been rejected out of hand by Goedhuis (14) since he believed that in its absolute sense it was unacceptable to restrict the rights of states to that degree. On the other hand it is quite absurd to allow sovereignty to be extended ad infinitum, since this would create an unintelligible result because of the rotating and revolving nature of the earth.

Intermingled with the problem of delimitation is also the problem of the legal status of space and at the beginning of the 1960's legal opinion began to come to the conclusion that the legal status of space would be

12. Anglo Norwegian Fisheries Case; I.C.J. Reports, (1951).

13. B. CHENG, "International Law and High Altitude Flight; Balloons, Rockets, and Man-made Satellites", International and Comparative Law Quarterly, (1957), pp.487-505.

14. D. GOEDHUIS, "The Changing Legal Regime of Air and Outer Space", International and Comparative Law Quarterly, (1978), p.582.

found not in its nature; instead the idea developed that if sovereign rights over space were prohibited then this would be more benefit to the world community (15) since it would allow for the free exploration and development of space. Certainly there is a degree of truth in this comment, though it could also be said that a state possesses rights of sovereignty not just because one has effective control, but also because of the right of sovereignty over the land below it. An analogy in favour of this argument can be seen in relation to the international law governing the continental shelf as contained in the Geneva Convention on the Continental Shelf 1958. This convention grew out of unilateral declarations by a number of maritime states laying claim to exclusive jurisdiction or control over the resources of the continental shelf. The United States claim was officially stated as being:-

"... almost as large as the area embraced in the Louisiana Purchase, which was 827,000 square miles, and almost twice as large as the original 13 colonies, which was 400,000 square miles. Along the Alaska coastline the shelf extends several hundred miles under the Bering Sea. On the eastern coast of the United States the width of the shelf varies 20 miles to 250 miles, and along the Pacific coast it is from 1 to 50 miles wide." (16)

Clearly, while such a claim bears little relationship to that of the claims of exclusive control over the territorial sea and while the United States originally only claimed rights of jurisdiction and control over the natural resources of the subsoil and seabed, the actual waters remaining being regarded as high seas, later claims by other states involved claims as to sovereignty and ownership over not only the subsoil and seabed but also over the seas themselves (17).

Thus in the *Grisbadarna Case* the Permanent Court of Arbitration held

15. GOEDHUIS, *Ibid.* at p.582.

16. Annual Report of the United States Secretary of the Interior 1945.

17. D.W. GREIG, International Law, Butterworths, (1970), p.159.

that when certain land was ceded to Sweden the radius of maritime territory constituting an inseparable appurtenance of this land territory must have automatically formed part of this cession." (18)

Similarly, in the Anglo-Norwegian Fisheries Case, Judge McNair stated:-

"International law does not say to a state: 'You are entitled to claim territorial waters if you want them'. No maritime state can refuse them. International law imposes upon a maritime state certain obligations and confers upon it certain rights arising out of sovereignty which it exercises over its maritime territory." (19)

Nowadays Article II of the Convention provides that the coastal state exercise "sovereign rights", though these are really in the nature of proprietary control since the Convention does contain certain reservations; thus, the rights of the coastal state "do not affect the legal status of the superadjacent waters as high seas, or that of the airspace above those waters". While states cannot possibly exercise effective control over such areas, nevertheless, they are classed as sovereign territory merely because "the shelf was a natural prolongation or continuation of the land domain and therefore appurtenant to territory over which the coastal state already had dominion" (20). Clearly once sovereignty over land is established, e.g. by a continuous exercise of effective control and authority (21), then sovereignty over the airspace, as well as the territorial sea is automatically established by virtue of Article I of the Geneva Convention on the Territorial Sea and the Contiguous Zone which states:-

"The sovereignty of a state extends, beyond its land territory and its internal waters, to a belt of sea adjacent to its coast, described as the territorial sea."

It would appear therefore that a state does not possess sovereignty over the air or territorial sea merely because it has effective control over them

18. Norway v Sweden; Hague Court Reports, (1909), p.121.

19. I.C.J. Reports, (1951), p.116.

20. North Sea Continental Shelf Cases, I.C.J. Reports (1969), pp.30-31.

21. Island of Palmas Arbitration, 22 American Journal of International Law, (1928), pp.875-876.

but because they are attached to sovereignty over territory. Quite clearly if this were not the case the smaller less powerful states could not possess any sovereign rights in the air, or on the sea, at all (22). The corollary to this view is that the more powerful states could extend their degree of control over the high seas and into airspace where they do not necessarily have sovereign rights (23). Additionally military and strategic considerations mean that airspace and the high seas could be regulated outside the area of sovereignty, thus the U.S.A. restricts the use of aircraft 1,000 miles out to sea, and during the nuclear tests at Bikini asserted temporary control over 400,000 square miles of ocean surrounding the atoll (24). An attempt to impose a non-sovereignty rule over space because that is for the benefit of the world community would, in the light of the above, hit the difficulty that nations could possess sovereignty as of right and are merely unable to control that right. The theory also transgresses that old problem of the freedom of the skies - a concept that one of the more powerful nations, the U.S.S.R., will not accept. There is a further analogy that can be drawn from the other peculiar entity in international law - Antarctica, where with the adoption of the Antarctica Treaty 1959, all claims to sovereignty were held in abeyance. The result of this has been to increase co-operation between nations in an environment so harsh that co-operation is a matter of life and death. Certainly this system works well in Antarctica but unlike space it poses no immediate military threat (25). Although the Outer Space Treaty attempted to provide a similar solution to space this has not been successful, primarily because of strategic considerations.

22. J.C. COOPER, "High Altitude Flight and National Sovereignty", International and Comparative Law Quarterly, (1951), p.417.
23. L.J. BOUCHEZ, "The Concept of Effectiveness as Applied to Territorial Sovereignty Over Sea Areas, Airspace and Outer Space", Netherlands International Law Review, (1962), pp.151-82.
24. BOUCHEZ, Ibid. pp.171-4. Also "National Sovereignty of Outer Space", 74 Harvard Law Review, (1961), p.1162.
25. J. HANESSAN, "Antarctica: Current National Interests & Legal Realities", American Society of International Law, (1958), p.148.

The fundamental difficulty seems to be the elimination of any possible claims to sovereignty whilst providing some other basis on which action can be taken on the premise of sovereignty. This new basis must allow for the protection of the interests of defence and security, since while many states recognise international interests in space and its exploration they will not forfeit their security measures for those principles. It was to achieve this aim of eliminating the sovereignty problem and yet providing some rights in space that the Russian writer Galina enunciated the "national security" criterion (26). This was also enunciated in another article published in the Soviet Yearbook of International Law by Kovalev and Cheprov as follows:-

"... in our opinion, the states, in deciding ... the limit of their sovereign rights, will base themselves on the need to guarantee their security ... should a state find it necessary in the interests of security to extend its sovereignty beyond the limits of the airspace or the atmosphere it would be authorised in doing so." (27)

Quite clearly this would be tantamount to an unacceptable extension of national sovereignty, though in fact the writers deny this and state that to allow a state to extend its defensive area ad infinitum would be contrary not only to the spirit of the freedom of the use of space, but would also be a disregard of basic astronomical factors regarding the rotational and revolving nature of the Earth and the surrounding universe. Certainly the view of Kovalev and Cheprov has in the past been upheld by other Russians, primarily Osnitskaya (28) and Zadorozhnyi (29). This theory was soon largely discounted in favour of the need for a treaty which not only

26. A. (GALINA) OSNITSKAYA, "On the Question of Interplanetary Law", Sovetskoe Gosudarstvo i Pravo, (1958), pp.52-58.
27. N. KOVALEV and I.I. CHEPROV, "Artificial Satellites and International Law", Soviet Yearbook of International Law, (1958), pp.147-148.
28. A. (GALINA) OSNITSKAYA, "International Law Problems of the Conquest of Space", Soviet Yearbook of International Law, (1959), pp.65-71.
29. G.P. ZADOROZHNYI, "The Artificial Satellite & International Law", Sovietskaya Rossiya, October 17th, 1957, pp.1-2.

prohibited the establishment of sovereignty in space, but also protected the defensive needs of states by prohibiting certain activities (30). This treaty has been forthcoming to some extent in the form of the Outer Space Treaty of 1967, yet still the question of sovereignty remains to be solved since, even though Article I states that outer space shall be free for the exploration and use of all states (31), it gives no definition of outer space. It is clear then that where only a few states possess the ability to make use of space an oligopolistic situation could arise unless a definite delimitation of airspace and outer space is provided for. Thus on January 11th 1977 at the World Administrative Radio Conference for the Planning of the Broadcasting Satellite Service held in Geneva, the Columbian delegate stated:-

"There is no definition of outer space that is valid and satisfactory for the international community such as might be cited to support the argument that the geostationary orbit (32) is included in outer space. Therefore it is imperative to arrive at a legal definition of outer space, since to apply the 1967 treaty without one would merely ratify the presence of the states that are already using the geostationary orbit ..."  
(33).

Certainly there are many reasons why the international community has not provided or agreed on the criterion for the delimitation of outer space, though the Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space has now been given the task of solving the problem. This task has received new urgency with the growth of importance of the

30. G. ZHUKOV "Conquest of Outer Space and Some Problems of International Relations", International Affairs, (1959), pp.88-96.
31. Article I Outer Space Treaty 1967 3. U.S.T. 2410, T.I.A.S. No.6347.
32. "Geostationary orbit" is the term given to a satellite which orbits the Earth at a height of 35,800 kilometres above the equator. At this height the satellite orbits the Earth once every 24 hours and is thus synchronised with the rotation of the planet below, appearing to 'hang' above it. This corridor can only hold a limited number of satellites (estimates vary from 180 to 1800) and is thus regarded as a limited resource which smaller third world countries lying below fear may become monopolised by the powerful 'space states'. COMMUNICATIONS SATELLITE CORPORATION PROSPECTUS (1964), pp.9-10.
33. International Telecommunication Union Broadcasting Satellite Conference, Geneva 1977, Document No. 81.

geostationary orbit. Many proposals have been suggested in order to provide a solution but all have failed. These proposals have been divided in their approach - the vast majority attempting to provide a spatial solution, the others a functional approach. The different theories which have been advocated show up the strenuous efforts that have been made to delimit space, especially since those states lying beneath the line of geostationary orbit, even though not possessing space travel capability, are laying claim to this limited resource.

### THE SPATIAL THEORIES ON THE DELIMITATION OF SPACE

Lubos Perek, Head of the Outer Space Affairs Division of the United Nations Secretariat, in his article entitled "Scientific Criteria for the Delimitation of Outer Space" (34), stated that outer space is a "three dimensional continuum" which could be "bounded by (a) one, (b) two, or (c) more than two simply connected surfaces". He maintained that in (a) the limiting surface would be a boundary close to the earth which would divide airspace from outer space. The second case (b) would not only have a "near" boundary but also a far limit. He gives no terms for this outer boundary, nor is it defined, but it could perhaps be explained by the International Telecommunication Union Radio Regulations which also uses such a far limit called "deep space", and which is defined as distances from the earth equal to or at a greater distance than the distance between the earth and the moon (35). The third category he maintained would be used if it was necessary to delimit a specific body in space, e.g. to provide a contiguous zone for the moon, thus separating the moon from its surrounding space.

34. 7 Journal of Space Law, (1977), p.113.

35. Administrative Regulations (Radio Regulations), annexed to the International Telecommunication Convention 1973.

In discussing the spatial theories on the delimitation of space the most relevant part of Perek's zones is (a) though in relation to geostationary orbit, which in recent years has tended to complicate the question of sovereignty, case (b) has also become an important issue in discussions in the Legal Sub-Committee of the United Nations Committee on the Peaceful Uses of Outer Space.

The spatial theories put forward as being possible solutions to the delimitation may be grouped into three broad areas - limits based on gravity, limits based on atmospheric properties, and limits based on the lowest perigees of orbiting satellites.

#### A. LIMITS ON SPACE BASED ON GRAVITY

##### 1. The Gravitation Theory

In 1953 Kroell in "Elements Createurs d'un Astronomique" (36) and later Rinck (37) proposed that the outer limit of sovereignty in space should be linked with the outer limit of the earth's gravitational field. Rinck put this distance at approximately one and a half million kilometres, even though at the time he discussed this theory there was no possible way in which this could be measured with any accuracy, indeed there was no method even by which a satellite could be pinpointed, thus making a nonsense of his further statement that a state was not bound to accept the passage of a satellite through its area of sovereignty. Rinck's theory has been also discounted on the ground that the Moon itself would have penetrated his suggested sovereign area, thus precluding any attempt to inhabit the Moon.

36. Revue Générale de l'Air, (1953), pp.222-233.

37. "Recht im Weltraum", Zeitschrift für Luftrecht und Weltraumrechtsfragen, (1960), pp.191-208, as cited in Space Law by Gyula Gal, Sijthoff-Leyden, (1969), p.71.

Kroell's theory, which is more widely recognised, was based on the idea that sovereignty should extend to the point where the earth's gravitational field is balanced by the gravitational field of another celestial body. Professor Cooper was one of the first to initially accept this theory, basing his boundary on the point where a missile leaves the gravitational field of the sun - an altitude of some 160,000 kilometres (38).

The theories of both Kroell and Rinck are generally rejected out of hand today for several reasons. Firstly, the distances referred to are so large that it renders any accurate pinpointing of the extent of sovereignty impossible because again of the rotating nature of the earth below. Secondly, the theories suppose that gravity exists in a uniform spherical shape corresponding to the curved surface of the earth. This is not so. Gravity is not uniform, and indeed fluctuates in relation to solar flare activity. Finally, the gravitational influences of various celestial bodies on the gravity of the earth would produce highly complex changes in the extent and direction of that gravity, and anyway, it would appear that the earth's gravity coupled with the sun's could extend many millions of kilometres into space (39). The theory as propounded by Professor Cooper, in that the boundary lies where a satellite leaves the gravitational pull of the earth, has also been rejected since such a boundary would vary with the velocity of the rocket (40).

## 2. The Karman Primary Jurisdiction Line

This theory has mainly gained its recognition because of the work of A. G. Haley, who adapted it from the basic technical idea of Theodor Von Karman. Haley maintained that the upper limit of air sovereignty would not be found by looking at the geophysical or aero-dynamic properties of

- 38. J.C. COOPER, "High Altitude Flight and National Sovereignty" International & Comparative Law Quarterly, (1951), pp.411-416.
- 39. O. SCHACHTER, "Who Owns the Universe?", Space Law, (1959), p.16.
- 40. SCHACHTER, Ibid.

the earth in isolation. To find the true boundary line one had to -

"... consider that the conditions for accomplishing aerial flight, that is to circle at constant altitude, are: weight equals aerodynamic lift plus centrifugal force. The aerodynamic lift decreases with altitude because of the decreasing density of the air and in order to maintain continued flight beyond zero air lift, centrifugal force must take over ... It will be noted that in the corridor of continuous flight when an object reaches 275,000 feet and is travelling at 25,000 feet per second the Kepler force takes over and aerodynamic lift is gone. This is a critical jurisdictional boundary." (41)

Although Haley's theory appears to be an improvement on the aerodynamic theory (see below) it has not been adopted as providing an unequivocal line, indeed, there are misgivings as to its consistency since the velocity figures given by Haley took into account the materials of the day and their inability to withstand frictional heat caused by travelling in excess of 25,000 feet per second, and thus with the development of improved cooling methods and heat resisting materials velocities could be pushed well beyond the 30,000 feet per second mark, where the frictional heat could exceed 2,000°F, with a corresponding shift in the jurisdictional boundary line. Even if one could suppose that the technical criteria remains the same there could well be a movement of the line due to the differing characteristics of the object to be launched, thus necessitating a new calculation every time an object with a differing configuration is launched (42).

Haley's theory also possesses a further flaw as was shown in his conflict with P. W. Quigg, who in his paper "Open Sky and Open Space" (43), stated that the Karman line could not provide a dividing point between an air breathing and rocket powered aircraft, as alleged by Haley, since certain hybrid types of aircraft such as the X15 (the forerunner of the U2 and latterley the 'Blackbird', an advanced reconnaissance aircraft) make use of

41. A.G. HALEY, "Space Age Presents Immediate Legal Problems", First Colloquium on the Law of Outer Space, (1958), pp.4 & 5.

42. F.N. KOVALEV and I.I. CHEPROV, "On the Road Towards a Cosmic Law" Moscow, (1962), p.42.

43. P.W. QUIGG, "Open Sky and Open Space", Foreign Affairs, (1958), p.95-106.

the lifting power of the air in the initial stages of flight but then continue to rise with the use of rockets to the height of the perigree of satellites i.e. approximately 320,000 feet. Haley however rejected that there was any conflict at all since he maintained that just because such craft had controls that could help them make use of air they could not be regarded as aircraft because of the way they relied on rockets for lift, an argument that does little to enhance his theory and which is generally regarded as being unacceptable.

#### B. LIMITS BASED ON ATMOSPHERIC PROPERTIES

The different theories which attempt to provide an adequate demarcation point for the division between airspace and outer space are really splinters from a much larger theory, known amongst its protagonists as the "airspace theory". The theory maintains that the distinction between airspace and outer space is the atmosphere itself. It is maintained that such a theory is justified because it can rely on international customary air law as recognised in international treaties and national laws for a meaning. Whether or not this is the case is a matter for speculation and discussion but certainly such writers as Bin Cheng and Eugene Pepin seem to support the basic concept of the theory (44). Further it is possible to rely on the Permanent Court of International Justice decision in the Legal Status of Eastern Greenland Case 1933 (45) to provide a solution. It was stated in this case that "the natural meaning of the term 'Greenland' was its geographical meaning". This decision has been extended and applied in the

44. B. CHENG, "The Right to Fly", Grotius Society, (1956) p.100 and Recent Developments in Air Law", Current Legal Problems, (1956), p.210; E. PEPIN, Symposium, as cited by N.M. MATTE, Aerospace Law, Sweet and Maxwell, (1969), p.22.
45. 3 World Court Reports (1938), p.171; P.C.I.J. Rep., Series A/B, No.53, (1933).

Chicago Convention (the principle is also embodied in the Paris Convention) and thus when the treaty talks of airspace it is taken to mean that national sovereignty extends to the limit of airspace in its geographical meaning. It is upon this last term that there is a divergence of opinion as to its meaning thus creating the differing sub-theories.

1. The Atmosphere Theory

This theory on the demarcation of space is largely derived from Article I of the Paris Convention which spoke in its French version of 'espace atmospherique', meaning that airspace is the same as the entire atmosphere and therefore implying that space begins at the outer limit of terrestrial atmosphere. It would seem then that the Paris Convention had unwittingly provided a definition of the limit of airspace and outer space. However this is not the case for two reasons; firstly, the term "espace atmospherique" was not translated into the English as "atmospheric space" but as "air space", thus giving an entirely different interpretation of the original term. This interpretation/translation error was further compounded in the Chicago Convention when the term "air space" was not re-translated to "espace atmospherique" but to "espace aerien" (46); secondly, the determination of the demarcation line according to the extent of the atmosphere does not provide as exact a definition as may be supposed since it would depend on what part of the atmosphere one uses. Thus the troposphere extends from sea level to approximately 10 kilometres, the stratosphere from 10 kilometres to approximately 375 kilometres, and finally, the exosphere from 375 kilometres to approximately 20,000 or more (47). With the distance involved in the latter two layers of the atmosphere it is clear that such an extension of national sovereignty is unacceptable, although certain authors such as A. Meyer and V. Mandl consider

46. CHENG, (1956), p.213.

47. G. GAL, "Airspace and Outer Space", Symposium (1961), P.1148.

that such an application of the theory has some credence, thus:-

"The acceptance by international law of sovereignty only included the zone of air, the atmosphere. There was no reason or intention to give the states rights going further upwards than that. Where airspace ends, there the territorial sovereignty - recognised by the states by way of treaties and constant practice - also ends." (48)

Similarly:-

"... the concept of airspace cannot mean anything else but the space filled with air layers, without any further limitation. The idea that the term airspace should be limited to the area where air is so dense that it enables the airplanes, i.e. instruments relying on the properties of air, to remain aloft, seems unfounded: the space filled with thin air is also part of the airspace." (49)

These two views are not isolated by any means and D. Goedhuis, Bin Cheng, and E. Pepin have also stated that the theory could exist in an extreme form, justifying such views by the Eastern Greenland Case which, as we have already seen, appears to provide them with the authority to apply a geographical 'natural' meaning to the term 'airspace'. Thus Bin Cheng states:-

"Airspace is the entire space where air is to be found under any form. This is identical with the atmosphere in its broadest meaning, including all its layers, irrespective of whether it is sufficiently dense to carry aircraft." (50)

Apart from the somewhat extreme notion of the extent of national sovereignty that this theory carries it also has intrinsic difficulties. If it is decided that national sovereignty extends to the limit of the earth's atmosphere, it must be decided just where that point lies and in order to do that one must presumably rely on a geophysicist to calculate the

48. V. MANDL, Das Weltraumrecht, Mannheim & Leipzig, (1935), p.31 as cited by GAL, (1969), p.14.
49. A. MEYER, "Die Staatshoheit im Luftraum und die Entwicklungen im Weltraum", Zeitschrift für Luftrecht und Weltraumrechts-fragen, (1965), p.27 (as cited by G. Gal, *Ibid*).
50. B. CHENG, "Recent Developments in Air Law", Current Legal Problems, (1956), pp.210-213. GOEDHUIS, (1978), p.582, though note that whilst he considered such a limit feasible given technological developments he thought such a limit probably absurd in its application and unduly restricted the rights of states. See above at p.19.

distance. Unfortunately the geophysicists themselves cannot agree on the extent of the exosphere, some putting it as low as 600 kilometres and others as high as 60,000 kilometres; indeed modern opinion is that particles of the atmosphere could extend to as far as 70,000 or even 100,000 kilometres. Perhaps it would be easier to appreciate the difficulties involved if it is considered that at 100 kilometres above the surface of the earth the air is one-millionth the density of that at sea level (51). The difficulties do not stop there since it has been shown that the levels of the various layers may be subject to variation; thus the troposphere can increase or decrease according to the weather, and in fact there are geographical differences - extending from sea level to 10 kilometres above the poles but extending to 17 kilometres above the equator. Similar variations also occur within the ionosphere during periods of solar flare. It is therefore somewhat unrealistic to attempt to provide a 'natural' solution to define the extent of the atmosphere as is suggested by the Eastern Greenland Case, since not even natural science can provide an answer. Apart from the scientific criticisms there are also legal mis-givings over this theory since it can be said that the very conventions that gave rise to this theory (i.e. the Paris and Chicago Conventions) could also be used to disclaim it. The reasoning behind this is that neither convention actually defined the term 'airspace', and also the drafters never conceived that man would penetrate the upper reaches of the atmosphere. Thus to take Article 1 of the Paris Convention 1919 as defining the limit of outer space must be regarded as not only fallacious but also erroneous.

The atmosphere theory then cannot in its present form be considered as a means of delimiting the extent of national sovereignty in space since it quite clearly possesses too many intrinsic contradictions to be realistic.

51. E. NAGY, The Future of Space Flight, Budapest (1962), pp.44-48.

This does not mean however that it should be completely discounted and some writers, such as C. W. Jenks suggest that the troposphere and stratosphere should be treated as airspace and everything else as outer space (52). Similarly, the Russian writer V. I. Lisovsky states:-

"The sovereignty of a state extends to the stratosphere (that is the stratum of air from 11 to 75 kilometres from sea level) over its territory because at the present level of technique of aviation not only peaceful flights may be performed in the stratosphere, but also military operations. Consequently, the state must have the right to regulate the traffic of foreign aircraft also in this stratum of air". (53)

The all important rider to this statement of Lisovsky's is contained in the words, "... at the present level of technique of aviation ...", presumably today then he would be in favour of extending national sovereignty into the exosphere since this area has now become the level at which military activities take place.

## 2. The Aerodynamic Theory

As already mentioned the higher one goes the less dense the air becomes, density being measured by the number of molecules of air present in a given volume. Every molecule of air adds to the lift produced by the wing (or aerofoil) of an aircraft, which is achieved by the flow of air over the aerofoil surfaces. The upper half of the aerofoil is curved and is called the "camber", and the bottom half is generally flat; the whole cross-section thus resembling a half tear in shape. As the aerofoil travels through the air, the air is cut in half, one half passing over the camber the other passing underneath, both meeting again at the trailing edge of the aerofoil. Clearly because the curved upper side of the aerofoil is longer than the underside a parcel of air moving over it must move faster in order to reach the parcel of air that moved in the most direct way under the aerofoil. Bernoulli's theory of physics states that the faster a

53. V.I. LISOVSKY, Mezhdunarodnoye Pravo, Moscow, (1961), p.196.

fluid (or air) travels, the lower will be the pressure surrounding it, thus the air moving over the camber has a lower pressure than that under the aerofoil. Since air tends to move from high to low pressure, the high pressure under the aerofoil attempts to move towards the low pressure area above the camber. Thus, because the air cannot move through the aerofoil it tends to push it up, creating lift. The more molecules of air passing the aerofoil the more lift that is generated. The result of this is that as the altitude is increased the degree of lift decreases until ultimately the air is too thin to support the aircraft (54). O. Schacter, in referring to this principle of flight, thought that it could be used to provide a definition of airspace - that is airspace ends where the air is too thin to provide flight (55). The supporters of this aerodynamic theory point out that the Chicago Convention talks of aircraft as being "all machines which can derive support in the atmosphere from the reactions of the air", and then attempt to use the converse of this to the effect that anything which flies without the support of the atmosphere, e.g. rockets, must be above the territorial sovereignty of the country over which they fly:-

"The outer space begins where ceases the possibility to fly, for the propelled and jet planes derive support in the atmosphere from the reaction of the air." (56)

Other writers reject this idea pointing out that just because the Paris and Chicago Conventions give a definition of aircraft that does not necessarily give a definition of airspace and outer space. They state that both conventions had nothing whatsoever to do with the legal status of space,

- 54. JOSEPH W. BENKERT, Introduction to Aerodynamic Science, Prentice-Hall, (1971), p.7.
- 55. O. SCHACTER, "Legal Aspects of Space Travel", Journal of the British Interplanetary Society, (1952), p.14.
- 56. M. SMIRNOFF, "The Real Possibilities and the Main Principles of a Future International Convention on Outer Space", Second Colloquium on the Law of Outer Space, (1959), p.324.

and thus any attempt to derive such a conclusion is therefore erroneous (57). Additionally, it would seem that if such a boundary were to be adopted then it would be set at a height of only some 30 kilometres -

far too low for practical purposes, since as aircraft develop they will attempt to gain as much height as possible in order to reduce drag, so saving on fuel costs and increasing the speed of aircraft. Thus the future commercial aircraft may fly at speeds of 6000 milometres per hour at heights of 100 kilometres, thus putting them in space itself and above the sovereign jurisdiction of underlying states; a situation that is unlikely to be tolerated from a security and traffic control standpoint.

C. THE DELIMITATION OF SPACE BASED ON THE LOWEST POSSIBLE PERIGEEES OF SATELLITES

It is probable that J. C. Cooper was the first to suggest this method of delimiting outer space from airspace, proposing that the boundary should be set at a height of 160 kilometres (58). R. Jastrow thought that outer space must be defined as the region traversed by vehicles which have been placed in orbit round the earth, or which have escaped the gravitational attraction of the earth (59). V. Kopal thought that the lowest perigee of satellites may be lower than 160 kilometres (60), and in later years he was proved to be correct since Skynet 2-A is listed in the Table of Earth Satellites as having a perigee of 96 kilometres - though this seems exceptional and could be inaccurate (61). Nevertheless, perigees of 105 kilometres seem to be quite possible, and it would appear that if this method was used a boundary of between 90 and 100 kilometres would be the correct delimiting line since a working party of the Committee on Space

57. E. KOROVIN, "International Status of Cosmic Space", International Affairs, (1959), p.54.

58. MATTE, (1969), p.31.

59. R. JASTROW, "Definition of Air Space", First Colloquium on the Law of Outer Space, (1958), p.82.

60. V. KOPAL, Tenth Colloquium on the Law of Outer Space, (1967), p.275 as cited in L. PEREK, "Scientific Criteria for the Delimitation of Outer Space", 5 Journal of Space Law, (1977), p.121.

61. Table of Earth Satellites 1974-1975.

Research found that satellites of the "usual" construction cannot survive for any appreciable length of time at 90 kilometres or lower (62). This criteria for delimiting space is clearly not new since another writer C. G. Fenwick in 1958 maintained that satellites did not violate international law provided they stay in orbit and retained their altitude (63). Although 90 kilometres seems to be the limit that a satellite can descend to without re-entering the atmosphere and burning up, studies by the Committee on Space Research (COSPAR) suggest that a satellite could descend to as low as 79 kilometres. COSPAR's data was gained by photographing the re-entry of meteorites which usually travel at higher velocities and enter at steeper angles than ordinary satellites, and thus burn up within a few seconds of re-entry. COSPAR photographed two meteors, the first being 20 tons in weight which began to glow at 98 kilometres, and the second being 500 kilograms began to glow at 86 kilometres. COSPAR calculated that if a meteor travelled at the normal re-entry speed of artificial satellites, i.e. 10 kilometres per second, then they would only begin to glow at 70 milometres. This does not mean however than an artificial satellite could survive an orbit at this height since there are high temperatures experienced even before an object begins to glow, and which would do irreparable damage to a satellite not designed to withstand the stresses of re-entry.

It would appear that a delimitation of outer space based on the lowest perigee of satellites offers the best opportunity out of all the spatial or geophysical methods of delimiting space, since it has the advantage of relying on physical concepts that are inevitable. Unfortunately, even though scientists know that orbital decay occurs in the area between 90 and 100 kilometres, this point of inevitability is not specific enough for

62. U.N. Doc A/AC 105/164 (1976).

63. C.G. FENWICK, "How High is the Sky?" American Journal of International Law, (1958), p.98.

some international lawyers, whilst others maintain that this theory is already accepted as part of customary international law (64). Clearly agreement will have to be reached as to the limit of the lowest possible orbit and then delimit airspace and outer space by laying down a sub-orbital boundary. This criterion is clearly supported by the International Astronautical Federation which in 1960 came to an informal understanding that any craft exceeding 100 kilometres is to be classified as a spacecraft (65).

It is the dissatisfaction with these theories that has led to a questioning of the ability of science to provide a reliable criterion on which to base an international agreement on the delimitation of space. According to N. M. Matte (66) factors such as Einstein's theory of relativity and spherical trigonometry are so complex that any accurate calculations is well nigh impossible. Matte states that:-

"Astronomy has succeeded in establishing spatial distances by taking as guidelines various celestial bodies and their movement, but the calculation is not done in the same way as on an even surface ... The notions of time and distance are not the same as on earth. Furthermore, science itself has not settled these concepts of mathematics and spatial geography."  
(67)

Other writers dispute the arguments of Matte and point out that spherical geography is used daily in maritime and air navigation, and that its calculations are certain and unequivocal, and that Einstein's theory of relativity has no influence on the measurement of the vertical height of sovereignty (68).

Perek, in his detailed examination on the boundary question in 1976 (69)

- 64. P.M. SONTAG, "Der Weltraum in der Raumordnung des Völkerrechts", 1966 in Gal, (1966), p.86.
- 65. International Astronautical Federation Congress, October 1960.
- 66. MATTE, (1969), p.51.
- 67. Ibid at p.49.
- 68. L. PEREK, "Scientific Criteria for the Delimitation of Outer Space", Journal of Space Law, (1977), pp.111-123.
- 69. L. PEREK, "Remarks on Scientific Criteria for the Delimitation of Outer Space", Proceedings of the 19th Colloquium on the International Law of Outer Space, (1977), p.185. Also Ibid at p.111.

concluded that a definition based on the lowest perigees of earth satellites had the soundest scientific basis in that it was based on physical concepts that were invariable. Further he thought that such a limit would meet "all the requirements for a practical and meaningful delimitation of outer space" (70).

Further in 1978 Górbiel supported the spatial approach on the ground that it was not possible to make a precise and satisfactory distinction between the use of the airspace and the use of outer space (71). Similarly Goedhuis has also concluded that "the problem of demarcation can only be solved on a conventional basis taking into account some scientific criteria" (72).

Nevertheless Matte and others (73) have rejected the scientific theories of the delimitation of space in favour of what has become known as the functional theory of outer space/airspace delimitation; that is a boundary fixed not by physical criteria but by the type of use to which it is put.

#### THE FUNCTIONAL THEORY OF SPACE LAW

As its name suggests the functional theory provides different rules according to the functions of the flying instrumentality. This theory is not new by any means and M. Lemoine was one of the first to advance this approach in 1947 when he stated that air law is:

70. Ibid at p.192.
71. A. GORBIEL, "Remarques sur la Definition de l'Espace Extra-Atmospherique", Proceedings of the 21st Colloquium on the International Law of Outer Space, (1979), p.89.
72. D. GOEDHUIS, "Some Observations on the Problem of the Definition and for Delimitation of Outer Space", 2 Annals of Air and Space Law, (1977), p.308.
73. M.S. McDOUGAL AND L. LIPSON, "Perspective for a Law of Outer Space", American Journal of International Law, (1958), pp.407-431; J. SZTUCKI, "Security of Nations and Cosmic Space", Symposium (1961), pp. 1164-1203.

"... the field of law which determines and studies the legal norms that regulate the traffic and use of aircraft, as well as the relations which they bring about." (74)

Wilfred Jenks in "International Law and Activities in Space" (75) maintained that the United Nations should exercise jurisdiction over space and asserted that space activities should not be subject to national sovereignty. Jenks' approach is however fraught with the same dangers as the spatial theories since there appears to be no boundary between air and space activities, i.e. at what point does one become the other? The idea that the United Nations should exercise jurisdiction over space is certainly a good one though it is unlikely to gain much force in the near future, since it would require the overturning of that basic principle of international law as contained in the Corfu Channel (Merits) Case, in which the International Court of Justice stated that, "respect for territorial sovereignty is an essential foundation of international relations" (76). It is however encouraging for supporters of the functionalist approach that the principle does have an exception in cases of proved 'force majeure' (77).

R. Quadri in 1959 produced another interpretation of the functionalist theory whereby he grouped air and space into an inseparable mass and stated that the theory restricts the activities of the underlying states rather than the activities of satellites over flying their territory (78).

Professor C. Chaumont, also in 1959, presented an argument in favour of the functionalist theory, whereby he rejected out of hand any limitation based on scientific criteria, arguing that they do not satisfy practical needs. He stated, correctly in the view of N. Matte, that it is far easier

74. M. LEMOINE, *Traité de Droit Aérien*, Paris, (1947), p.3.

75. C.W. JENKS, "International Law and Activities in Space", International and Comparative Law Quarterly, (1956), pp.99-114.

76. International Court of Justice (1949), p.35.

77. JENKS, (1965), p.232.

78. R. QUADRI, "Droit International Cosmique", Recueil Des Cours de L'Academie De Droit International a La Haye, (1959).

for states to reach agreement as to the activities of states than to fix an artificial boundary (79). This would appear to be supported by Professor Peter Sand, who mentioned that the functionalist theory is also acceptable by the Soviet Union for security reasons (80).

Out of the various theories advanced on functionalism the most realistic would seem to be that proposed by the Russians, as described by Peter Sand. This viewpoint would appear to state that national security must underlie any agreements entered into for the regulation of space. Before the space age as regards aircraft it was clear that they had to appear before they could constitute a danger to security. Nowadays, however, with the enormous speeds of some ballistic missiles, it is clear that retaliatory defensive action must take place well before it approaches the sovereign territory of the target state. This Russian outlook seems consistent with the existing practices of states as regards conventional aircraft and ships.

With regard to conventional aircraft it has already been seen that they are governed by the Paris and Chicago Conventions which provide that a commercial airline's right to operate in the airspace of a foreign state depends on a treaty granting such operating rights to the airline's flag state. However neither of these treaties contain regulations which deal with the case of the civil aircraft that strays into foreign airspace, though Article 25 of the Chicago Convention applies to such aircraft in distress. The problem here can be divided into two: firstly, when the unauthorised flight takes the aircraft into the territory of a state that is a party to the convention, and, secondly, when the unauthorised flight takes the aircraft into the territory of a state not a party to the convention. In the first

79. C. CHAUMONT, Problèmes de Droit International de L'Espace Extra-Atmosphérique, from lectures given at the Institut des Hautes Études Internationales, Paris 1959, p.10; (Cited in Matte, (1969), p.67).
80. P. SAND, "Die Entwicklung der Luftfahrtrechts in der Sowjetunion" Ost Europa Recht, (1964), p.176.

case the general practice was considered by the International Court of Justice in the Aerial Incident case (81) as being the duty of the state to indicate to the aircraft that it is performing an unauthorised act, and, without putting it in danger, should direct that it either bring the intrusion to an end or require it to land and submit itself for examination. In the second case however, it would seem that there is nothing to prevent the territorial state from doing as it wishes, though on purely humanitarian grounds there should be no distinction between the case of the territorial state a party to the convention and one which is not.

The Aerial Incident Case (82) is a classic example of the tragedies that can occur because of the operation of the second situation above. In the case an Israeli airliner flying from London strayed from the flight path allocated to it between Greece and Yugoslavia, and entered Bulgarian airspace. Bulgaria, acting within its rights, sent military interceptor fighters to investigate the intrusion but which attacked and destroyed the airliner. Bulgaria, whilst admitting that they had acted too forcefully, denied responsibility for the incident which they alleged had arisen out of an illegal violation of their airspace. In the submissions of Israel, the United States, and the United Kingdom, who represented the individuals killed in the incident, to the International Court of Justice, it was alleged that the remedy for the violation of airspace by a civilian airliner could never be to shoot it down. In this case the International Court of Justice referred to the Corfu Channel Case where it had arrived at its conclusions upon "elementary considerations of humanity even more exacting in peace than in war" (83). In that case the court also referred to the Mexico-U.S. Claims Commission case of *Garcia v U.S.* (84), where it was said that

81. Aerial Incident of 27th July 1955 (*Israel v Bulgaria*); I.C.J. Pleadings (1959), p.5.

82. Ibid.

83. Ibid.

84. *GARCIA v U.S.*, 4 United Nations Reports of International Arbitral Awards (1928), p.119.

an unauthorised incursion into the U.S. territory could not be met with force "unless the importance of preventing or repressing the delinquency by firing is in reasonable proportion to the danger arising from it to the lives of the culprits and other persons in their neighbourhood".

The decision of the court in Aerial Incident case in any event proved unforthcoming since Bulgaria had not provided a declaration accepting the compulsory jurisdiction of the court under Article 36(5) of the Statute of the International Court of Justice, and therefore this court was not competent to hear the claim. It is nevertheless possible to draw certain conclusions from the case since it would seem that the previous cases quoted indicated that there is no rule of international law that would sanction the immediate destruction of a civilian airliner that has made an unauthorised entry into the airspace of a foreign state (85). The practice should be it would seem either for the territorial state to request the aircraft to land for inspection or for it to be escorted away from its airspace.

The position of military aircraft is clear in international law even though neither the Paris Convention 1919 nor the Chicago Convention 1944, or any other treaty for that matter, governs this situation. The rule seems to be that the use of force against an aircraft engaging in operations over or against a territorial state is legitimate, just as it is against a military aircraft which strays into foreign territory while it is engaged in operations near the border of that state. The legitimacy of such action has been seen a number of times, the most famous being the U2 Incident of 1960 (86), when there was no question of the U.S. Government alleging that Russia was in breach of international law by shooting down a plane engaged

85. D.W. GRIEG, International Law, Butterworths, (1970), p.285.

86. Discussed in "Legal Aspects of the U2 Incident", by Quincy Wright. American Journal of International Law, (1960), p.836.

in espionage activities. Quite clearly this incursion was a deliberate act, but what of the unarmed military aircraft which inadvertently strays into foreign airspace? An incident taking in this question arose in 1952 when an unarmed Swedish military aircraft was shot down over an area of the Baltic Sea alleged by Russia to be part of its airspace (87). Russia alleged that it had the right to insist that the aircraft land for investigation, and if it fails to do so it may be attacked. The Swedish view was that the territorial state has the right to "warn off" but not to demand that they land, thus following the British and American view, though one which is unlikely to be a rule of international law. Military aircraft are clearly apart from civilian aircraft and the rule seems to be that any request to land is merely a concession to humanity rather than to any binding international obligation.

It would seem that the above attitudes towards civil and military aircraft may easily lend itself to providing a functional solution to the problems of sovereignty in space though it would be unrealistic to assume that it could be adopted as a *fait accompli*. One of the first problems that would be met in adapting the airspace rules is, how does one decide whether a satellite has a civilian function or a military function? Since the Outer Space Treaty 1967 prohibits the placing of nuclear weapons or other weapons of mass destruction in orbit on the Moon or other celestial bodies (88), it must be assumed that a state would not attempt to place such a satellite in space. Nevertheless it would be extremely difficult to differentiate between the status of, for instance, a survey satellite, which could be engaged on bona fide scientific research, from a spy satellite, particularly if such a satellite is powered by solar panels rather than nuclear fuel. Any satellite carrying the amount of fuel required for an atomic

87. Inter alia in the American Journal of International Law, (1953), p.559.

88. Outer Space Treaty 1967 Article IV.

weapon, with today's sophisticated telemetry systems would be instantly recognised as such and the launching state could expect initially a warning as being in breach of international law and then retaliatory action being taken, either against the satellite itself or in the threatened state taking reciprocal measures. Clearly the major powers do possess 'spy' satellites but no attempt has yet been made to attack these (though the capability is being developed) and in the absence of an agreed limit on the extent of national sovereignty one can only assume the major powers have come to an implied reciprocal agreement not to interfere with one another's surveillance facilities in that it is lawful to engage in remote sensing from the sovereignty-free area of outer space. It would seem however that this implied agreement is likely to be formalised since on April 10th 1978 Mr. Cyrus Vance, Secretary of State for the United States, stated that negotiations were taking place with the U.S.S.R. for a limitation on the use of so-called 'killer' satellites (89).

A second problem with the adaptation of the rules relating to territorial airspace to outer space, is that the only real argument against military action being taken against a civilian airliner which strays into the airspace of a state not party to the Chicago Convention is that of humanitarian reasons. However, since the vast majority of satellites are unmanned, this reason for not taking action against a functional infraction of airspace is untenable. In the case of manned spacecraft it would seem that the humanitarian argument might carry some weight. In the Aerial Incident case the applicant states referred to an international obligation of states to assist aircraft in distress, even though the aircraft in question was not in distress. This obligation is more formal with regard to outer space since the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched in Outer Space imposes such

89. Cyrus Vance at the American Society of Newspaper Editors April 10th 1978. See also C.Q. CHRISTOL, "The Modern International Law of Outer Space", Pergamon Press, (1982), p.732.

obligations on the parties contracting to the agreement (90).

A third problem occurs with the adaptation of the functional character of airspace to the outer space environment, and that is "At what point can action be taken against a military satellite?" In airspace any military aircraft that strays into the territorial airspace of a foreign power whether armed or unarmed can expect at best to be either guided away or forced to land for inspection, and at worst to be shot down. The territorial airspace of a country will extend over its national boundaries and its territorial sea (91), while conversely the airspace above the High Seas is not subject to the sovereignty of any state (92). Thus, as already seen while the U.S.A. did not contend that the destruction of the U2 was contrary to international law, since it was over the territorial airspace of the U.S.S.R., it did allege such a breach when one of its RB-47 reconnaissance aircraft was brought down when flying over the high seas (93).

While it is useful to use the law relating to international rights in airspace as a model on which to base sovereignty limitations in space, it must be said at this point that the extent of territorial airspace is not a settled matter in relation to the extent of those rights contained therein. The reason for this uncertainty is the diverse claims as to the extent of sovereign rights over the territorial sea. The traditional three mile limit has been superseded by the expansion of a territorial sea of up to 200

90. Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched in Outer Space 1968. 19 U.S.T. 7570; T.I.A.S. 6599.

91. B. CHENG, The Law of International Air Transport, London-New York, (1962), p.3. Also the Anglo-Norwegian Fisheries Case, I.C.J. (1951) and Geneva Convention on the Territorial Sea and the Contiguous Zone 1958 Article I; U.K.T.S. 3, (1965); Command 2511; 516 U.N.T.S. 205.

92. Ibid Article II.

93. O.J. LISSITZYN, "Some Legal Implications of the U2 and RB-47 Incidents", American Journal of International Law, (1962), p.135.

miles in some cases (94). In 1974 at the United Nations Conference on the Law of the Sea, virtually all the states present agreed to the establishment of a 12 mile territorial sea, which is now contained in Article 3 of the United Nations Convention on the Law of the Sea 1982 (95).

In addition to the areas of territorial sovereignty over the territorial sea (and thus territorial airspace) many states have in addition made claims to an "exclusive economic zone", which does not encompass territorial sovereignty but lays claim to sovereignty over certain resources such as marine life and minerals. Article 57 of the United Nations Convention on the Law of the Sea 1982 imposed a 200 mile limit for this purpose (96).

In addition to these contiguous zones both the United States and Canada have established air defence identification zones (i.e. ADIZ and CADIZ respectively) extending several hundred miles into the Pacific and Atlantic oceans, within which aircraft approaching Canada and the United States must identify themselves (97). It is the adaptation of this area of the law relating to airspace that would render itself more easily to outer space in that states would not possess any sovereign rights as such but would be able to take pre-emptive action against military satellites entering such zones. Such a zone could extend for several hundred or possibly several thousand miles since the speed of missiles makes them a far larger risk than aircraft. The adoption of contiguous or air defence zones in space would allow for a truly functionalist method of controlling outer space, since such zones would not restrict the use of space by civilian satellites. Air defence zones are however not without their critics and some writers

- 94. E.D. BROWN, "Maritime Zones: A Survey of Claims", 3 New Directions in the Law of the Sea, (1973), p.157.
- 95. U.N. DOC.A/CONF. 62/122, October 7th 1982.
- 96. Ibid.
- 97. W. BISHOP, International Law, (1962), p.533.

have alleged that the establishment of such zones is contrary to international law as being an unwarranted and unilateral extension of territorial sovereignty (98). Other writers have viewed their introduction as legal by reason of the right of self defence as is inherent in the maritime doctrine of the contiguous zone (99). It has been suggested that such zones should not be considered as extensions of territorial sovereignty and that aircraft are as free to fly through such zones as they are through the airspace above the high seas (100). Such air defence zones as adopted by the U.S.A. and Canada are only air IDENTIFICATION zones and their establishment does not automatically mean that a pre-emptive attack would be launched immediately against an intruding aircraft since that may be contrary to Article 51 of the United Nations Charter, in that while it allows for an inherent right of self defence this right may only be used where an armed attack has actually occurred. It is however difficult to assess when an attack has commenced and clearly it would be unreasonable and unrealistic to expect a state to have to wait until the first missile actually strikes before it could react. Once a missile has been launched it may be said that an attack has commenced and the appropriate action may then be taken. It would seem that the international community has come to accept an international customary right of anticipatory self defence since:-

"Unless a rule of international law is based upon the practice of states or is sufficiently general to fit in with both that practice and the reasonable demands of states likely to be

98. E. CUADRA, "Air Defence Identification Zones: Creeping Jurisdiction in the Airspace", Virginia Journal of International Law, (1978), p.485.
99. J.C. COOPER, "Contiguous Zones in Aerospace - Prevention and Protective Jurisdiction", 7 JAG Journal, (U.S. Government Printing Office), (1965), pp.15-21. Also BIN CHENG, "The Right to Fly", Grotius Society, (1956), p.121.
100. C.SHAWCROSS and K.M. BEAUMONT, Air Law, Butterworths, (1977), p.182. Also J.A. MARTIAL, "State Control of the Airspace Over the Territorial Sea and the Contiguous Zone", Canadian Bar Review, (1952), p.243.

faced with the need to act, it is probable that it will not be observed, and in the international community, rules based solely upon the legal niceties of treaty construction without adequate recognition by states are unlikely to meet whose demands." (101)

However such an approach is probably unnecessary where an armed attack actually takes place since Article 51 clearly maintains a right of self-defence. In the case of a situation where no armed attack has actually commenced, then Article 33 of the U.N. Charter requires states to settle their disputes by peaceful means. Nevertheless where such attempts prove fruitless states retain their "inherent right of self defence" and may take action even if no armed attack takes place (102).

With regard to missiles such a right of anticipatory self defence is essential because of their relatively high velocities when compared to aircraft. The establishment of an air identification zone is thus a fairly simple method of maintaining national security without the need for the kind of pre-emptive action seen in the Aerial Incident case.

Applying such a system into outer space would result in the establishment of a zone in which all satellite traffic would be required to identify themselves to the sovereign state over which they are passing, and failure to do so would possibly result in pre-emptive action being taken against that craft. There are other problems associated with these zones and their adaptation to space; firstly, a zone is still required and thus the same problems of delineating space; secondly, if a craft fails to identify itself there may be a problem over what action can be taken since only now are the major powers beginning to develop 'killer' satellites - thus the final, ultimate weapon against unauthorised incursions is not available as of

101. GRIEG, (1970), p.680.

102. Ibid. at p.681.

yet; thirdly, the circumstances which arise may only warrant the escorting of a satellite out of the zone and there is no evidence that such a capability exists, or is being developed; fourthly, since the majority of satellites stay in the same orbit for many months, if not years, it seems unrealistic to expect them to have to identify themselves every time they orbit; fifthly, what information would be required to be given? If a satellite was merely to identify who the launching state was that would seem incongruous with the functional theory, where it is the use the satellite is to be put to which is of fundamental importance. Further, given that the function of the satellite is declared, there is no method of assessing whether that be a military or civilian function, particularly in the case of earth resource satellites. Sixthly, the General Assembly in 1961 called upon:-

"States launching objects into orbit or beyond to furnish information promptly to the Committee on the Peaceful Uses of Outer Space, through the Secretary-General, for the registration of launchings." (103).

Whilst states have complied with this appeal the resolution does not define the information that is required to be given. Thus the U.S.S.R. gives the serial number and the name of the device, the purpose of launching, the date of launching, and the angles of inclination to the equator, perigee and apogee. The U.S.A., on the other hand, does not indicate the purpose of launching but classifies the satellite by placing it under one of four headings, i.e. development of space flight and techniques, space research and exploration, practical application of space based technology, and non-functional objects. Predictably neither the U.S.A. nor the U.S.S.R. give information on military devices having secret missions, and thus the application of such a registration system with an air defence zone would be pointless unless states are more candid about the functions of their satellites. The fact that registration is now mandatory by virtue of the

103. United Nations General Assembly Resolution 1721 (XVI), "International Co-operation in the Peaceful Uses of Outer Space", 1961.

Convention on the Registration of Objects Launched into Outer Space 1974 appears to have made little impact on the attitudes of launching states (104).

It would seem that a proposal for a space defence identification zone will not at present provide a workable solution to the question of the delimitation of territorial sovereignty in space, mainly because that it would still involve the establishment of a definite line, as with the spatial theories of delimitation with all their problems. However the functional theory would tend to reconcile the basic right of states to have access to the atmosphere and space with their right to security and self-defence. If the state overflown has good reason to suppose that the craft will cause damage or is to be used for aggressive purposes, it has the right to defend itself in a manner proportionate to the danger. Similarly if a state launches a satellite which is likely to cause damage or is to be used in a hostile manner it must expect action to be taken against it, and should be prepared to provide compensation for any damage caused. It should also be borne in mind that if a craft is manned then there is a very strong rule in international space law that the reciprocating state should pay due attention to the safety of that crew. N. Matte believes that the concept of functionalism should be extended to encompass the aerospace as well, though he does give a concession of national sovereignty to states so that they may control aeronautical navigation over their territory (105). Matte also stresses that national sovereignty in this context is purely functional and is limited to aeronautical navigation only, thus there would be no need to establish barriers in air and space. In other words Matte is advocating an 'open skies' policy, as advanced by the U.S.A. at both the Paris and Chicago Conventions, limiting it only to the extent of aeronautical navigation and acts of belligerency. However admirable such a proposal is

104. Article II, para. 2.

105. MATTE, (1969), pp.72 & 73.

territorial sovereignty is here to stay and it is inconceivable that such a proposal would be adopted since this would require fundamental change in political, economic and legal reasoning.

Many of the options available for the delimitation of outer space have been discussed in the United Nations Secretariat background paper produced in 1970 entitled "The Question of Delimitation and/or the Delimitation of Outer Space" (106), to which there was an addendum dated January 21st, 1977 (107). Broadly speaking, and according to Bin Cheng (108) there were basically three groupings amongst states involved in the discussion - the spatialists, the functionalists and the "wait-and-seers" (which included "don't knows"). However over the years support for the functionalist approach amongst states has waned, most being won over to the spatial or wait and see camps. Typical of this is Belgium who in 1976 advocated a spatial approach whilst formally it had adopted a functionalist stance (109). The reason for this switch of attitude might be seen in the attitude of Gal, who whilst supporting the functionalist approach, considered that the spatialist approach offered better prospects for agreement (110). The Soviet Union however has maintained a spatialist approach advocating a boundary of 100 kilometres in its working paper of 1979 (111). The Western states, particularly the United States, the United Kingdom and the Federal Republic of Germany, have tended to lean towards the "wait and see" camp since, as the United States has stated, most countries are unable to monitor any boundary that might be set up, secondly, the relevant scientific, legal and political factors have not been adequately examined, and thirdly, any boundary that is imposed could inhibit future efforts on

106. U.N. DOC.A/AC. 105/2/7, (1970).

107. U.N. DOC.A/AC. 105/C.2/2/7, (1977).

108. B. CHENG, "The Legal Status of Outer Space", Journal of Space Law, (1983), pp.93-94.

109. U.N. DOC.A/AC. 105/C.1/L.76, 23rd March 1976.

110. G. GAL, "The Question of Delimitation After Twenty Years", Proceedings of the XXII Colloquium on the Law of Outer Space, (1980), p.125.

111. U.N. DOC.A/AC. 105/C.2/L121 (Reissued version of March 28, 1979).

the exploration and use of outer space (112).

Each of the alternative approaches to the delimitation of airspace and outer space has presented its own special problems. The spatial approach has been hampered by disagreements between its own proponents as to a preferred spatially measured height and has been criticised by its opponents in that they do not consider that adequate scientific and technological data has been supplied respecting the lowest safe perigee of earth satellites. The functional approach for its part is open to the problem of the need to categorise air activities and space activities and the subsequent difficulties involved with defining hybrid space missions.

Ultimately the proposals of the U.S.S.R. may carry the day since its language was simple and comprehensible and addressed itself to the goals of the 1967 Treaty in that it facilitates the free and equal exploration, use, and exploitation of, and equal access to outer space (113). Further it tends to favour the growing feeling that the spatial solution to the question of delimitation has now become part of customary international law in that the space powers now appear to accept that all orbits of artificial earth satellites are considered to lie in outer space and that national airspace does not exceed the lowest perigee height of any satellite (114). Cheng suggests (115) that while such a line is apparently a rule of general international law the fact that the space powers have refused to define such a line is indicative of a desire to leave their options open in order to raise or lower this line as their national interests determine at some future date. He goes on to suggest that in fact the positions of the U.S.S.R. and

112. U.N. DOC.A/AC.105/C.2/SR 316, 4th April 1979.

113. C.Q. CHRISTOL, "The Modern International Law of Outer Space", Pergamon Press, (1982), p.525.

114. B. CHENG, "Outer Space: The International Legal Framework", 10 *Thesaurus Acroasium*, (1979), pp.66-72.

115. B. CHENG, (1983), pp.95-96.

the U.S.A. are identical in that their aims are to enhance their own positions - the U.S.A. by their "wait and see" policy, the U.S.S.R. by not only establishing a line on 100 kilometres above sea level but also by proposing a right of space objects to pass through the territorial airspace of underlying states in order to enter outer space or to return to earth (116).

The functionalist approach is really a great deal more extreme in that they are saying that if a space flight is lawful then the craft is free to penetrate the airspace of an underlying state and therefore as far as legal space activities are concerned sovereign airspace has been abolished. With regard to military reconnaissance satellites whilst these are legal once stationed in outer space they do not represent a legal activity when passing through the sovereign airspace of another state and it is really at this point that this approach departs from the spatial approach since functionalists would not allow these craft to pass through the airspace of an underlying state.

It is suggested therefore that while an agreement on delimitation is desirable because of the problems relating to the geostationary orbit it is unlikely to be forthcoming because of the interests of the space-powers, who clearly feel it is to their advantage to maintain the status quo.

#### TERRITORIAL SOVEREIGNTY IN RELATION TO THE GEOSTATIONARY ORBIT

As already described (117) geostationary orbit is the term that is given to a satellite which orbits the earth at a height of approximately 35,800 kilometres above the equator, turning about the polar axis once every 24 hours, it is thus synchronised with the rotation of the earth appearing to

116. Ibid.

117. Supra Note 32.

'hang' above a given underlying point. The area of geostationary orbit has been described by Gehrig as a "three dimensional corridor" within which satellites move at different heights, inclinations, and speeds in relation to the equatorial plane (118). The corridor does have physical limitations of size but it is highly unlikely that this will cause any problems in the foreseeable future. The real problem with satellites in geostationary orbit is electromagnetic interference from other satellites since the distances between satellites will vary with the tolerations of each satellite to such interference. It is this, and other factors, such as the size of satellites and stability of orbit, that led a United Nations study of the problem to state:-

"It is impossible to state how many satellites can be accommodated in the geostationary orbit. It is, however, possible to find out if a specific satellite system, with all the parameters defined would interfere with other systems or not." (119)

It has been estimated that between 1980 and 1991 274 such satellites will be launched (120), however, the eventual number cannot be realistically assessed. As more and more states lay claim to the use of geostationary orbit so the problem of overcrowding will become acute, and it has already been described as a "limited natural resource" (121). It is because it is a finite resource that controversy has erupted as to who has the right to use this resource and to what extent can its use be controlled? Clearly the answer to these questions must involve the problem of sovereignty rights in space, and the various theories as to how such rights can be delineated.

- 118. J.J. GEHRIG, "Geo-stationary Orbit - Technology and Law", Proceedings of the XIX Colloquium on the Law of Outer Space, (1977), p.268.
- 119. U.N. General Assembly Committee on the Peaceful Uses of Outer Space; "Physical Nature and Technical Activities of the Geo-Stationary Orbit", Study prepared by the Secretariat, U.N. Document A/AC.105/203, (1977).
- 120. GEHRIG, (1977), p.270.
- 121. International Telecommunication Convention, October 25th 1973.

1. The Geostationary Orbit and the Delimitation of Territorial Sovereignty in Space

The problem of the geostationary orbit and the question of sovereignty in space may be divided into two. Firstly, the establishment of sovereignty into areas traditionally thought of as outer space by extending the limits of airspace. Secondly, the establishment of "pockets" of sovereign territory in outer space by the exercise of possessory rights established by the stationing of a satellite in a particular position.

Having examined the various theories, and the difficulties inherent in them, it would seem that any solution to the problem of delimitation is inconclusive. Nevertheless, many years of experiment and discussion could be said to have created a rule of customary international law in that satellites move in outer space (122). There now appears to be a consensus that outer space begins just under the lowest orbit that a satellite can maintain (i.e. between 100 and 110 kilometres) (123). Since satellites move on a geostationary orbit at an altitude of approximately 35,800 kilometres they are undoubtedly moving in outer space and therefore beyond the sovereign areas of the underlying states. It follows that if this geostationary orbit is in outer space then the Outer Space Treaty 1967 must come into operation, and this states that:-

"Outer space ... shall be free for exploration and use by all states ... on the basis of equality, and in accordance with international law." (124)

The treaty also states that:-

"Outer space ... is not subject to national appropriation by claim of sovereignty, by means of use or occupation." (125)

122. M.S. McDOUGAL, "The Emerging Customary Law of Space", 58 N.W.U.L. Review, (1964). S.H. LAY and H.J. TAUBENFIELD, The Law Relating to the Activities of Man in Space, University of Chicago Press, (1978).
123. GEODHUIS, (1978), p.591. Note, however, supra at p.35 et seq the earlier arguments regarding the lowest perigees of satellites.
124. Outer Space Treaty 1967 Article I, para.2.
125. Outer Space Treaty 1967 Article II.

Recently, however, the application of the above two articles of the Outer Space Treaty has been challenged by the equatorial states underlying the corridor of geostationary orbit, claiming rights of sovereignty over parts of the geostationary corridor. This challenge was formalised in November 1976 when eight equatorial states (126) met in Bogota to decide on a unified agreement on the status of the geostationary orbit. The conference concluded in December 1976 with a statement which has subsequently become known as the Bogota Declaration. The declaration, which discusses both the arguments for and against the position of the equatorial states in relation to the geostationary orbit, asserts that the orbit is a natural resource constituting an integral part of the equatorial countries, which therefore have complete and exclusive rights (127). The declaration went on to state that any state placing a satellite on a geostationary orbit above an equatorial state had first to get "express authorisation on the part of the state concerned" (128); that the equatorial states would not condone the use of the geostationary orbit by existing satellites, and that such existing satellites would not confer any rights to place other satellites in that position (129). The declaration did however make two exceptions to the claim: firstly, the equatorial states did not object to the free transit of satellites approved and authorised by the International Telecommunication Convention (130); and, secondly, that segments of the orbit corresponding to the high seas beyond national jurisdiction would be the "province of all mankind" (131), as contained in the Outer Space Treaty and the Draft Treaty Relating to the Moon (132).

- 126. Brazil, Columbia, Congo, Ecuador, Indonesia, Kenya, Uganda, and Zaire.
- 127. Bogota Declaration Section 1.
- 128. Bogota Declaration Section 3(d).
- 129. Bogota Declaration Section 3(e).
- 130. Bogota Declaration Section 3(c).
- 131. Bogota Declaration Section 3(b).
- 132. Article I and Article X respectively.

The above assertions in the Bogota Declaration were based on several arguments. Firstly, it was alleged that the geostationary orbit was a physical fact arising from the nature of the earth because it depends exclusively on the phenomena of gravity caused by the earth. Geodhuis maintains that this argument is fallacious in that the geostationary orbit is exactly the same as any other orbit, except that the satellite is synchronised to a particular location on the earth. He maintains that the unsynchronised orbit also relies on the properties of the earth as a whole, and therefore it is impossible to argue that the geostationary orbit is not in outer space (133).

The second argument used in justifying the declaration was the allegation that, according to the International Telecommunication Union (134), geostationary orbit is a limited natural resource and therefore should be subject to the sovereign control of the equatorial states. Such an argument, at least according to Geodhuis (135), cannot be justified at all since the issue at stake is whether the orbit does or does not lie in outer space, where there exists a fundamental freedom of exploration and use (136).

The third argument was that the present rules of international law were drawn up by industrialised states for their own benefit, and that developing countries were not given the opportunity to detect and assess contradictions in those rules because they lacked adequate scientific aid. Again Goedhuis rejects the argument by maintaining that the principles of freedom and non-appropriation in space was universally accepted as rules

133. GOEDHUIS, (1978), p.588. He refers to a statement by the U.S. delegate at the meeting of the U.N. Legal Sub-Committee on Outer Space on April 6th 1977 - U.N. Doc.A/AC 105/C2/SR281, (1977).

134. International Telecommunication Convention, October 25th, 1973.

135. GOEDHUIS, (1978), p.589.

136. Outer Space Treaty 1967 Article I para.2.

of international law by virtue of Article II of the Outer Space Treaty. He also correctly commented that these rules have never been challenged until the Bogota Declaration.

The three arguments above were also supplemented by others in order to justify the declaration, thus, they argued that since there is no definition of outer space there can be no objection to the geostationary orbit being excluded from outer space. Additionally, the equatorial states alleged that since the Outer Space Treaty has no provisions regarding the geostationary orbit it cannot be regarded as being legal authority for the regulation of the geostationary orbit - it is not the "final answer" (137).

In 1977 and 1978 at a meeting of the U.N. Committee on the Peaceful Uses of Outer Space, the Columbian delegate Mr. Aguilera made certain additional comments on the arguments raised in the Bogota Declaration. Firstly, he stated that the continued uncertainty of a definition for outer space is illustrated by the different criteria suggested in order to solve the problem (138). Following on from this point Mr. Aguilera maintained that, since there is no definition of outer space, principles of domestic law will apply and thus allow for the establishment of such sovereign rights as are in keeping with public international law (139). He also maintained that countries who had not ratified the Outer Space Treaty were not bound by it, and that geostationary orbit was a unique and natural resource because it was the only position where solar energy platforms would be capable of operating from (140).

The attempt by equatorial states to establish sovereign rights over the geostationary orbit has been overwhelmingly rejected and condemned by the other members of the U.N. Committee on the Peaceful Uses of Outer

137. Supra Section 4.

138. U.N. Doc.A/AC 105/C2/7/ADD 1, (1978).

139. U.N. Doc.A/AC 105/C2/SR296, (1978).

140. Ibid.

Space (141). The United States delegate maintained that there was no legal or scientific basis for a claim of national sovereignty over the geostationary orbit, and that such a claim could not serve the best interests of mankind since the exploration and exploitation of space would be inhibited (142).

Other members of the committee produced arguments against the claims of the equatorial states, most notably Belgium who maintained that any comments by the International Telecommunication Union on the geostationary being a limited resource was without legal foundation since Article 33 of the International Telecommunication Convention only describes the geostationary orbit from a scientific standpoint (143). It was also pointed out that the only legal provision in the International Telecommunication Convention maintains that any orbital allocation does not confer permanent priority or possession (144). Belgium also maintained that in order to validly claim sovereign rights it must be based on effective occupation (145), that geostationary orbit was an intellectual concept based not on its physical relation to the earth but arising out of the mathematical and scientific mind (146), and that any claim that it was a natural resource subject to sovereign acquisition was manifestly absurd (147). The United Kingdom commented that the use of geostationary orbit is subject to the Outer Space Treaty (148), whilst Italy stated that no state had ever before protested against space activities that were being carried out for the benefit of mankind (149).

- 141. Inter alia: Australia, Belgium, Czechoslovakia, France, German Democratic Republic, Iran, Italy, Mexico, U.K., U.S.A., U.S.S.R.
- 142. U.N. Press Release OS 852, (April 5th 1978).
- 143. U.N. Doc.A/AC 105/C2/SR298, (1978), p.5.
- 144. Ibid on p.6.
- 145. U.N. Doc.A/AC 105/C2/SR298, (1978), p.5.
- 146. U.N. Press Release OS 224, (April 5th 1978).
- 147. U.N. Doc.A/AC 105/C2/SR298, (1978), p.6.
- 148. U.N. Press Release OS 852, (April 5th 1978).
- 149. U.N. Press Release OS 852, (April 5th 1978).

Referring to the Bogota Declaration and the claim of national sovereignty over the geostationary orbit by the equatorial states, it can be seen that one of the arguments was that since these states had not ratified the Outer Space Treaty they were not bound by it. However, it was stated by the dissenting members of the Committee of the Peaceful Uses of Outer Space that it had become part of international law, in that space was not subject to national appropriation and that the exploration and exploitation of space was free for all (150). Until the declaration in 1976 no state had ever questioned the 'basic freedom' criteria contained in the Outer Space Treaty. Prior to this treaty in 1963 there had been a unanimous acceptance by the Eighteenth General Assembly of the United Nations of the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (151). The acceptance of this declaration was given in such a manner that it would appear to have the force of a legally binding instrument, such were the nature of the statements from nearly all the members of the United Nations. Manfred Lachs, who at the time was President of the International Court of Justice remarked of the resolution:-

"Thus, by expressing their will to be bound by the provisions of the document in question, they consented to so to be bound, and there is no reason why they should not be held to it. For their intention seems to have been clear, the question of form therefore ceases to be of the essence." (152)

If the conclusions of Lachs are correct it would appear that Resolution 1962 (XVIII) will have the binding force of international law. This resolution states that "the exploration and use of outer space shall be carried on for the benefit ... of all mankind" (153), and follows "outer space and celestial bodies are free for exploration and use (154) ... and are not

150. Supra Note 136.

151. G.A. Resolution 1962 (XVIII), (1963).

152. MANFRED LACHS, The Law of Outer Space, (1972), p.138.

153. Supra Note 151, Section 1.

154. Supra Note 151, Section 2.

subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means" (155). It would seem that the claims of the equatorial states in contravention of this resolution are contrary to international law. This conclusion may be reinforced by the fact that even though the term "outer space" has not yet been defined, no state has ever protested about the passage of the several thousands of satellites that have orbited the earth. Additionally, D. Goedhuis in 1966 conducted an investigation into the attitudes of bodies concerned with the development of space law, i.e. inter alia the Institut Du Droit International, the International Law Association, and the David Davies Memorial Institute, and all the bodies concerned in the investigation considered that the principles of freedom and non appropriation of outer space were part of international law (156). Similarly at the 21st Colloquium on the Law of Outer Space of the International Institute of Space Law of the International Aeronautical Federation in 1978 not one commentator supported the claim of the equatorial states, and all considered that the Bogota Declaration to be a violation of customary law (157) in that the doctrine of *opinio juris et necessitatis* provides that customary international law is constituted by recurrent practice or abstention which gives rise to an expectation that in future situations that practice or abstention will be repeated. However S.38(1)b of the Statute of the International Court of Justice refers to "general practice accepted as law" and therefore for customary international law to be established there must be a degree of

155. Supra Note 151, Section 3.

156. D. GOEDHUIS, "Reflections on the Evolution of Space Law", The Netherlands International Law Review (1966), p.112.

157. R. ARZINGER, "The Freedom of Outer Space and the Geostationary Orbit", p.12. Others expressing such views were:- Edward R. FINCH, "Outer Space Global Independence and the Geostationary Orbit", p.17; JONATHAN F. GALLOWAY, "The Current Status of the Controversy Over the Geostationary Orbit", p.22; P. HAANAPPEL, "Article II of the Toshio Kosuge, "National Appropriation of Geostationary Satellite Orbit", p.31; KRYSTYNA WIEWIOROWSKA, "Legal and Political Problems of the Geostationary Orbit", p.34. All contained in the Proceedings of the 21st Colloquium on the Law of Outer Space, 1978.

obligation rather than mere usage. Indeed the Permanent Court in *The Lotus* stated that to establish customary international law there must be a conscious obligation rather than mere long practice (158). Further both in *The Lotus* and in the *North Sea Continental Shelf Cases* (159) it was stated that a high standard of proof was required of the concept of *opinio juris*. Nevertheless the amount of emphasis given to *opinio juris* in establishing customary international law varies according to the circumstances (160) and it is possible for customary international law to be established without the need of proving the psychological element of *opinio juris*, though this may be regarded as a minority view.

The fact that the parties to the Bogota Declaration do not accept the 'basic freedom' criteria of the Outer Space Treaty or Resolution 1962 would probably not however prevent a rule of customary international law from being established. The reason for this is that since the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, on which the Outer Space Treaty was based, was passed unanimously this must represent the law as generally ACCEPTED by the member states of the United Nations and must therefore form the basis of *opinio juris* (161). Thus the Canadian delegate stated:

"The Legal Principles contained in it reflected international law as it was currently accepted by Member States." (162)

Further evidence of this attitude may be seen in an earlier statement referring to Resolution 1721 (163), which was also passed unanimously, stating:

158. P.C.I.J. Reports (1927), Ser.A No.10, p.28.

159. I.C.J. Reports (1969), p.43.

160. D.W. GREIG, *International Law*, Butterworths, (1970), p.16 & 17; P. GUGGENHEIM, "Les Deux Eléments de la Coutume en Droit International", 1 *Études en L'Honneur de G. Scelle*, (1950), p.275, as cited in B. CHENG, "United Nations Resolutions on Outer Space: 'Instant' International Customary Law?" 5 *Indian Journal of International Law*, (1965), p.23-48.

161. CHENG, *Ibid* p.38.

162. U.V. Doc.A/C 1/SR 1346, December 5th 1963, p.189.

163. U.N. Doc.A/AC 105/C2/SR 20, April 22nd, 1963.

"A General Assembly resolution would be the most appropriate instrument for a declaration of general principles. Some delegations had argued that only an international agreement signed by governments would be legally binding. International agreements were not, however the only sources of law. As stated in Article 38 of the Statute of the International Court of Justice, decisions of international tribunals and the growth of customary law as evidenced by State practice should also be taken into consideration. When a General Assembly resolution proclaimed principles of international law as resolution 1721 (XVI) had done - and was adopted unanimously, it represented the law as generally accepted in the international community." (164)

Since neither Resolutions 1721 and 1962 impose legally binding obligations on the parties it is clear that the only way in which the parties to them may be bound is by customary international law. While the psychological evidence of custom can be shown by reference to the unanimous resolutions above there is apparently no material or usage element. In the opinion of Bin Cheng the usage element is only of evidential necessity and where the usage is usually extensive there is no real need for this; in fact he maintains there is no need for any evidence of usage at all provided the *opinio juris* of the States concerned can be shown, though it may be difficult to talk in terms of custom in these circumstances (165). Further Cheng maintains that whilst *opinio juris* is usually established over a long period of time there is no reason why in fact it cannot be established over a very short period of time, such as in a unanimous General Assembly resolution which would operate to "positivize" their *opinio juris*; States being bound not by reason of the resolution but from their acceptance of the principles contained in the resolution (166).

Summing up it would seem that the principle of freedom and use of outer space as contained in Articles I and II of the Outer Space Treaty includes the area of geostationary orbit, which is thus in outer space and therefore

164. U.N. Doc.A/AC 105/C2/SR 20, April 22nd, 1963.

165. CHENG, (1965), p.37.

166. Ibid at p.38.

cannot be subject to a claim of national sovereignty. Thus the recommendation of the panel of the Sub-Committee on Space Science and Applications of the House Committee on Science and Technology stated that -

"... action should be initiated and vigorously pursued to establish an international codicil to the 1967 Outer Space Treaty which specifically forbids any individual nations claiming sovereignty over the geostationary orbit." (167)

should be rejected as being unnecessary since the legal status of the geostationary orbit has already been established by the Outer Space Treaty. The panel also recommended (168) that alternatives to the geostationary orbit should be found by technological advancement which would seem, at least to S. Neil Hosenball (169), to be a far better solution.

## 2. The Establishment of Territorial Sovereignty Within the Geostationary Orbit

The importance of satellites in geostationary orbit cannot be underlined enough since modern telecommunications depend on satellites being in line of sight so that there is no break in the communications system, which would occur if the satellite travelled faster or slower than the earth's rotation. Further not all such satellites are used for telecommunications purposes since many are now used for military surveillance, weather forecasting and navigational purposes. It is further anticipated that by the end of the century space solar power stations will be developed to transmit energy to earth (170).

167. Sub-Committee on Space Science and Application of the Committee on Science and Technology: U.S. House Report on International Space Activities, November 1978.

168. Ibid at p.38.

169. S. NEIL HOSENBALL, "The United Nations Committee on the Peaceful Uses of Outer Space: Past Accomplishments and Future Challenges", 7 Journal of Space Law, (1979), p.113.

170. "An Orbiting Solar Power Station", 49 Sky and Telescope, (1975), p.226.

One of the main problems associated with geostationary orbit is that it is limited in its area. It is because of the fact that it is limited in its area that there is some speculation as to the number of satellites the corridor will hold. The estimated number of satellites varies between 180 and 1800, since some authors consider that a one degree segment could hold five satellites without colliding (171), whilst others consider that the technological limit is one satellite per two degree segment (172). Even this latter figure is very much guesswork since the criteria restricting the number is not availability of space but the actual radio frequencies used by the satellites in geostationary orbit. This is because any overlap of frequencies will cause interference, particularly if the radio frequencies of each satellite are very close together. This restricting criteria should not only be judged from the point of view of the close proximity of satellites to each other but also to the area of intended reception on earth. Thus a satellite broadcasting to a very wide geographical area is more likely to suffer from interference than one broadcasting to a very small area (173). Severe problems may also occur if space solar stations become a reality since one proposal is for a satellite to cover an area of 17.4 square miles (174).

In order to create some sort of order in the allocation of radio frequencies the International Telecommunication Union, which has been a part of the United Nations since 1947, has played an important role. Normally the I.T.U. allocates frequency bands for certain uses and then different states assign frequencies to their radio stations, which in turn are registered with the International Frequency Registration Board of the I.T.U. on a "first

171. W.R. HINCHMAN, "Issue in Spectrum Resource Management", Twentieth Century Fund Task Force, The Future of Satellite Communication, (1970), p.52.
172. J. BUSAK, "Geostationary Satellites and the Law", 39 I.T.U. Telecommunication Journal, (1972), p.487.
173. S.E. SCRUPSKI "Users Starting to Hop Aboard U.S. Communications Satellites", 47 Electronics, (1974), pp.98-100.
174. Supra Note 170.

come, first served" basis (175). Nevertheless breaches of the frequency allocations are common, and though this is sometimes due to atmospheric conditions, it is also due to deliberate action which the I.T.U. is unable to prevent because of its lack of effective sanctions.

Further compounding the difficulties of radio frequency allocation is the fact that there is no overall system of allocating geostationary orbital positions, though these are nearly always registered with the United Nations under the relevant convention (176). The method by which a state establishes a satellite in geostationary orbit is again on a purely "first come, first served" basis since this is a "firmly embedded concomitant of the principle of freedom of exploration and use of outer space" (177), and may be clearly seen in state practice. With a need for an estimated 230 new geosynchronous satellites between 1975 and 1990 (178) there is an obvious need for some sort of regulatory system of the geostationary orbit. This is particularly acute because the figure does not take into account areas taken up by 'dead' satellites. These satellites occur not necessarily because they cease transmitting but also because satellites in geostationary orbit constantly have to have their positions corrected in order to take into account movements in the earth's axial tilt and other variations caused by the gravitational effects of the moon and the sun. Once the fuel on board the satellite runs out there is no way of correcting its position and the satellite consequently drifts out of position. Normally drifting satellites eventually take up a position at either 90 degrees west longitude above the Galapagos Islands or at 80 degrees east longitude above

175. S. HOUSTON LAY and HOWARD J. TAUBENFIELD, The Law Relating to Activities of Man in Space, University of Chicago Press, (1970), p.114.

176. Convention on Registration of Objects Launched into Outer Space, 1975; 28 U.S.T. 695; T.I.A.S. 8480.

177. G. GOROVE, "The Geostationary Orbit: Issues of Law and Policy", American Journal of International Law, (1970), p.455.

178. W. VON KRIES, "Legal Status of the Geosynchronous Orbit", Proceedings of the Eighteenth Colloquium on the Law of Outer Space, (1975), p.30. See also the estimates of GEHRIG, (1977), p.270.

the equator, south of Sri Lanka (179). These conglomerations of derelict satellites clearly take up valuable space until they eventually drift back into the earth's atmosphere and burn up. Furthermore they may from time to time produce hazardous situations and thus the recent trend has been to remove such satellites from the geosynchronous corridor with their last reserves of fuel (180) so that they again burn up in the atmosphere. It is anticipated that satellites not removed in this way could eventually be removed by the space shuttle (181).

Undoubtedly the "first come, first served" basis of allocating radio frequencies and acquiring geostationary positions must benefit the more technologically advanced nations rather than the developing ones. These States fear that once they are in the position to launch geostationary satellites, the geostationary corridor could be saturated with satellites from advanced States, thus precluding the use of their satellites. Nevertheless the practice of unilateral acquisition of orbital positions and frequencies, which was endorsed by the I.T.U. at the Extraordinary Administrative Radio Conference in 1963 (182), is still in operation despite various attempts to make alterations to this system, indeed in the Committee on the Peaceful Uses of Outer Space in 1979, the Brazilian delegate stated:-

"... the geostationary orbit is being occupied at present at a rate and in a form that basically benefits those countries which have a monopoly on space technology. This is the principle of "first come, first served", which cannot be

179. E.N. VALTERS, "Perspectives in the Emerging Law of Satellite Communications", Stanford Journal of International Studies, (1970), p.53, 71.
180. Committee on the Peaceful Uses of Outer Space, Physical Nature and Technical Attributes of the Geostationary Orbit, Study Prepared by the Secretariat 3, U.N. DOC.A/AC 105/203, (1977).
181. K.G. GIBBONS, "Orbital Saturation: The Necessity for International Regulations of Geosynchronous Orbits", California Western International Law Journal, (1979), p.146.
182. Final Acts of the Extraordinary Administrative Radio Conference to Allocate Frequency Bands for Space Radiocommunication Purposes, November 8th 1963, 15 U.S.T. 887, T.I.A.S. 5603. •

accepted by those countries that do not have the conditions of technological progress that enable other countries to develop their space applications at an increasing pace. Thus the use of the geostationary orbit is not a purely technical problem. There must be negotiations to establish an international legal system that would serve the interests of all countries in the international community." (183)

One of the first attempts to give the underdeveloped countries protected rights to radio frequency allocations in space and geostationary orbital positions occurred in 1971 during the World Administrative Radio Conference for Space Communications in which a resolution was passed, which stated that all countries had equal rights in the allocation of radio frequencies and in geostationary satellite positions for the use of those frequencies (184). However in the light of this resolution it must be borne in mind that a further resolution made it specifically clear that the registration of space radio frequencies does not provide any individual state with a permanent prior claim over that frequency, and any other state need not regard such registration as a barrier to a state using that frequency. Additionally there is no part of any resolution which speaks in terms of the I.T.U., the International Frequency Registration Board (I.F.R.B.) or any other organisation having the power to introduce an allocation scheme. The conference therefore left the position more or less in the status quo except for one or two minor changes.

The concern of several states as to the need for the allocation of geostationary orbital positions was raised two years later at the International Telecommunication Convention, when Israel made a specific proposal to this effect. However this proposal failed to attract support and a revision of Article 10 was accepted instead. This reads as follows:-

183. Mr. DAYNELL de LIMA, the Brazilian delegate, in the Committee on the Peaceful Uses of Outer Space held on 25th June 1979, U.N. DOC.A/AC 105/P.V. 199 (1979), p.29.
184. Final Acts of the World Administrative Radio Conference for Space Telecommunications Resolution No.SPA2-1, (Geneva 1971).

"International Frequency Registration Board.

- (1) The International Frequency Registration Board shall consist of five independent members, elected by the Plenipotentiary Conference. The members shall be elected from the candidates sponsored by countries, Members of the Union, in such a way as to ensure equitable distribution amongst the regions of the World. Each Member of the Union may propose only one candidate who shall be a national of its country.
- (2) The Members of the International Frequency Registration Board shall serve, not as representing their respective countries, or of a region, but as custodians of an international public trust.
- (3) The essential duties of the International Frequency Registration Board shall be:-
  - (a) to effect an orderly recording of frequency assignments made by the different countries so as to establish, in accordance with the procedure provided for in the Radio Regulations and in accordance with any decision which may be taken by competent conferences of the Union, the date, purpose and technical characteristics of each of the assignments, with a view to ensuring formal international recognition thereof;
    - (aa) to effect, in the same conditions and for the same purpose, an orderly recording of the positions assigned by countries to geostationary satellites;
  - (b) to furnish advice to Members with a view to the operation of the maximum practicable number of radio channels in those portions of the spectrum where harmful interference may occur, and with a view to the equitable, effective and economical use of the geostationary orbit;
  - (c) to perform any additional duties, concerned with the assignment and utilisation of frequencies and with the utilisation of the geostationary orbit, in accordance with the procedures provided for in the Radio Regulations, and as prescribed by the Administrative Council with the consent of a majority of the Members of the Union, in preparation for or in pursuance of the decisions of such a conference;
  - (d) to maintain such essential records as may be related to the performance of its duties." (185)

It would appear that the Israeli proposal to give the I.T.U. power to allocate "position slots on the geostationary orbit" (186) was rejected

185. International Telecommunication Convention 1973, Article 10, as adopted in Torremolinos by the International Telecommunication Union Plenipotentiary Conference.
186. C.E. RANKIN, "Utilisation of the Geostationary Orbit - A Need for Orbital Allocation?", Columbia Journal of Transnational Law, (1974), P.102, Note 25.

because it was outside the competence of the Conference and the I.T.U. itself in that it was a political act which would result in a major shift of policy within the I.T.U. The effect of such a shift may be summed up by C. E. Rankin in the following terms:-

"If the proposal had been accepted, it would have meant the eventual granting of power to some international body and a reciprocal loss of power now held by the individual member nations. Any surrender of sovereign rights requires a political decision at the highest government level; and the delegates at the Torremolinos conference were neither prepared to discuss such a decision nor equipped with the authority to make it." (187)

In spite of the lack of progress made in the allocation of geostationary orbital "slots" (188), in February 1977 a system of allocation for direct broadcast satellites was adopted at the World Administrative Radio Conference for the Planning of the Broadcasting Satellite Service. This system went into effect amongst the accepting parties in January 1979 and designated frequency assignments in the radio bands and the geostationary orbital positions (189).

The above system was put forward by the states of Western Europe and received the support of the Soviet Union, China and Japan, however the United States, Brazil and Canada did not accept this system (190) and thus it only applies to Region 1 which consists of Africa, Europe, the Soviet Union and Mongolia, and Region 3, consisting of Asia and the Pacific (191). The main reason for it not applying to Region 2 (which consists of the Americas) is that an evolutionary approach was favoured in this region on

187. Ibid at p.189.

188. A geostationary "orbital slot" is defined by C.E. Rankin "as a particular segment of space into which a satellite may be placed without causing interference to other satellite systems". Ibid at p.102.

189. Final Acts of the World Administrative Radio Conference for the Planning of the Broadcasting Satellite Service, RES. NO.SAT-7, (Geneva 1977).

190. K. JOHNSON, U.S. to Oppose Broadcast Satellite Plan", 106 Aviation Weekly and Space Technology, (January 10th 1977).

191. I.T.U. Press Release, I.T.U./76-36, (November 1976).

the insistence of the U.S.A., Canada and Brazil (192). The evolutionary approach provides that orbital slots are only allocated when a requesting state is about to put a satellite into orbit, though this is a simplistic definition since the approach also provides that the principles of equality of countries, equitable rights of access and equal rights for services be recognised (193). This method was favoured by those states because they argued that an advanced allocation plan takes away orbital slots which could be used by other geostationary satellites. This is particularly relevant if solar power from satellites ever became feasible since very large areas of the geostationary orbit would be required. Thus if any particular area had been previously allocated serious restrictions would be placed on space development (194). In other words a geostationary slot may be allocated to an undeveloped country, which would not have the technology to make use of that slot, thereby inhibiting its use. According to the United States it would make more sense to allocate areas of the geostationary orbit as and when a state requires a geostationary position. Since this evolutionary approach is subject to equitable rights of access it would appear that satellites in geostationary orbit should have the capability of being manoeuvred in order to accommodate further satellites that are likely to be needed in that area (195).

The United States, Canada and Brazil were not the only states to reject the allocation system since the equatorial countries also adopted the same approach. The reasons behind this rejection may be seen in the Bogota Declaration of 1976, as discussed above (196). However the claims of the

192. S. GOROVE, "The Geostationary Orbit: Issues of Law and Policy", 73 The American Journal of International Law, (1979), p.458. K. GIBBONS "Orbital Saturation: The Necessity for International Regulation of Geostationary Orbits", 9 California Western International Law Journal (1979), p.154.
193. LONBERG, "The Broadcasting Satellite Conference", 44 I.T.U. Telecommunication Journal, (1977), p.488.
194. GIBBON, (1979), p.153.
195. JOHNSEN, (1977), p.85.
196. I.T.U. Broadcasting Satellite Conference, DOC.No. 81-E, Annex 4 (January 17th 1977). Also Journal of Space Law, (1978), p.193.

equatorial states in this Declaration were overwhelmingly rejected before the United Nations Committee on the Peaceful Uses of Outer Space in 1978 (197) and were further rejected by the Final Acts of the World Administrative Radio Conference, in which the United States (198), amongst others, stated that the decision of the conference to assign geostationary orbital slots was fully within the International Telecommunications Convention (199).

With regard to the allocation plan adopted by the I.T.U. at the 1977 World Administrative Radio Conference, several problems present themselves as a result of this approach. The first is the fact that the allocation of orbital slots might inhibit and hamper the development of space technology by withdrawing the availability of slots, as already discussed in relation to the United States criticism of the allocation plan. The second problem is to a certain degree related to the first in that if states are restricted to certain areas of geostationary orbits, then in order to make the fullest use of that area, technological prohibitions will be placed on the functioning of satellites. This in itself is a serious disadvantage but the overall effect could also be to make satellites so expensive as to be uneconomic, thus making any system of allocation completely meaningless (200).

The third problem is not one which is unknown to this whole discussion of the common heritage of mankind, common province of mankind and the appropriation of territory in outer space and on the moon, in that which body should be given responsibility for allocating geostationary orbital slots? In the Moon Treaty there is provision for an international regime to govern activities on the moon, however no such provision is made for the allocation of areas of geostationary orbit in the Outer Space Treaty, though it would seem that the I.T.U. has been given the competence to deal with

197. See earlier arguments.

198. Supra Note 189, Final Protocol No. 74.

199. Supra Note 185.

200. United States Department of State, Office of Telecommunications, Position Paper on the Allocation of Orbit Positions and Specific Radio Frequency Channels, World Administrative Radio Conference, June 1971.

this issue by virtue of the 1977 Conference. This role that the I.T.U. would seem to have acquired would appear to be logical in that it would be extremely difficult for a body assigned the task of co-ordinating the efficient and economic use of the radio spectrum to do this competently without having some say in the positioning of satellites since the two are undoubtedly inseparable (201). It is perhaps this fact that eliminates both INTELSAT and the United Nations Committee on the Peaceful Uses of Outer Space from taking on this role as suggested by some writers (202). INTELSAT is particularly inappropriate since the Soviet Bloc countries are not members and therefore any geostationary planning could simply be ignored by those nations (203).

The fourth problem, and the most relevant to this discussion, is that if a system of allocation is provided for the use of the geostationary orbit, then there must be an overturning of the non-appropriation principle contained in Article II of the Outer Space Treaty. Further any system of allocation must by definition be contrary to Article I of the Outer Space Treaty in that "the exploration and use of outer space ... shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development and shall be the province of all mankind", and more particularly, "outer space (etc.) ... shall be free for exploration and use by all states without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies". If however no allocation system is used then the fact that satellites in geostationary orbit occupy a particular area of space on a continuous basis (subject to its orbital life),

201. S.K. SARKAR, "Geostationary Orbital Positions for Space Stations", Proceedings of the 20th Colloquium on the Law of Outer Space, (1978), p.450.
202. Suggesting INTELSAT as the regulator: A. CHAYES and L. CHAZEN "Policy Problems in Direct Broadcasting from Satellites", Stanford Journal of International Studies, (1970), p.4. Suggesting U.N.C.O.P.U.O.S. GIBBONS, (1979), pp.154 & 155.
203. GIBBONS, (1979), pp.143 & 154.

say for thirty years, then that might constitute an appropriation of that area of space in that there is an exercise of indefinite control and the excluding of others.

In examining the allocation system and the 'laissez-faire' system of using the geostationary orbit and comparing them with Articles I and II of the Outer Space Treaty, there would appear to be 'circular' inconsistencies in that both systems could be inconsistent with the non-appropriation rule in Article II, which in itself is inconsistent with Article I since the non-appropriation rule must of itself impose restrictions on the use of space by states, which is contrary to paragraph 2 of Article I in that "outer space ... shall be free for exploration and use by all States without discrimination". This latter point was discussed by the French delegation at the United Nations Working Group on Direct Broadcast Satellites in 1969 in which it was stated:

"... the rule of non-appropriation ... in itself implies a limitation on the complete freedom of States in space. In fact the very use of geostationary satellites can be regarded as an "appropriation" of the equatorial orbit, which is a privileged portion of space. In return for de facto occupation, the State responsible for the satellite should agree to submit to certain rules. The same applies to the use of a frequency for broadcasting, especially since the optimum spectrum of frequencies for present requirements is already in very heavy use." (204)

The U.S.A. immediately countered this argument by stating that provided space was used in a peaceful and legitimate manner, then the use of the geostationary orbit could not amount to appropriation. According to Rankin the U.S.A. is really distinguishing between the word 'use' and the phrase 'appropriation by means of use' as found in Article II the effect of which, it is alleged, is that the use of the geostationary orbit for legitimate activities is allowed because there is no intent to appropriate (205).

204. U.N. DOC.A/AC 105/62 (1969) at p.3 & 4, as cited by RANKIN, (1974), p.100.

205. RANKIN, (1974), p.100

Whilst undoubted difficulties exist with the attempts at rationalising the geostationary orbit with the non-appropriation rule in Article II some light might be found by taking the view that the role of the I.T.U. in adopting an allocation system is not contrary to Article II in that such a system does not create "national appropriation by claim of sovereignty". While this may seem to be inconsistent with Article I in that the I.T.U. may place restrictions on how that allocation is used (vis á vis radio frequencies), it would be illogical to interpret that as stating that the freedoms and benefits conferred by Article I are prohibited by Article II (206).

As stated already one criticism of the allocation system is that it might deprive the world community of a geostationary slot simply because the state to which it is allocated has no plans to exploit that slot at that particular moment in time. However from the earliest beginnings of man's exploitation of space the principle of "first come, first served" applied. This principle was succinctly put by the Argentine representative to the U.N. Committee on the Peaceful Uses of Outer Space in the following manner:

"... though everybody has a right to place a space object in orbit, the second in line is to respect the route chosen by the first." (207)

In such a situation where a state has exercised its right of freedom to use space by establishing a satellite in a geostationary slot already allocated to another state which has failed to make use of that area, it would seem inconceivable on the above information that the first state will move out of that position merely on the whim of the second state to decide to use that slot. Such an attitude would be reinforced on the basis that the first state is unlikely to waste very large sums of money on a satellite only to

206. GIBBONS, (1979), p.151.

207. A.A. COCCA, "Towards an Adequate Legal Regulation of the Geostationary Orbit", Proceedings of the 20th Colloquium on the Law of Outer Space, (1978), p.194.

be ordered to remove it from its designated orbit, particularly since in practice this would be tantamount to the destruction of the satellite because of the limited degree to which most satellites in geostationary orbit may be manoeuvred. It must be said therefore that a state putting a satellite into another's geostationary slot must be exercising de facto control over that area while the satellite is in situ, and is thus technically in breach of Article II of the Outer Space Treaty, in the same way as any other satellite. This is particularly true when one considers there are no sanctions that can be taken against a state taking control of another's geostationary slot. Nevertheless it should be stated here that while states are not legally bound to the resolutions of the I.T.U. they do generally abide by them. It is also suggested that the wide consensus on the resolutions of the I.T.U. and the regulations contained in the I.T.C. and Radio Regulations' instruments imply that there is no legal right to use a geostationary position permanently (208), however that in no way detracts from the reasoning that a state exercises de facto appropriation of that area of space while it has a satellite located there.

## CONCLUSION

The problem of where national sovereignty over airspace ends and outer space begins has been discussed now for more than twenty years without its issues being reconciled, even though five treaties dealing with outer space have come into being in that time. Indeed the Outer Space Treaty 1967 would seem to have exacerbated the problem because it is so radically different from the Chicago Convention which, by Article I, "recognises that every state has complete and exclusive sovereignty over the airspace above its territory". It would appear however that the perennial problem

208. S. GOROVE, "The Geostationary Orbit: Issues of Law and Policy", American Journal of International Law, (1979), pp.458 & 459.

of the definition and delimitation of outer space may well soon disappear from the agenda since at the 1979 session of the United Nations Committee on the Peaceful Uses of Outer Space the U.S.S.R. introduced draft provisions for a U.N. General Assembly resolution on the sovereignty problem and the status of the geostationary orbit. In this working paper (209) the U.S.S.R. proposed: 1) that the region above 100/110 kilometres from sea level will be deemed to be outer space in that this is the lowest height at which satellites can survive; 2) that space objects of states have the right to fly over the territory of other states at lower altitudes for the object for the purpose of placing the object in orbit and to effect re-entry of the object to the earth's atmosphere; and 3) that the area of geostationary orbit is deemed to be in outer space and as such is governed by the Outer Space Treaty 1967 - it is thus not subject to claim of national sovereignty.

The U.S.A. has indicated its agreement with the U.S.S.R. on the issue of geostationary orbit, though it does not consider a definition of the demarcation line between airspace and outer space to be necessary since it maintains that no problem would be solved by the adoption of such a definition (210). It has also been stated by the Committee on Space Research of the International Council of Scientific Unions that in the past estimates of the lowest altitude at which satellites can survive have been too high, thus arguing against the establishment of such an arbitrary boundary (211). It is perhaps as a consequence of these two attitudes that there has been no commencement on the drafting of any treaty documents based on the working paper of the U.S.S.R.

While the U.S.S.R.'s working paper was undoubtedly a reaction to the Bogota Declaration it went further to include a solution to any problem

209. U.N. DOC.A/AC 105/L112, (1979).

210. U.N. DOC.A/AC 105/240, (1979), p.9.

211. U.N. DOC.A/AC 105/L64, (1976).

caused by the inauguration of the space shuttle by the U.S.A., and while the problems associated with the geostationary has not prompted international action there are possibilities that this new development will. The space shuttle has been designed to ascend into outer space like a conventional spacecraft and to descend in a manner similar to an ordinary aircraft. The problem which has grown out of this development has been succinctly put by S. Gorove as follows:-

"Reduced to its bare essentials, the question is whether the shuttle is an aircraft, a spacecraft or both ... If the shuttle is an aircraft while in airspace it will be subject to the rules of air law, domestic and international i.e. the CHICAGO CONVENTION WILL APPLY. If the shuttle is a spacecraft not only in outer space but also during its descent through airspace to earth, then the rules of the space law, domestic and international would apply to it, i.e. the OUTER SPACE TREATY WILL APPLY". (212)

Thus the problem even though quite different from that of the geostationary orbit raises the same questions as to national sovereignty and the delimitation of airspace and outer space. As already stated, none of the five existing space treaties (213) define the terms 'airspace' and 'outer space', but neither do they define the term 'space object', though it has been proposed by one author that a space object is any craft designed and intended for use in outer space (214). If this definition were applied clearly the space shuttle would be considered as a space vehicle and the four earlier international treaties would apply to it. If this was the case a further question would be raised as to whether international space law would take precedence over the Paris and Chicago Conventions. It is suggested that the space agreements being later in time would take such precedence, at least to states that are parties to both the air and space

212. S. GOROVE, "Legal Aspects of the Space Shuttle", International Lawyer, (1979), p.154.

213. Outer Space Treaty 1967; Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space 1968; Convention on the Registration of Objects Launched into Outer Space 1975; Convention on International Liability for Damage Caused by Space Objects 1972; Moon Treaty 1979.

214. S. GOROVE, Space Law - Its Challenge and Prospects, Sijtoff-Leyden, (1977), pp.105-6.

agreements, and thus would not be in breach of the sovereign airspace of any state it might pass through, either in ascending into orbit or in re-entering to the atmosphere.

The adoption of the U.S.S.R.'s proposal that space objects of states have the right to fly over the territory of other states at a lower altitude than that of their proposed 100/110 kilometre boundary, in order to place an object in space and to effect re-entry, would undoubtedly provide the best solution to the problem, though one that is unlikely to be adopted for two reasons. Firstly, the proposal has pre-empted the need for such an exception to the two previous international air law conventions in that there is no requirement for such a facility, since both major space nations are able to use either their own territory or the high seas to effect orbit and re-entry. Secondly, the U.S.S.R. proposal is likely to be viewed by other states as an erosion of their sovereign airspace and is unlikely to be countenanced not only from this point of view, but also from the fact that such a right of passage could affect their national security. On the other hand, it has been argued that national security would not be threatened by the adoption of such a proposal since if the spacecraft was a space shuttle, with the manoeuvrability of an aircraft, it would still be possible to regulate its height and direction so as to fully protect the security of the underlying state (215). It is also argued that if it was decided to establish an outer space boundary that this would do nothing to protect a state's security (216). Both arguments could be said to be incorrect since, the first fails to recognise the possibility of such a craft carrying weapons of mass destruction aimed at the underlying state, and although such weapons are prohibited from being placed in orbit by virtue of Article IV of the Outer Space Treaty 1967, there is nothing to prevent a state using outer space to deliver such weapons. The first argument may also be

215. S.B. ROSENFELD, "Where Air Space Ends and Outer Space Begins", 7 Journal of Space Law, (1979), p.146.

216. Ibid.

criticised in that it attributes a potential of manoeuvrability to the space shuttle that has not been developed, and is unlikely to be developed for many years, as well as the fact that at present all spacecraft (including the shuttle) are carried into orbit by conventional means. The second argument may be said to be incorrect in that it attempts to justify the application of the U.S.S.R. proposal by adopting a negative stance on a state's right to sovereignty over its airspace - a principle that is firmly accepted as positive international law. The main concern of a state is to protect itself against surveillance or attack, and since surveillance can be carried out far more easily in space than from an aircraft at a lower altitude, the question must be asked - what altitude is required to protect a state? Merely deciding on an arbitrary limit on airspace is unlikely to increase the security of a state because of the accuracy of satellite surveillance techniques. Nevertheless, a state is entitled to feel secure on both its horizontal and vertical boundaries, and while a definition of where sovereignty ends is unlikely to increase such security, it does provide a state with an air defence identification zone within which pre-emptive action could be taken against unidentified vehicles (217). Several states, particularly the U.S.A. would prefer the existing functional approach rather than the provision of a definitive line as proposed by the U.S.S.R. and clearly as regards the problems that have occurred so far the functional approach has provided a solution, though this is primarily because such an approach is contained in the existing international space law agreements, other than the Outer Space Treaty which ignores the question altogether, except insofar as it regulates activities rather than areas. Thus, in the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched Into Space 1968 part of the purpose of this agreement is to render assistance to astronauts in cases of distress or

emergency (218) without reference to where the incident occurred. The Convention will apply therefore if the distress occurs on the territory of a contracting party, on the high seas, or in any other place not under the jurisdiction of any state (219) providing the incident involves an astronaut or an object launched into space. A similar approach is found in the Convention on International Liability for Damage Caused by Space Objects 1972 where a launching state is liable for any damage caused whether that be on the surface of the earth, to an aircraft in flight, or in outer space (220). Thus it is of no importance where the damage occurred if a spacecraft is involved, just that it occurred. In both these cases no definition of outer space is required for the solution to be found since they are purely functional in their operation.

Though the functional approach can provide solutions to certain problems it would be shortsighted to dispense with the need for a definitive line, since if the space shuttle became available to smaller, less scientifically advanced states some degree of limitation would be required simply to avoid the possibility of a vehicle using the same course as some other craft. Certainly if a line is to be drawn it must be based either on some scientific criteria on which states can agree, or be designed as a solution to a specific problem. No prediction can be made as to when these circumstances may arise though it is plain that they do not exist at the present moment in time. Even if they did it is probable that the states concerned would not be able to agree on substantially the same policies, but prefer to rely on the vague and ambiguous formulae laid down by the Outer Space Treaty 1967.

With regard to the problem of the establishment of sovereign rights within the geostationary orbit it would seem that the system of allocation would tend to overturn the non-appropriation principle set out in Article II of the

218. Article II.

219. Article I.

220. Article II and III.

Outer Space Treaty. Further it may be said that if a state were to occupy a position within the geostationary orbit for an extensive period of time on a continuous basis then an implication of sovereign rights may be raised, though in the face of Article II such a view would be erroneous. Alternatively it would probably prove logical to suggest that whilst such rights are not established, a state would enjoy enhanced possessory rights. The 1980 Report of the Legal Sub-Committee still reflected the fact the members of COPUOS still had divergent views relating to both the issues of delimitation and the geostationary orbit. On the matter of the former there was still disagreement as to whether the spatial or functional approach should be adopted, though even amongst those advocating the spatial approach there was widespread disagreement (221). With regard to the latter the equatorial states re-asserted their claim that they exercised sovereign rights over those segments of the orbital position superjacent to their territories. These claims were of course rejected by the space-resource states, though some of these states did acknowledge that developing countries should have equitable access to the orbital position and that their needs might be determined through the I.T.U. The representatives of the developing countries favoured the creation of an equitable regime whose function would be to ensure that the orbital position be employed for the benefit of all countries but with special reference to the needs of the developing states (222). Their claim that the "first come, first served" basis of allocating geostationary orbital slots was depriving them of future resources was, not surprisingly, opposed by the advanced states who claimed that any detailed allotment of orbital slots would simply result in a freeze of technological advance.

221. U.N. DOC.A/AC 105/271, April 10th 1980.

222. C.Q. CHRISTOL, (1982), p.494.

In 1981 the Legal Sub-Committee considered widely the pros and cons of using a formal agreement on the boundary between airspace and outer space (223), however it was clear that the members of COPUOS were not in a consensus position on the subject of delimitation. Further the widely divergent views relating to the geostationary orbit also put this issue in the same position, as a result no set of proposals was forthcoming. Perhaps the most ominous aspect to this area of international space law was that attitudes were beginning to harden, particularly in relation to the geostationary orbit, and such a situation is fatal to a system based on consensus.

Clearly there are direct links between the issues of the geostationary orbit and the question of the delimitation of space. However the claims of the equatorial states have come after several years of space exploration by the space-resource states who have now come to rely on the international legal regime built up over those years - the right to assured freedom of access to space coupled with the free and equal use of the space resource, as given in Article I, II and III of the 1967 Treaty. The result of these claims was to put the spotlight on the delimitation problem which had, until 1976, been pushed to the backwaters of international space law, when it emerged as a rule of customary international law in that the boundary between airspace and outspace was at least as low as 100-110 kilometres.

No agreement would appear to be forthcoming that will contradict this rule and therefore above this level one has to rely on the outer space Treaty to find the law, and since the treaty specifically preserves the free and equal exploration, use and exploitation of space together with free

access, it seems clear that the geostationary orbit falls within the provisions of the treaty. However in the absence of provisions prohibiting the acquisition of preferential rights in space there is no reason why a rule of customary international law cannot in due course arise giving such a right even though they would tend to be inconsistent with the freedom of use provisions of the 1967 Treaty.

## CHAPTER TWO

### STATE PRACTICE AND THE MOON TREATY WITH REFERENCE TO THE OUTER SPACE TREATY 1967

From the very beginnings of space flight it seemed to be accepted that space was subject to the principle of *res communis omnium*, as opposed to *res nullius*, and could not be appropriated on a basis of sovereignty. Strictly speaking because space is infinite and incapable of measurement it should be regarded as *communis omnium* though not necessarily *res* (1). This approach would however seem to be somewhat trivial since even in Roman law intangible 'things' were included in its property system as *res incorporales* (2). The main distinction between *res communes* and *res nullius* would appear to be that the latter indicates that the area in question is not subject to state sovereignty and is thus capable of occupation, whilst in the former the area cannot be occupied in a manner which can establish sovereign rights, and is thus described by some writers as *res extra commercium* in order to underline the principle (3). Though the term *res communes* has never been conclusively defined in international law (4), in the view of Gyula Gal it would seem that in the context of space law it means that all states may carry on space activities on the basis of sovereign equality (5).

1. BIN CHENG, "The Extra-Terrestrial Application of International Law", 18 Current Legal Problems, (1965), p.143.
2. INST. II 2,2 as contained in G. GAL Space Law, Sijthoff Leyden, (1969), p.124.
3. BIN CHENG, "International Law and High Altitude Flights, Balloons, Rockets and Man-made Satellites", International and Comparative Law Quarterly, (1959), p.494.
4. S.H. LAY and J.J. TAUBENFIELD, The Law Relating to the Activities of Man in Space, University of Chicago Press, (1970), p.53.
5. GAL, (1969), p.123.

The theoretical acceptance of the principle of *res communis* in space is derived from the analysis of two other legal regimes - the High Seas which has had the greatest influence in providing space with the principle of *res communis*, though the High Seas regime itself has not always accepted the principle. Between the fifteenth and seventeenth centuries the accepted legal principle on the High Seas was one of *mare clausum* or "closed seas", though this declined after Grotius publicised his objections to Portuguese monopoly of navigation and commerce in the East Indies (6). The main objections by Grotius were that firstly, the ocean cannot be the property of a state since it cannot be effectively taken into possession by occupation, and secondly, Grotius maintained that things which are inexhaustible and capable of being used by anybody cannot be appropriated by someone else to the exclusion of all others (7).

An attempt to define the principle of freedom of the seas was made in Article II of the Convention of the High Seas, signed at Geneva in 1958, which states:-

"The High Seas being open to all nations, no state may validly purport to subject any part of them to its sovereignty. Freedom of the High Seas is exercised under the conditions laid down by these articles and by the other rules of international law. It comprises, *inter alia*, both for coastal and non coastal states:-

1. Freedom of navigation,
2. Freedom of fishing,
3. Freedom to lay submarine cables and pipelines,
4. Freedom to fly over the high seas,

These freedoms, and others which are recognised by the general principles of international law, shall be exercised by all states with reasonable regard to the interests of other States in their exercise of the freedom of the High Seas."

The above freedoms, particularly the freedom to fish, have their original

6. I. BROWNLIE, *Principles of Public International Law*, Clarendon Press, (1973), p.233; from "*De Jure Praedae*" by GROTIUS.
7. GROTIUS, "*Mare Liberum*", (1609).

authority in arbitral decisions (8) and customary rules of international law, but all are subject to the rights of states over the continental shelf and contiguous zones, as discussed in the United Nations Conference on the Law of the Sea. It should however be stated that the freedom of the High Seas from assertions of sovereignty is not irrebuttable, since it is possible for a state's territorial sea to be extended and acquired by virtue of general acquiescence (9).

Another feature of the rules relating to the high seas is that while certain freedoms are protected this does not mean that there otherwise exists a possibility of unregulated lawlessness, since there exist specific international rules giving maritime states such rights as "hot pursuit" and the right to board ships engaged in piracy or slavery (10).

Whereas the legal regime for the high seas gives it a status of *res omnium communis*, the legal regime for Antarctica gives it a theoretical status of *res nullius*, though it is in fact subject to a specific legal regime. The reasoning behind this difference lies in the fact that while certain states have laid claim to sovereignty on the basis of the sector principle (11), Article IV of the Antarctica Treaty 1959 states:

"No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force." (12)

Thus states party to the Antarctica Treaty are not renouncing their claims to sovereignty, on the contrary they have merely reserved their rights and claims for a period of thirty years (13). There is therefore nothing to

8. e.g. The Anglo-Norwegian Fisheries Case I.C.J. Reports (1951), pp.181-9; The Bering Sea Fisheries Arbitrations (1983) (Moore, "Digest", Para.172) and (1902) (Moore, "Digest", Para.173).
9. Ibid.
10. Convention on the High Seas 1958, Article 22.
11. GRIEG, (1976), p.174.
12. Antarctica Treaty Article IV. Text Command 913, MISC.No.21, (1959). For the U.K. See the Antarctica Treaty Act, 1967 ch.65.
13. Article XII.

prevent a state not party to the Treaty laying a claim of sovereignty to a part of Antarctica because of its *res nullius* status. Despite this a number of authors refer to the regime in Antarctica as being analogous to the regime in outer space (14). Whilst it is true that certain articles of the Outer Space Treaty have their counterparts in the Antarctic Treaty (15), the fact that claims as to sovereignty have only been suspended must cast doubts on such an approach. In this respect Gyula Gal has stated:-

"As ... the renouncement of rights is but temporary, we are bound to reach the conclusion that an analogous application of the present status of the Antarctic, ... for outer space would be incorrect". (16)

Those who support the view that the regime in Antarctica is analogous to outer space point to the preamble of the Antarctica Treaty which states:-

"... it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes  
..."

as indicating a resemblance between the two regimes. However, if one compares this wording with equivalent provisions in Article I of the Outer Space Treaty that "... outer space ... shall be the province of all mankind" and the provisions in Article XI of the Moon Treaty that "... the moon and other celestial bodies shall be the common heritage of mankind", it is clear that whilst the regime in Antarctica may conceivably amount to something more than *res nullius*, it cannot be said to constitute a regime of *res omnium communis*.

If the assumption is made that space and celestial bodies constitute a regime of *res communis*, as described above, the fact that it has never been defined in international law must not be ignored. It is thus necessary to examine the extent of the "common heritage of mankind" provision,

14. I. BROWNLIE, Principles of Public International Law, Clarendon Press, (1973), p.261; C.W. JENKS, Space Law, (1965), p.106; J.E.S. FAWCETT, International Law and the Uses of Outer Space, Manchester University Press, (1968), p.34; N. MATTE, Aerospace Law, Sweet & Maxwell, (1969), p.289.
15. i.e. Articles I, II and V.
16. GAL, (1969), p.121.

which purports to embody the principle of res communis, in that there can be no sovereign rights established in space. However the increasing use of the term "mankind" tends to indicate something more than such a prohibition: Thus Article I of the Outer Space Treaty 1967 states that:-

"The exploration and use of outer space, including the Moon and other celestial bodies shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development and shall be the province of all mankind." (17)

With regard to the Moon and other celestial bodies, Article XI Paragraph 1 of the Agreement governing the Activities of States on the Moon and Other Celestial Bodies (18), reinforced the res communis nature of the Outer Space Treaty by stating that,

"The Moon and its natural resources are the common heritage of mankind ..."

What may be said to be a further reinforcement of these provisions may also be found in Article II of the Outer Space Treaty, which specifically prohibits the appropriation of space,

"Outer Space, including the moon and other celestial bodies is not subject to national appropriation by claim of sovereignty, by means of use or occupation or by any other means."

Similarly this article is also embodied in the Moon Treaty of 1979 (19).

From the above it would seem that the principle of the common heritage of mankind as embodied in the Moon Treaty has established a further category of territory in international law alongside national sovereignty, res nullius and res communis (20). Since the Moon Treaty was the first document of a binding nature to contain this term it is necessary to

17. G.A. RESOLUTION 2222 (XXI), Annex (6 I.L.M. 386 (1967) ); 3 U.S.T. 2410; T.I.A.S. 6347.
18. U.N. DOC.A/34/664; 18 I.L.M. 1434 (1979), G.A. RES.34/68.
19. Article XI Paragraph 2.
20. BIN CHENG, "The Moon Treaty: Agreement Governing the Activities of States on the Moon and Other Celestial Bodies within the Solar System other than the Earth, December 18th 1979, Current Legal Problems, (1980), p.213.

analyse it in order to discover the extent of its application, both to states and private entities.

Whilst the Moon Treaty was the first to embody the concept of the "common heritage of mankind" it was in fact proposed as long ago as August 17th 1967, when Ambassador Arvid Pardo of Malta asked the 21st Session of the United Nations General Assembly to include on its agenda for the 22nd Session an item proposing a discussion and treaty reserving the sea bed, ocean floor and underlying seas beyond the then limits of national jurisdiction for exclusively peaceful purposes. Accompanying the proposal was a memorandum explaining that the sea bed and ocean floor should be for the "common heritage of mankind" (21). In December 1970 the General Assembly resolved that:-

"The sea bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction (hereinafter referred to as the area), as well as the resources of the area, are the common heritage of mankind" (22).

However such resolutions are not considered to be legally binding, and as a result the concept was adopted by the United Nations Committee on the Peaceful Uses of Outer Space and embodied in the Moon Treaty before the organisational session of the United Nations Conference on the Law of the Sea could translate the new concept into treaty law.

There have been attempts to use the common heritage of mankind principle in the Convention on the Law of the Sea 1982 as analogous to that in the Moon Treaty though this is questionable, since according to C. Q. Christol (23), there has been an effort to keep separate the common heritage of mankind principle as applying to the deep sea bed separate

21. U.N. DOC.A/6695, August 18th 1967.

22. U.N. DOC.A/RES/2749 (XXV), (1970), 10 International Legal Materials (1970), 220.

23. C.Q. CHRISTOL, "The Common Heritage of Mankind Provision in the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies", International Lawyer, (1980), p.475.

from that as applying to the Moon; in that the criteria contained in Article XI Paragraph 7 of the Moon Treaty, for the implementation of the common heritage of mankind principle, were designed specifically for application to the Moon and its natural resources. Further, Ambassador R. W. Petree of the United States before the Special Committee of the General Assembly on November 1st, 1979 maintained that the meaning of the common heritage of mankind principle was "without prejudice to its use and meaning in any other treaty" and that its meaning was "to be found within the Moon Treaty itself" (24).

Nevertheless an examination of the Declaration of Principles Governing the Sea Bed and the Ocean Floor (25) may give some indications as to the extent of the term "common heritage of mankind" as a form of territorial status, since Principle 2 states:-

"The area shall not be subject to appropriation by any means by states or persons, natural or juridical, and no State shall claim or exercise sovereign rights over any part thereof."

Further Principle 3 states:-

"No State or person, natural or juridical, shall claim, exercise or acquire rights with respect to the area or its resources incompatible with the international regime to be established and the principles of this declaration."

Private companies or "non-governmental entities" are expressly permitted to take part in activities in space and on celestial bodies by virtue of the Outer Space Treaty of 1967 (26), provided the relevant State party authorises and undertakes continuing supervision of that entity. It would seem that this supervision does not mean the continued presence of a governmental official, but that control would be in the nature of consultations, reports, inspections and investigations of reported failure to abide

24. R.W. PETREE, U.N. DOC.A/SPC/34/SR 19, November 1st 1979.

25. G.A. RESOLUTION 2749 (XXV) (1970).

26. Article VI.

by regulatory directives, as may be embodied in statute (27). The involvement of non-governmental entities in space was extended to include the Moon and other celestial bodies by the Moon Treaty of 1979 (28). However this involvement has also created a problem since the growth of private enterprise must depend on the commercial exploitation either of space itself or of the moon or some other celestial body, and such exploitation would appear to contradict the common heritage of mankind principle. A further difficulty also arises with the attempts to justify private exploitation in that Article II of the Outer Space Treaty and Paragraph 2 of the Article XI of the Moon Treaty expressly states that outer space including the moon and other celestial bodies is not subject to national appropriation by claim of sovereignty, by means of use or occupation or by any other means and therefore there would appear to be room for private appropriation. There would thus appear to be some inconsistency between private and public involvement in space.

Whilst the exploitation of space on a commercial scale by non-governmental agencies with the supervision of their respective governments is clearly in order, this would not seem to be the case with the moon or other celestial bodies since Article XI states:-

"Neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become property of any state, international, intergovernmental or non-governmental organisation, national organisation or non-governmental entity or of any natural person. The placement of personnel, space vehicles, equipment, facilities, stations and installations on or below the surface of the moon, including structures connected with its surface or subsurface, shall not create a right of ownership over the subsurface of the moon or any areas thereof. The foregoing provisions are without prejudice to the international regime referred to in paragraph 5 of this article." (29)

- 27. M. MENTOR, "Commercial Participation in Space Activities", 9 Journal of Space Law, (1981), p.56.
- 28. Article XIV.
- 29. Paragraph 3.

Paragraph 5 of Article XI then goes on to say:-

"States Parties to this Agreement hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible ..."  
(30)

The effect of reading these two paragraphs in conjunction with each other may be to render the commercial exploitation of the moon, or other celestial bodies, extremely difficult past the stage of initial exploration until the establishment of the international regime. According to Paragraph 7 of Article XI the main purposes of the international regime is to ensure:-

- "... (a) The orderly and safe development of the natural resources of the moon;
- (b) The rational management of those resources;
- (c) The expansion of opportunities in the use of those resources;
- (d) An equitable sharing by all State Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries, as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration."

If this paragraph portrays the criteria for the application of the common heritage of mankind principle, as seems to be suggested (31), then it goes a great deal further than anyone first imagined when comparing the principle with the concepts of *res nullius* and *res communis*. Certainly the principle is more restrictive than the "common province of all mankind" provision contained in the Outer Space Treaty (32), which the U.S.S.R. preferred to adopt since it meant that the moon and other celestial bodies would be "available for the undivided and common use of all states but not jointly owned by them". (33)

30. Article XI Paragraph 5.

31. CHRISTOL, (1980), p.453.

32. Article 1.

33. U.S.S.R. Working Paper. U.N. DOC.A/AC/ 105/101 (1973).

In fact the U.S.S.R. only eventually acceded to the common heritage of mankind provision on the last day of the 1979 meeting of the Committee on the Peaceful Uses of Outer Space.

However whilst the common heritage of mankind provision is more restrictive as towards rights on the moon, inextricably mixed into the rights given to exploit the moon and other celestial bodies is the requirement to establish the international regime to police the activities of states and individuals in their exploitation of the moon and other celestial bodies. So far however no such regime has been established and one wonders whether the drafters of the treaty envisaged the setting up of a new international organisation to monitor the factors contained in Article XI Paragraph 7, or alternatively the provision of a set of rules designed to ensure compliance with Paragraph 7. Each interpretation has its problems. In the first instance it is doubted whether the willpower is present to set up a new international organisation, quite apart from the difficulties involved in monitoring compliance with the treaty and funding in such an organisation.

Secondly, it is unlikely, in the light of the protracted negotiations required to produce the Moon Treaty in the first place, that sufficient impetus is present to produce a complex set of rules giving effect to Paragraph 7.

Article XI Paragraph 6 states:-

"In order to facilitate the establishment of the international regime referred to in paragraph 5 of this article States Parties shall inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of any natural resources they may discover on the moon."

From this there would appear to be an indication that the drafters intended that a body of rules be formulated to give effect to Paragraph 7 through state practice, though it must be said that such an approach

would appear to be unworkable without some sort of institutional structure. This is particularly true as regards Paragraph 7 (d) which relates to the equitable sharing of benefits. It would seem that another treaty would be required to establish the international regime, otherwise Article XI Paragraph 5 would merely be in the nature of a pactum de contrahendo, requiring states merely to attempt to negotiate with a view to establishing such a regime (34).

The problem of such an agreement becoming reality was summed up by Neil Hosenball, Chairman of the U.S. Delegation to the 1979 Committee on the Peaceful Uses of Outer Space meeting as:-

"There is nothing ... in the Moon Treaty that binds us to anything in any follow up conference, and the world, I think, may be a lot different when exploitation is proven feasible on a commercial scale, and that common heritage may mean something completely different then." (35)

The Moon Treaty does however make some provision for what is to happen in the interim period before the agreement is made since Article XI paragraph 8 states:-

"All the activities with respect to the national resources of the moon shall be carried out in a manner compatible with the purposes specified in paragraph 7 ..."

Nevertheless unless some further agreement is arrived at over the establishment of an international regime, the scope of the common heritage of mankind provision must be seriously weakened.

As already indicated the U.S.S.R. has historically shown itself to be less than willing to adopt the common heritage principle and, indeed, in 1978 it made the following statement:-

34. B. CHENG, "General Principles of Law as Applied by International Courts and Tribunals", 1953, pp.117-118, as cited in B. CHENG, "The Moon Treaty: Agreement Governing the Activities of States on the Moon and Other Celestial Bodies within the Solar System Other than the Earth, December 18th 1979"; Current Legal Problems, (1980), p.231.
35. Given on July 3rd 1979 and quoted before the House Committee on Science and Technology, 96th Congress, 1st Session, (1979), p.96, in the Hearing on International Space Activities.

"The complete unwillingness of some countries to abandon the introduction of the concept of common heritage into the new treaty threatened to make it impossible to conclude the treaty" (36).

Prior to this statement there had been very fierce resistance to the common heritage principle seen in the writings of Dekanazov, who stated that the concept was:-

"... untenable from the legal point of view. It uses civil Law categories in an arbitrary eclectic fashion without any regard for established legal realities and brings to mind undesirable associations (like the notion of *res omnium communis* which had been) transferred from the Roman private law into the field of international relations." (37)

The reason why the concept was "untenable from the legal point of view" to the U.S.S.R. was that it regarded the common heritage of mankind provision as embodying the concept of inheritance which belonged to civil law, and since the concept was not known in Soviet civil law it could not be embodied as part of public international law (38).

It is not inconceivable therefore that the U.S.S.R. could accept the notion of the common heritage of mankind by acceding to the treaty, and yet reduce its effectiveness substantially by failing to agree on the introduction of the international regime. The position may be summed up by Mr. Petree before the Special Political Committee as follows:-

"Each of the participants in the conference on such a regime would of course, have to evaluate any treaty emerging from the conference in the light of their own national interests. For this country that would require a treaty which was balanced and reasonable and which met with the approval of the United States Senate." (39)

In the light of this it may be argued that if the exploration of the Moon,

36. U.N. DOC.A/AC 105/219, May 15th 1978, p.35.

37. R.V. DEKANAZOV, "Relationship Between the Status of Outer Space and the Statutes of Areas Withdrawn from State Sovereignty", Proceedings of the 16th Colloquium on the Law of Outer Space, (1974), p.10.

38. U.N. DOC.A/AC 105/196, ANNEX, April 11th 1977 p.11.

39. R.W. PETREE, U.N. DOC.A/SPC/34/SR19, November 1st 1979, Para.24, before the Special Political Committee of the U.N. General Assembly.

and the other principles contained in Article XI paragraph 7 are dependent on the establishment of the international regime, it might be interpreted that a moratorium exists on the exploitation of the moon and other celestial bodies until such a regime is established.

The problem of whether the treaty contained a moratorium or not arose because of the United Nations Assembly resolution declaring a moratorium on the exploitation of the sea bed and ocean floor in 1969 (40) and it was thought that the Moon Treaty had the same effect. This was regarded seriously by the United States since as early as 1973 the Committee on the Peaceful Uses of Outer Space had been advised as to the United States position. Thus the United States working paper of that year stated:-

"As is apparent from the text, this paper excludes the concept of a pre-regime moratorium. References to the words 'in place' in the first sentence of that paragraph (2) and to paragraph 7 of Article X (41) make this clear. More particularly, the words 'in place' in the first sentence of paragraph 2 are intended to indicate that the prohibition against assertion of property rights would not apply to natural resources once reduced to possession through exploitation either in the pre-regime period or, subject to the rules and procedures that a regime would constitute, following the establishment of the regime." (42)

After the Committee on the Peaceful Uses of Outer Space vote on the draft treaty, Neil Hosenball, the United States delegate, stated:-

"The draft agreement ... as part of the compromises made by many delegations, places no moratorium upon the exploitation of the natural resources on celestial bodies, pending the establishment of an international regime. This permits orderly attempts to establish that such exploitation is in fact feasible and practicable, by making possible experimental beginnings and, then, pilot operations, a process by which we believe we can learn if it will be practicable and feasible to exploit the mineral resources of such celestial bodies." (43)

- 40. U.N. DOC.A/RES/2574 D(XXIV), (1970), 9 International Legal Materials, (1970), p.422.
- 41. Article X in the draft treaty became Article XI in the treaty itself.
- 42. U.N. DOC.A/AC 105/C2 (XI)/WORKING PAPER (1973).
- 43. U.N. DOC.A/AC 105/PV 203, July 3rd 1979, p.22.

This view was supported by Petree in his statement before the United Nations General Assembly Special Political Committee when he said that:-

"The draft Treaty placed no moratorium on the exploitation of the natural resources of celestial bodies by States or their nationals, but it did provide that any such exploitation must be carried out in accordance with Article XI paragraph 7, and Article VI Paragraph 2." (44)

Certainly Paragraph 6 of Article XI also tends to imply that at least preliminary exploitation may be carried out since it requires states to inform the Secretary General of the United Nations, as well as the public, of the feasibility of the exploitation of the moon or other celestial bodies so that the international regime can be established (45).

Such views have been rejected by L. S. Ratiner who stated on September 6th 1979 that:-

"... it is my very strong view that the Moon Treaty in its present form imposes a de facto moratorium on private enterprise use of outer space in connection with the development of natural resources." (46)

It seems, according to Cheng, that the difference of opinion is caused by different interpretations of the term "exploitation" (47). He thought that Ratiner in analysing Article XI Paragraph 5, which provided for an international regime to be established when "exploitation is about to become

44. U.N. DOC.A/SPC/34/SR 19, November 1st 1979, Para.25. Article VI Paragraph 2 states:-

"In carrying out scientific investigations and in furtherance of the provisions of this Agreement, the states Parties shall have the right to collect on and remove from the Moon samples of its mineral and other substances. Such samples shall remain at the disposal of those States Parties which caused them to be collected and may be used by them for scientific purposes. States Parties shall have regard to the desirability of making a portion of such samples available to other interested States Parties and the international scientific community for scientific investigation. States Parties may in the course of scientific investigations also use mineral and other substances of the moon in quantities appropriate for the support of their missions."

45. Ibid at p.119.

46. Hearings before the Sub-Committee on Space Science and the Application of the Committee on Science & Technology, U.S. House of Representatives, 96th Congress 1st Session, September 5th & 6th 1979.

47. CHENG, (1980), p.230.

feasible", had come to the conclusion that "exploitation" meant the systematic utilisation of the moon and other celestial bodies for commercial or other purposes. Certainly such an interpretation would be borne out by examining the Deep Sea Mining (Temporary Provisions) Act 1981, Section 17 of the United Kingdom where "exploration in relation to the hard mineral resources of the deep sea bed, means the investigation of that part of the deep sea bed for the purpose of ascertaining whether or not the hard mineral resources of that part of the deep sea bed can be commercially exploited". On the other hand Hosenball seemed to indicate in his statement (48) that the term "exploitation" also included the preliminary exploratory work and since such work is permitted by virtue of Article VI Paragraph 2 (49) provided it is carried out in accordance with the principles contained in Article XI Paragraph 7 and in Article VI Paragraph 2 itself (50), there can be no question of a moratorium existing. A further point which would appear to contradict the theory that a moratorium exists is that in 1974 a proposal was put forward by Egypt, Nigeria and India, that only "exploration for experimental purposes" should be permitted, but this was firmly rejected. (51)

It would from the above arguments, appear that even if the U.S.S.R. attempted to prevent the full application of the common heritage principle by prevaricating over the setting up of the international regime, this would be to no avail since states parties may still exploit the moon and celestial bodies. Such exploitation must however take place in accordance with state practice, though it is difficult to imagine how the "rational management of those resources" provision under principle (b) will develop satisfactorily by such a method when such co-operation is so difficult to achieve

48. Supra Note 43.

49. For text See Note 44 Supra.

50. Article XI Para.8, which states:- "All the activities with respect to the natural resources of the moon shall be carried out in a manner compatible with the purposes specified in Para.7 of this Article and the provisions of Article 6 Para.2."

51. U.N. DOC.A/AC 105/C2/L97 (1974).

in relation to the earth itself.

A similar difficulty may also be found with regard to provision (d) under Paragraph 7 of the Article XI, which states that the benefits derived from the exploitation of space shall be 'equitably shared by all States Parties'. According to Carl Christol the common heritage of mankind principle has been influenced by considerations based on the moral concern that "mankind has been based on the proposition that the rich and powerful possess a moral obligation to aid those less favourably endowed" (52). He also maintains that "realism must take into account the fact that scientific and technological competences are not equally shared amongst states" (53). On the subject of such realism it should be pointed out that such moral considerations requiring the equitable sharing of the proceeds of the exploitation of space only apply to "States Parties" to the treaty, and further, realism should also dictate and envelope the method by which the proceeds of exploitation are to be distributed.

At present there is no accepted definition as to the practical meaning of the term "equitable sharing" though it seems likely that a restricted meaning of the term should be adopted because of obvious difficulty of calculating and distributing any benefits that have accrued to states. However the preamble to the United Nations Convention on the Law of the Sea gives some indication of the possible meaning of the term when it states:-

"Recognising the desirability of establishing through this Convention, with due regard for the sovereignty of all States, a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilisation of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment. Bearing in mind that the achievement of

52. CHRISTOL, (1980), p.453.

53. Ibid.

these goals will contribute to the realisation of a just and equitable international economic order which takes into account the interests and needs of mankind as a whole and, in particular, the special interests and needs of developing countries, whether coastal or land-locked." (54)

Nevertheless, as far as outer space is concerned, it may well be simpler to interpret the term in an analogous manner to Article I of the Outer Space Treaty of 1967, which stated that "the exploration and use of outer space, including the moon and other celestial bodies shall be carried out for the benefit and in the interests of all countries ...". Such an approach would, it is suggested provide a more logical interpretation since Petree, referring to Article XI Paragraph 7 (d), stated:-

"This language also reflects the international co-operation that exists today in the communications and other practical applications of space: for example, Intelsat, Intersputnik, and Inmarsat, where those states who have expended large resources, either public or private, to develop space systems to exploit these applications have equitably shared the benefits with the international community" (55).

In the long run it will be for the proposed international regime to decide how wide the term "equitable sharing" will come to mean, even though the provisions for the establishment of this are vague and inconclusive.

While it must be acknowledged that the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies is a tremendous achievement, it must be stated that its lack of definition has created substantial interpretative problems. In fact so serious has this criticism come to be regarded in the U.S.A. that there are now open calls for its rejection. According to Christol:-

"This form of criticism comes from those who, when confronted by innovative terms such as mankind or the common heritage of mankind, seek to advance a definition of a concept

54. United Nations Convention on the Law of the Sea Reproduced from U.N. DOC.A/CONF. 62/122 of October 7, 1982. I.L.M. Vol.XXI No.6, November 1982, p.1271.
55. R.W. PETREE, U.S. Department Report to the U.N. Security Council, in the United Nations General Assembly Special Political Committee on the Report of the Committee on the Peaceful Uses of Outer Space and the Moon Treaty (Press Release U.S. U.N. 107(79) (November 1st 1979).

or of an idea. In this connection it should be kept in mind that while definitions may be suitable for a specific defect, having for example, tangible qualities, or for private relationships, as in a contract situation, the utility of endeavouring to define a principle may be questioned. It is generally accepted that principles do not lend themselves readily to definitional labels. The latter serve as arbitrary limitations on growth and destroy the usefulness of principles." (56)

Statements such as this, rejecting the need for the definition of principles, are not in the best interests of international law, since it is clear that where language differences may be present it is infinitely better for a consensus to be arrived at over a definition, rather than to let state practice provide the solution.

Undoubtedly one of the most serious interpretative deficiencies with regard to the treaty concerns the role of private enterprise in the exploitation of the moon and celestial bodies. Indeed the treaty has caused so much concern from this aspect that a former chairman of the Senate Foreign Relations Committee, Senator Frank Church, and Senator Jacob Javits have requested that the United States oppose the opening for signature of the treaty in that it was contrary to the free enterprise interests of the United States. Similarly Congressman John Breaux also considered that the treaty would deprive the U.S.A. of opportunities for space technology and resources, when he appeared before the House Sub-Committee on Space Science and Applications of the Committee on Science and Technology (57).

This opposition to the treaty is founded upon the adoption of the phrase "common heritage of mankind" in Article XI Paragraph 1 which states that it refers to the whole treaty for its meaning. Thus Paragraph 1 makes particular reference to the international regime in Paragraph 5, whose aims and purposes are laid down in Paragraph 7, which contains the "equitable

56. CHRISTOL, (1980), p.479.

57. S.B. ROSENFELD, "The Moon Treaty: The United States should not become a Party", 74 American Society of International Law Proceedings, (1980), p.162.

sharing" provision as already stated. Further, opponents of the treaty refer to Article XI Paragraph 3, which provides that "neither the surface nor the subsurface of the moon, nor any point thereof or natural resources in place shall become the property of any state ... or of any natural person", as authority for the prevention of private enterprise activity on the moon.

It would appear therefore that the opponents of the treaty are interpreting the common heritage of mankind provision as embodying the purposes laid in Paragraph 7, as suggested earlier in this chapter (58), and this involves the "equitable sharing" of benefits realised in the exploitation of the moon and other celestial bodies. However this term has come to be interpreted as a device to eliminate any profits earned by private enterprise by disseminating them on a world wide basis. Strictly speaking whilst the extent of the term is for the international regime to decide, since the Moon Treaty is really only an extension of the 1967 Outer Space Treaty it is anticipated that a similar approach would be adopted, i.e. "exploration ... shall be carried out for the benefit and in the interests of all countries" (59) and without question this provision has allowed for the free use and access into the space environment, which is likely to be increased with the development of the space shuttle. At present while there has been little or no sharing of any financial benefits derived from man's exploration into space, there has been a sharing of technological advancements. It is unlikely that the Moon Treaty will overturn that position but merely attempt to formalise the system by creating specific rights and duties.

It is also imprecise to state that the Moon Treaty is anti-private enterprise for the treaty merely prohibits the acquisition of sovereign rights to areas

58. Supra, p.93.

59. Outer Space Treaty 1967, Article I.

of the moon, since Article XI states:-

"Neither the surface nor the subsurface of the moon, nor any part thereof or natural resources IN PLACE, shall become the property of any state ...". (60)

The term "in place" was included in this paragraph on the specific request of the United States. Thus the treaty allows for the exploitation of resources that have been removed from their original location and are thus reduced into the possession of the exploiting body (61). Clearly by allowing such activity the treaty conforms to the original 1967 treaty in that space activities should not be restricted, subject to any procedures that the international regime, once established, might inaugurate. In the meantime exploitation could proceed on the basis established by the treaty and subsequent state practice.

It is perhaps on this latter point that criticism can be aimed at the Moon Treaty because, since it is by nature somewhat innovative, the international regime should have been negotiated, agreed on and brought into existence at the same time as the treaty itself. This thesis is agreed on by both Alfred Neil Kramer and Stephen Gorove (62), who commented:-

"I ... believe that in order to alleviate some of its fears, it might in retrospect have been better to have negotiated all of the provisions of the international regime now rather than later, or none at all. Industry fears would probably be allayed if it knew precisely what was meant by the term "equitable sharing in the benefits", and what the power and authority of the international regime would be."

It might be said to this suggestion that the negotiations establishing the regime would have further delayed the adoption of the treaty, and while this may be true it is unlikely to have had a great effect because the treaty is largely speculative anyway and pre-empts any possibility of lunar

60. Paragraph 3. Emphasis has been added.

61. U.S. Representative at the Legal Sub-Committee in 1973. C.Q. CHRISTOL, The Modern International Law of Outer Space, Pergamon Press, (1982), p.278.

62. Comments by A.N. KRAMER and S. GOROVE in response to S.B. ROSENFELD's paper, "The Moon Treaty: The United States Should Not Become a Party", American Society of International Law Proceedings, (April 1980), p.171.

exploitation and exploration by many years. However if the Moon Treaty was intended to create a new category of territorial status then the body proposed to govern the actions of States in that territorial regime should have been created and brought into operation alongside the treaty itself. The reasons for this approach may be summed up by Bin Cheng who stated:-

"... just as the conclusion of the moon treaty was a matter of political will, so will be its implementation. Whether the new concept of the heritage of mankind introduced by the treaty develops into a striking reality or degenerates into a myth will depend on whether in the years to come the States Parties display the necessary will to comply with not only the letter of the treaty, but also its spirit." (63)

The establishment of the regime could help to prevent the degeneration of the principles set out in the Moon Treaty by the ad hoc development of the Moon and other celestial bodies by state practice. Such an approach may be justified by an examination of the Outer Space Treaty which, while containing several laudable principles, has been suborned by the practice of States. This is not to say that states have consciously set out to break down the principles of the treaty, though certainly this has been the effect. Typical of this is the military use of space as discussed in the forthcoming chapter, and a similar trend can be seen with regard to national sovereignty in space.

Article II of the Outer Space Treaty 1967 states that:-

"Outer Space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."

The principle contained in Article II that states should not be able to establish sovereign rights in space grew quickly after the launching of the first satellite. Its foundation was based on the belief that if the full

63. BIN CHENG, "The Moon Treaty: Agreement Governing the Activities of States on the Moon and Other Celestial Bodies Within the Solar System Other than the Earth", December 18th, 1979, Current Legal Problems, (1980), p.233.

potential of outer space was to be achieved, claims of national sovereignty would have to be prohibited. Also if the principle that space was to be the province of all mankind was to be the guiding light, any establishment of sovereign rights was clearly incompatible with that principle.

However this prohibition must be regarded as illusory since if one considers that a space station may be in orbit for many years and the fact that satellites in geostationary orbit occupy the same position in space in relation to the earth, then some degree of dominion control must be established over that area of space to form what may be termed enhanced possessory rights. It might be suggested that the Outer Space Treaty itself recognises this fact since it specifically gives restricted rights of access to other States Parties' installations (64). In actual fact this provision makes no mention of access to vehicles and installations in space itself but only those on the moon and other celestial bodies. Thus it is conceivable that any installation in outer space could, on the strict interpretation of the provision, be used to the exclusion of all other states. Whilst this may not seem particularly important at the present time, without doubt serious problems could result when very large space installations with large crews or even colonies are developed.

It has already been seen that Article II of the Outer Space Treaty only prohibits the national appropriation of outer space including the Moon and other celestial bodies, though this prohibition has been extended by Article XI Paragraph 3 of the Moon Treaty to prevent the acquisition of property rights by private enterprise and non-national organisations on the moon and other celestial bodies. Thus while non-nationals could in fact appropriate areas of outer space itself, the Moon Treaty has only broadened the scope of the Outer Space Treaty with regard to the moon, and only here to any areas or parts of the moon "in place". Nevertheless by establishing an

64. Outer Space Treaty 1967, Article XII.

installation on the moon any non-governmental agency must exercise some degree of control over that area. Further any materials not "in place" would be subject to appropriation thus, for example, any materials extracted and separated from the surface or subsurface by mining operations could be appropriated into the ownership of a non-governmental agency. However with regard to the appropriation of areas of outer space by individuals it should be borne in mind that in international law individuals and non-national entities have no locus standi before the international community and therefore could be said to have no legal basis for establishing such claims. Normally speaking where an individual's rights have been violated by another state, a fiction is used whereby the claim of the injured individual or non-national entity becomes that of the State's (65). The effect of this could be therefore for states to acquire enhanced territorial rights over areas of space through the fiction of diplomatic protection. This approach could also be justified on the basis that "mankind", as contained in Article I, specifically includes private entities and thus recognises the significant contribution that can be made by non-governmental entities in outer space.

This method of spatial appropriation by proxy can be seen by the role of Eurospace, for example, which, though made up of private industrial organisations, undoubtedly represents European national interests in certain aspects of space exploration and co-operation (66). While such observations indicate the substantial contribution that non-governmental entities play in establishing national interests in space, it would be erroneous to think in terms of these entities being subjects of international law, since states

65. E. BORCHARD, "The Diplomatic Protection of Citizens Abroad", 1915, as cited in I.H.P.H. DIEDERIKS-VERSCHOOR and W. GORMLEY, "The Future Legal Status of Non-Governmental Entities in Outer Space: Private Individuals and Companies as Subjects and Beneficiaries of International Space Law", 5 Journal of Space Law, (1977), p.130.

66. DIEDERIKS-VERSCHOOR & GORMLEY, Ibid, p.128.

nonetheless remain responsible for their activities. Thus Article VI of the Outer Space Treaty states:-

"States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorisation and continuing supervision by the appropriate State Party to the Treaty. When activities are carried out in outer space, including the moon and other celestial bodies, by an international organisation, responsibility for compliance with this Treaty shall be borne both by the international organisation and by States Parties to the Treaty participating in such organisation."

Further treaties also lay down national responsibility for non-governmental entities (67).

It has been stated in the past that individuals and non-governmental agencies did not enjoy the status of full subjects in space because of their inability to acquire the facilities to develop space commercially (68) though it must now be conceded that such possibilities do now exist. This is because in the past it was thought that commercial companies would have to develop their own launching facilities at tremendous cost and, anyway, private enterprise could never develop the high technology required to enter space within the parameters of a commercial undertaking. This has now been proved to be false since several organisations, albeit for the most part government agencies, allow commercial enterprises to use their launching facilities in order to put their satellites into space. Certainly one of the main functions of the space shuttle is to sell cargo space for private organisations wishing to put their own satellites into space. Thus whilst private, non-governmental entities are still not considered

67. Convention on International Liability for Damages Caused by Space Objects 1972 and the Convention on the Registration of Objects Launched in Outer Space, 1975.

68. W. GORMLEY, "The Procedural Status of the Individual Before International and Supranatural Tribunals", 41 University of Detroit Law Journal, (1964), p.405.

subjects in international law, their part in the development of space is becoming of major importance and sooner or later that significant contribution will have to be recognised, particularly if these enterprises will occupy areas of space. Nevertheless sovereign states continue to be the dominant subjects under the rules of international law, though if the U.S.S.R.'s interpretation of the "common province of mankind" provision in the Outer Space Treaty that celestial bodies (and presumably space itself) are "available for the undivided and common use of all states, but not jointly owned by them" (69), is universally accepted, then states would naturally, it is suggested, encourage private enterprise in space in order to widen their influence in space through individuals or commercial entities. Indeed the fact that the U.S. Congress, in order to induce private sector use of the space shuttle, has provided for third party liability insurance to protect the users from third party claims (70), and the fact that in the 1st Session of the 96th Congress in 1979 a bill was introduced to establish a Space Industrialisation Corporation, whose aim would be to provide government funds to promote and encourage private enterprise in space (71), could be regarded as evidence of the desire by the U.S.A. to establish rights in space through the possible establishment of enhanced territorial rights by private enterprise by way of control, as well as being simply good business.

69. U.S.S.R. Working Paper, U.N. DOC.A/AC105/101 (1973). As stated above this statement would appear to have been made in connection with celestial bodies since for many years the U.S.S.R. would not accept the phrase "common heritage of mankind" in connection with the Moon Treaty. Since the phrase "common province of mankind" relates to the Outer Space Treaty, it is assumed that the U.S.S.R.'s interpretation would also apply to outer space as well as celestial bodies.
70. Pub. L. 96-48 modified S.308 of the National Aeronautics and Space Act 1958 was enacted on August 8th, 1979, and provided for insurance and indemnification under regulations to be laid down by the NASA Administrator; G.J. MOSSINGHOFF, "Managing Tort Liability Risks in the Era of the Space Shuttle", 7 Journal of Space Law, (1979), p.120.
71. H.R. 2337, 96th Congress 1st Session 1979. See also L.D. FUQUA, "Space Industrialisation: Some Legal and Policy Considerations for Private Enterprise", 8 Journal of Space Law, (1980), p.1-7.

A further difficulty which arises with the fact that Article II of the Outer Space Treaty appears to allow non-governmental agencies to appropriate or at least exercise dominion over areas of space (albeit subject to the control of their respective States) is that many enterprises carried out in space are joint ventures, involving both public and private bodies. If one accepts the restrictive interpretation of Article II which prevents national appropriation, but with certain reservations allows non-governmental appropriation or possibly enhanced territorial rights, the question of mixed enterprises becomes a fundamental problem since national entities may attempt to play down their national role and portray the entity as being private in nature so that it could establish rights in space, which in the event of a dispute will be defended on the basis of state responsibility (72). Thus it would appear that national bodies or states could establish rights in space under the auspices of what purports to be an independent commercial body.

## CONCLUSION

The Moon Treaty, like the other Treaties dealing with outer space that followed the Outer Space Treaty 1967, is to a large degree a more detailed examination of the principles laid down in that treaty. The main distinction between the two however is that during the somewhat protracted negotiations establishing the Moon Treaty, a new category of territorial status emerged which enlarged the concept of the *res communis* and firmly rejected the concept of *res nullius* in the context of the moon and other celestial bodies. This new status - the common heritage of mankind - contained principles intended to produce a more equitable sharing of the benefits received from the exploration of the moon and celestial bodies than had been achieved by the Outer Space Treaty itself. Further it

72. MAVROMMATIS PALESTINE CONCESSIONS CASE, P.C.I.J. REP. SER.A, No.2, (1924), p.12.

contemplated the creation of an international regime to ensure that certain pre-determined objectives be obtained (73).

It would appear that the Moon Treaty has done too much in attempting to produce a detailed legal regime for the moon together with a new type of territorial status. These two factors combined in a treaty, which is highly speculative anyway in that it will be many years before the moon could possibly come to be exploited on any type of scale, has inevitably led to problems of both a practical and theoretical nature. In particular the Moon Treaty has tended to ignore the practicalities of the exploration and exploitation of the moon since there must come a moment in time when some degree of appropriation is carried out. Such a situation must clearly occur when one state has established some sort of moon base since it is inconceivable that another state could successfully require the removal of that base in favour of its own simply because it requires that particular position on the moon. Additionally it is unlikely that a state would bear the huge development costs of building such a base not to require some other state seeking to use it from contributing to that cost. In such a situation there must by implication be some exercise of dominion over that base in that there is a granting of a licence to use that base. In this respect the principle of non-appropriation is very similar to the position of satellites in geostationary orbit in that once established they exercise enhanced territorial rights over that area of space until their removal. Such a view is also reinforced by reference to Article XII Paragraph 1 of the Moon Treaty, which states:-

"States Parties shall retain jurisdiction and control over their personnel, vehicles, equipment, facilities, stations and installations on the Moon. The ownership of space vehicles, equipment, facilities, stations and installations shall not be affected by their presence on the moon."

73. As contained in Article XI, Paragraph 7.

Further evidence of the possible establishment of enhanced territorial rights may also be seen in Article XV in that whilst a state is entitled to have access to another's facilities it must give notice of such a visit.

Thus:

"Each State Party may assure itself that the activities of other States Parties in the exploration and use of the moon are compatible with the provisions of this Agreement. To this end all space vehicles, equipment, facilities, stations and installations on the moon shall be open to other States Parties. Such States Parties shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited ...".

On the problem of the non-appropriation principle, contained in the treaty, one must also take into account not only the exercise of enhanced territorial rights but also the appropriation of its natural resources. Certainly the right to exploit the natural resources of the moon and other celestial bodies is allowed by the treaty, since by Article VI Paragraph 2 "... States Parties shall have the right to collect and remove from the moon samples of its minerals and other substances". Further Article XI Paragraph 3 states that, "Neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become the property of any State ...". As already stated (74), this allows states to exploit the mineral and natural resources of celestial bodies because once they have been removed from their original position they may then be reduced into the possession of that state. This situation must raise the question, that to what degree is the exploitation of the moon and other celestial bodies to be allowed since, again, there must come a point at which such exploitation becomes appropriation. E. Brooks raised this very point in 1969 in relation to Article II of the Outer Space Treaty, when he stated:

74. Supra at p.104.

"... since the use of planetary resources is permitted but national appropriation is not, there is a point at which the use of a planetary resource becomes appropriation and is forbidden." (75)

According to C. Christol, Brook concludes that "appropriation occurs when there is a substantial use of a tangible resource and when this results in "a significant benefit to a single nation" (76). Undoubtedly therefore the Moon Treaty has failed to reconcile this problem, even though it purports to deal with the moon and other celestial bodies in detail. It is for this reason that it might well have been more prudent to exclude asteroids from the treaty since it is these which might hold the best potential for the exploitation of minerals, but the use of which may now be barred by the treaty as constituting an appropriation of a celestial body. Nevertheless it is a problem which is unlikely to present itself for many years to come and may well be solved by the simple fact that the rising costs of space exploration and exploitation will almost certainly result in any commercial exploitation of the moon being organised on a multi-state basis.

A further method of solving the last problem, should it ever arise, is through the international legal regime proposed in Article XI. It has been said that the need to establish the international regime creates a moratorium on the development of the natural resources of the moon, this is not the case, though it would appear to restrict full scale commercial exploitation. This is because Article XI requires the parties to the treaty to establish the regime once exploitation becomes feasible, and if no regime is forthcoming this could have the effect of preventing the further development of the moon or any other celestial body. If this is the case State Parties to the treaty could block the establishment of the international regime in order to protect their own interests until they too are

75. E. BROOKS, "Control and Use of Planetary Resources", Proceedings of the 11th Colloquium on the Law of Outer Space, (1969), p.346.  
76. CHRISTOL, (1980), p.447.

ready to exploit the moon and other celestial bodies on an equal footing. With regard to the establishment of the international regime it must be seriously questioned as to whether the political will exists to inaugurate such a body. Further, if such will does exist, judging by the extremely lengthy negotiations needed to produce the Moon Treaty itself (77) then one must be sceptical as to whether any exploitation on a commercial scale would ever get past the initial research state, which states are entitled to do before the establishment of the regime, as laid down in Article XV Paragraph 5.

Doubts must also exist as to the effectiveness of such a regime, even if established, since the parameters of its operation must be decided by an international conference of those States Parties to the treaty itself, who will evaluate any discussions in accordance with their own national interests. Certainly this is the position as summed up by Mr. Petree before the Special Political Committee of the U.N. General Assembly (78). Further reservations must also be made as to the operation of the international legal regime when it is borne in mind that the equivalent organisation in the Convention on the Law of the Sea, the International Seabed Authority, together with the treaty itself, has recently been rejected by America, Turkey, Venezuela and Israel whilst Britain, West Germany and Russia held such critical views that they abstained from the vote adopting the treaty in the United Nations General Assembly. Two reasons for the way America voted were, firstly, the treaty allowed for three-quarters of the signatories to impose amendments on the rest, and secondly, and as far as the outer space international regime, most importantly it excluded America from the International Seabed Authority, even though it was the

77. The first proposal for an international agreement for the moon and other celestial bodies, which included the principle of the common heritage of mankind was put forward on July 3rd 1970, in U.N. DOC.A/AC105/C2/L71. The treaty was opened for signature on December 18th 1979.

78. Supra Note 39.

foremost production country in the development of the exploitation of deep seabed resources (79). Clearly if a similar attitude is adopted with regard to the international regime in the Moon Treaty by the other members of the United Nations then the future does not look good. Certainly any isolation of leading states in the exploration and exploitation of space from the international regime would only denude it of any influence it might have.

The attitude of states as enunciated by Petree may also be seen in the approach that has been taken on the control of satellites in the geostationary orbit, since while no special regime has been created to deal with the allocation of geostationary slots, this role would appear to have been accepted by the I.T.U. Thus several states have formally rejected the allocation system put forward at the World Administrative Radio Conference, preferring an evolutionary approach (80). Whilst others, though accepting the system, have not altogether restricted their activities to the areas allocated to them. The justification for this is that while the geostationary orbit is below saturation point there is no reason why unoccupied areas cannot be used. The implication here is that the ground rules laid down by an international regime may always be dismissed by states acting in their national interest, particularly when that international regime lacks any sanctions that might enforce compliance with its rules. It may thus be unrealistic to expect absolute compliance with any rules laid down by the international regime proposed in the Moon Treaty since state practice will adjust those rules in accordance with national interest, particularly if amendments can be made by a proportion of the signatories as in the Convention on the Law of the Sea (81).

79. D. SHEARS, "U.S. Rejects Sea Law Treaty", Daily Telegraph, July 9th 1982, p.32. See also Editorial Comment p.18.

80. i.e. the U.S.A., Canada, Brazil and the other equatorial states as signatories to the Bogota Declaration.

81. U.N.G.A. RES.No. 37/66; U.N. DOC.A/CONF. 62/122; I.L.M. VOL. XXI No.6, (Nov. 1982), p.1272.

That the Moon Treaty protects the rights of non-governmental enterprises cannot be doubted because of Article XIV, which has a corresponding provision in Article VI of the Outer Space Treaty. Nevertheless there are fears, particularly in the U.S.A., that whilst the Moon Treaty clearly made provision for the participation of the free enterprise systems in the exploitation of the moon and celestial bodies, the environment in which it is expected to participate is in fact hostile to private commercial interests. Such fears are largely based on the common heritage of mankind principle of equitable sharing, as laid down in Article XI (82), in that private enterprise will not invest immense amounts of money in projects the proceeds of which will have to be shared amongst States Parties to the treaty, particularly when those states have not contributed to any of the development costs (83). Certainly the situation initially looks very pessimistic until it is considered that the extent to which the common heritage of mankind principles will be applied is for the legal regime, when negotiated and created, to decide. Additionally limitations are already imposed on the extent to which any benefits gained will be shared by the use of the word "equitable" rather than "equal". Up until the establishment of the legal regime it is anticipated that any sharing will be carried out in accordance with the present system under the Outer Space Treaty, where states have benefitted considerably from the technological "spin-offs" of space development. It is this area in the Convention on the Law of the Sea that contributed to the U.S.A.'s decision not to sign, since private enterprise would not only have to sell its technology to the international authority and train its personnel, but also have to contribute a share of their profits to that authority who in return would grant mining licences and impose production quotas. The profits received by the authority would be shared amongst the other signatories, even though they had contributed nothing to the effort needed to raise the mineral deposits

82. Paragraph 7 (d).

83. MENTER, (1981), p.59.

from the seabed except to guarantee freedom of navigation to the other States Parties (84). Undoubtedly if such a situation were to be repeated within the international regime envisaged by the Moon Treaty private enterprise would be deterred from taking part in the exploration and exploitation of the Moon and other celestial bodies.

As can be seen from the above discussions the whole structure of the Moon Treaty is extremely loose and has perhaps suffered from nine years of piecemeal construction. It is also regrettable that a new type of territorial status has to be introduced in this manner, and indeed it is a serious omission to introduce such a new concept into a treaty without having it properly defined, except for the four elements which it is considered should be included in that definition (85). Since the common heritage of mankind principles are required to be implemented by an international regime which itself has yet to be established, it is suggested by Christol that the traditional principle of *res communis* will apply (86). This is certainly acceptable though it should be added that such principles of the Moon Treaty as are consistent with the Outer Space Treaty 1967 should also apply bearing in mind that the latter provided a basis for it. It would seem that already the principles contained in the Moon Treaty will be altered by subsequent state practice. This is particularly true of the United States where the House of Delegates of the American Bar Association has been advised by the Section of International Law to urge the Senate to adopt four reservations before ratifying the Moon Treaty (87). The first read:-

84. Supra Note 81.

85. Article XI Paragraph 7.

86. C. CHRISTOL, "The American Bar Association and the 1979 Moon Treaty. The Search for a Position", Journal of Space Law, (1981), p.78.

87. Section of International Law, American Bar Association, Report to the House of Delegates 1980, p.10, CHRISTOL, (1981), p.79.

"It is the understanding of the United States that nothing in this Agreement in any way diminishes or alters the right of the United States to determine how it shares the benefits derived from the exploitation by or under the authority of the United States of natural resources of the Moon or other celestial bodies." (88)

This reservation was particularly consistent with the United States reservation attached to its ratification of the Outer Space Treaty (89), except insofar that this did not refer to natural resources. It was therefore a substantial updating and clarification of the U.S. position in the light of the potential exploitation of natural resources.

The second reservation took into account the property rights of natural resources taken into possession and stated that such rights were "subject to the exclusive control of, and may be considered as the property, the State Party, or other entity responsible for their extraction, removal or utilisation" (90). This reservation was clearly intended to protect the interests of private enterprise from the subordination of their property rights in the exploitation of natural resources to those of States Parties to the treaty. Further this reservation is a reinforcement of the rights of States to reduce resources no longer "in place" into their ownership contrary to the original Soviet proposal against the establishment of such rights (91).

The third reservation proposed referred directly to the common heritage of mankind principle as laid down in Article XI Paragraph 1 of the Treaty (92), and provided that the term related only to its context in the Moon Treaty itself. It was therefore not to be interpreted in the light of any other provision. This was a reference to the use of the term in Article 136 of the Draft Convention on the Law of the Sea (Informal Text) (93),

88. Ibid at p.2. CHRISTOL, (1981), p.80.

89. Treaty on Outer Space, Executive Report No.8 to accompany Senate Ex.D 90th Congress 1st Session 4, 1967, as contained in Christol, (1981), p.80.

90. Supra Note 87 at p.2.

91. CHRISTOL, (1981), p.80.

92. Supra Note 87 at p.2 and Ibid.

93. U.N. DOC.A/CONF. 62/WP 10/REV 3, August 27th 1980.

and was a clear indication to the fact that any new type of territorial status inaugurated by the Moon Treaty should be confined to the areas covered by that treaty, so as not to inadvertently prejudice the United States position in the Law of the Sea negotiations. Not content with the above declaration the Section also laid down that the common heritage of mankind principle was subject to the principles laid down in Articles I and II of the Outer Space Treaty. Further the Section wanted to make it abundantly apparent that the terms of the Moon Treaty allowed States Parties to the treaty to "... retain exclusive jurisdiction and control over their facilities, stations and installations on the Moon, and that other States Parties are obligated to avoid interference with normal operations of such facilities" (94). According to Christol this overkill approach by the Section was in response to concern that the Moon Treaty was prejudicial to private enterprise when it was apparent that the treaty specifically allowed for the involvement of such entities in the exploitation and development of the Moon and other celestial bodies (95).

The fourth and final reservation of the section was concerned with the period up to the time of the establishment of the international regime, provided for in Article XI Paragraph 5 and the period after. Up until the establishment of the regime, the Section provided that a status of *res communis* would apply to the exploitation and development of the Moon and that, "No moratorium on such exploitation is intended or required by this Agreement" (96). However the Section did state quite specifically that the United States had to comply with the provisions laid down in Article XI Paragraph 7 during this period, at the same time adding a rider that the United States had the right to determine the standards of such compliance until it became a party to the international regime. This first

94. Supra Note 87 at p.2. CHRISTOL, (1981), p.81.

95. CHRISTOL, (1981), p.81.

96. Supra Note 87 at p.2 and Ibid.

part of the fourth reservation must be considered a major departure from the provisions of the Moon Treaty and must lend a great deal of weight to the argument that State practice in certain areas of space law has evolved in such a way as to suborn the provisions of the guiding treaties. The principle reason for such a statement is that Article XI Paragraph 1 of the Moon Treaty states that "The Moon and its natural resources ARE the common heritage of mankind ...". The text is thus phrased in the present tense and must therefore become a binding principle once the treaty comes into operation, albeit that part of its expression is subject to the procedures laid down by the establishment of the international regime (97). Nevertheless, it may well be argued that because the establishment of the international regime, as laid down in Paragraph 7, are not expressions of the term "common heritage of mankind" in its present context. However such an argument may be countered in that Paragraph 1 talks about the term finding its expression from the provisions of the Agreement and that because the guiding principles of the regime are expressly stated then these also are expressions of that term, notwithstanding that they provide the regime with its basic purposes. Having stated this position it may be seen that such confusion has its roots in the impatience of the Outer Space Committee of the United Nations General Assembly to have a Moon Treaty in a final form as soon as possible because of its own impatience with the protracted negotiations that had been taking place. Thus the Chairman of the Outer Space Committee in his opening speech at the 22nd Session of the Committee on June 18th, 1979 stated:

"Indeed the end result of the work was not altogether encouraging, and we have to face this fact squarely ... Progress by the Sub-Committee on the outstanding issues will take place only as Member States display an active desire and, let me say, a stronger political will to achieve the necessary compromises ... In this connection, the time might even have come for us to reassess our respective positions in

order to see whether we cannot really bridge this gap. And if, in all honesty, we find ourselves unable to do so, the time might also have come to devote our energies - at least for the time being - to other important areas of concern which deserve our attention." (98)

While accepting the Chairman's point concerning the political will of states, it is nevertheless unhelpful to the achievement of consistent rules of international law to attempt to introduce innovating concepts and principles without attempting to define their parameters. Such an erroneous approach is further compounded when, having just had the political will of states questioned, those concepts and principles are left to some future regime to delineate more fully, the existence of which is itself open to the vagaries of that political will. It should also be noted in this context that the other forms of territorial status have emerged over many centuries and that to develop an impatience over lack of progress after a mere ten years of debate and discussion is not likely to promote the conditions tending towards good law, particularly when the exploitation and development of the moon and celestial bodies is not likely to arise for several decades at least. It is in this context more feasible to treat the moon and celestial bodies as being subject to a regime of *res communis*, even though this is apparently in conflict with the treaty in its present terminology.

The second part of the fourth reservation concerned itself with the period of time relating to the negotiation of the proposed international regime, and is perhaps indicative of the possible lack of political will discussed above. The reservation stated that whilst the United States would engage in the negotiations in good faith, it would not agree to:-

"... any particular provisions which may be included in such a regime: nor does it constitute an obligation to become a Party to such a regime regardless of its contents." (99)

98. U.N. DOC.A/AC 105/PV.190, June 18th 1979, pp.7-8.

99. Supra Note 87 at p.2, CHRISTOL, (1981), p.82.

Such an approach is unlikely to aid the development of a coherent legal system for the moon and celestial bodies, and it is likely to undermine treaty making processes generally since if several states took a similar approach the result could, in the words of Christol, produce "a splintering effect with the resultant loss of the general agreement evidenced in the terms of the agreement and its negotiating history" (100).

From the stance taken by the Section of International Law, the Section of Natural Resources Law also added its criticisms of the common heritage of mankind principle contained in the Moon Treaty (101). This section had already come across the principle in the Draft Convention on the Law of the Sea (Informal Text) 1980 Article 136, and had considered it prejudicial to United States interests. The section therefore proffered three potential risks in accepting the principle. Firstly, they suggested that acceptance could harm United States interests in the Law of the Sea negotiations, and potentially in the eventual negotiations on the status of Antarctica when the present thirty year moratorium ended. Such a risk must be apparent since it is inconceivable that the principle could have one interpretation for the moon and celestial bodies and another for other regimes, though surprisingly the representatives of both sections eventually accepted that the principle should apply to the moon and celestial bodies, but should be divorced from the use of the principle in the Draft Convention on the Law of the Sea (Informal Text).

The second risk was that the acceptance of the principle in its present form would force the United States into surrendering explorative and exploitative autonomy to the international regime (102). Finally it was stated that it was possible that a "moratorium on exploration and exploitation of space resources is inherent in the Moon Treaty, pending establishment of machinery to govern such activities under the control of the

100. CHRISTOL, (1981), p.82.

101. Report of the Section of Natural Resources with Recommendation to the American Bar Association House of Delegates, (1980), as contained in CHRISTOL, Ibid.

102. Ibid.

international regime" thereby damaging United States interests still further (103).

In May 1981 the two sections, having reconciled any differences there may have been in their reports, produced a joint recommendation which took into account the statements issued by both sections (104). The principle recommendation to the House of Delegates was that it adopt a resolution for the signature and ratification of the Moon Treaty. Though on first appearances this might seem surprising in the light of the reservations put forward, on further reflection it can be seen that if the United States did not become a party to the agreement then it would forego its right to be a participant in the later negotiations on the international legal regime, which it might be able to influence in its favour.

The American Bar Association report to the House of Delegates was framed in the form of six declarations, to which ratification of the treaty was to be subject. The declarations corresponded closely to the reconciled views of the two sections. However if the American Bar Association report (105) was accepted by the United States then the declarations contained therein would amount to interpretations of national policy, unlike reservations which would amount to interpretations as to the terms of the treaty (106). Such an approach should be rejected since in terms of producing a coherent system of international law the whole area would become an entangled mass because of individual states wishing to raise their own objections to different parts of a particular treaty. While there tends to be a modern trend to adopt this approach, it is nevertheless a weakening of the treaty making process which could encourage a deviation from the terms of a treaty by way of state practice. It is this and more

103. Ibid.

104. American Bar Association, Report to the House of Delegates (1981).

105. Ibid.

106. CHRISTOL, (1981), p.88.

importantly the failure of the Moon Treaty to provide sufficient definition that would give rise to an undermining of the treaty by means of state practice, as further disclosed by the attitudes found while discussing the geostationary orbit and its related issues.

## CHAPTER THREE

### INTERNATIONAL LAW AND MILITARY ACTIVITIES IN SPACE

Since the launch of Sputnik 1 and the development of inter-continental ballistic missiles the military importance of outer space has increased dramatically over the years. Intercontinental ballistic missiles, however, constitute only a small part of the military involvement of states in space, and projects which are generally regarded as being for scientific or commercial purposes, such as meteorological, navigation and communications satellites, furnish essential services for military operations (1). The distinction between the civilian and military uses of space is not easy to make, since both the U.S.A. and the U.S.S.R. space programmes rely heavily on the involvement of their respective armed forces in what are essentially civilian projects. Thus, for instance, both major space powers rely heavily on the armed forces for their astronauts. Similarly certain pieces of equipment have a dual military/civilian use (2).

The Outer Space Treaty 1967 clearly lays down as its first and most fundamental object the principle that outer space, including the moon and celestial bodies, is the province of all mankind. Further Article I states that activities in outer space are to be carried on for the benefit and in the interests of all countries, whilst Article II provides that outer space is to be used "in the interest of maintaining international peace and security

1. P.C. JESSUP and H.J. TAUBENFIELD, "Controls for Outer Space and the Antarctic Analogy", New York, (1959), pp.222-25.
2. "MISSILES AND ROCKETS", January 20th, 1964; NASA PRESS RELEASE, (1964), pp.64-234.

and promoting international co-operation (3). While space is being used for various military activities, which appear to be contrary to the principles laid down in Articles I and II, Article IV states that only certain military activities are barred:-

"States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner. The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for the peaceful exploration of the moon and other celestial bodies shall also not be prohibited." (4)

Article IV attempted to enlarge and re-inforce the principles put forward by the Limited Test Ban Treaty of 1963, which merely prohibited the testing of nuclear devices in outer space (5). While there appeared to be no difficulty within the Legal Sub-Committee of the United Nations Committee on the Peaceful Uses of Outer Space in achieving this when the article was drawn up, in subsequent years it has been subject to close scrutiny which has produced conflicting interpretations of the provisions in Article IV. The possible result of these conflicting interpretations has been, it is suggested, to detract from the principles of disarmament in space, as contained in the Outer Space Treaty. The analysis of these interpretations may be broken down into two basic areas; firstly, interpretations of the provisions relating to nuclear weapons and other types of weapons; and secondly, interpretations of the provisions dealing with the peaceful uses of the moon and other celestial bodies.

3. TREATY ON PRINCIPLES GOVERNING THE ACTIVITIES OF STATES IN THE EXPLORATION & USE OF OUTER SPACE, INCLUDING THE MOON AND OTHER CELESTIAL BODIES 1967, Articles I and II (hereinafter cited as the Outer Space Treaty); 18 U.S.T. 2410; T.I.A.S. 6347.
4. Outer Space Treaty 1967, Article IV.
5. Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water, 1963, Article I, Paragraph 1; Command 2245; U.K.T.S. 3, (1964); 480 U.N.T.S. 43.

1. PROVISIONS RELATING TO NUCLEAR AND OTHER TYPES OF WEAPONS IN SPACE

The objective of Article IV, Paragraph 1 was to eliminate nuclear weapons and other weapons of mass destruction from outer space and the celestial bodies. It is clear that Paragraph 1 places no restriction on conventional weapons, and thus has been termed a clause of "partial disarmament" (6).

A closer examination of Paragraph 1 also reveals that nuclear weapons themselves are not totally barred from space, since the paragraph states that parties to the Treaty "undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction". Thus an intercontinental ballistic missiles (I.C.B.M.) or fractional orbital bombardment systems (F.O.B.S.) (7) neither of which make a full orbit of the earth, are not banned. Nevertheless such systems must be regarded as eroding the principle of preventing the militarisation of space.

Although nuclear weapons are clearly prohibited from being placed in orbit around the earth, the term "weapons of mass destruction" lacks definition, though it would seem, at least according to the United States U.N. Ambassador A. J. Goldberg and the then Deputy Secretary of Defence C. R. Vance, that a weapon that could kill 20-30 persons was not regarded as a weapon of mass destruction, unless the weapon was of a bacteriological or chemical nature (8).

6. M.G. MARKOFF, "Disarmament and 'Peaceful Purposes' Provision in the 1967 Outer Space Treaty", 4 Journal of Space Law, (1967), pp.3 & 4.
7. A fractional orbital bombardment system travels at approximately 100 miles above the earth at orbital speed, slowing down periodically to discharge nuclear warheads towards a target, though never completing a full orbit before returning to earth. The device is only regarded as travelling through space and is thus not controlled by the Outer Space Treaty.
8. As contained in statements prior to the Outer Space Treaty being notified by the Senate. HEARINGS ON THE TREATY ON OUTER SPACE BEFORE THE SENATE FOREIGN RELATIONS COMMITTEE, 90th CONGRESS, 1st SESSION.

It is clear that Article IV, Paragraph 1 bars the installation and stationing of nuclear weapons and weapons of mass destruction on celestial bodies. However it is not clear whether the term "celestial bodies" includes the moon. Since the term "moon and celestial bodies" appears throughout the treaty it is thought that the moon is still included on the basis that it would make no sense at all to permit the installation of weapons of mass destruction on the moon, while prohibiting such installations on other celestial bodies (9). In fact Article IV goes a great deal further than just barring nuclear weapons or weapons of mass destruction from the moon and celestial bodies, since in Paragraph 2 there is a complete bar on all military activities except where military personnel are used in scientific research or for any other peaceful purposes. Further, any military facility is not necessarily prohibited provided it is "necessary for the peaceful exploration of the moon and other celestial bodies" (10). Thus, it would seem that as far as the moon and celestial bodies are concerned there is an obscure attempt at a policy of complete non-militarisation of space, since it would appear that Paragraph 2 is aimed at preventing the testing of even conventional weapons, whereas Paragraph 1 is concerned with the installation and stationing of particular types of weapons on those bodies, namely, nuclear weapons and weapons of mass destruction.

Clearly important questions must arise as to the interpretation of the terms "install" and "station". Thus, at what point is a weapon said to be installed? If the term means something more than just placing, then the mere presence of a nuclear weapon is not strictly illegal, and it is only the testing of such weapons that is illegal. Gorove is of the opinion that the term "install" means something more than just placing nuclear weapons

9. S. GOROVE, "Arms Control in Outer Space", 3 Georgia Journal of International Law and Comparative Law, (1973), p.116. Also contained in Studies in Space Law: Its Challenges and Prospects, Sigthoff-Leyden, (1977).
10. Article IV, Paragraph 2.

on the moon and celestial bodies but implies a degree of permanence (11). Looking to the term "station" there would appear to be some doubt as to exactly what is meant here - does it mean orbiting or does it mean placing a weapon in a position of geostationary orbit above the moon or any other celestial body, so that its orbital speed coincides with the rotational speed of the celestial body. It would appear that the term is interpreted very widely since the U.N. representatives of the U.S.A., U.S.S.R. and Great Britain maintained that "stationing" meant "deployment" around the moon or any other celestial body (12). Similarly, other writers, such as Poulantzas, thought that the term "station" meant every manner in which nuclear weapons and weapons of mass destruction could be placed in outer space on celestial bodies (13).

Paragraph 1 quite evidently restricts nuclear weapons and other weapons of mass destruction from being placed in orbit around the earth, and either installed or stationed on "celestial bodies", which is interpreted as including the moon. By implication therefore there would appear to be no restriction on the stationing or use of conventional weapons in space, nor on the installation of such weapons on celestial bodies (14). Since there is a complete lack of restrictions in the use of conventional weapons, the leading space nations have striven to develop operational anti-satellite weapons (A.S.A.T.) capable of destroying, or at least 'blinding' the other's observation and attack warning satellites by conventional methods.

The freedom to use conventional weapons in space nevertheless poses just as great of threat to peace as any object carrying nuclear weapons or other weapons of mass destruction. This is because both the U.S.A. and

11. GOROVE, (1973), p.117.

12. U.N. Documents A/7221 September 10th, 1968.

13. N.M. POULANTZAS, "The Outer Space Treaty of January 27th 1967, A Decisive Step Towards Arms Control, Demilitarisation of Outer Space and International Supervision", 20 Revue Hellenique de Droit International, (1967), p.66.

14. Providing no testing of them takes place on the celestial body.

the U.S.S.R. are heavily dependant on satellites for intelligence gathering, military communications, weather forecasting, and guidance and navigation.

Further both super powers rely on satellites in order to monitor and verify compliance with arms control agreements. Such is the importance of satellites in this role that in the Interim Agreement and Protocol on the Limitation of Strategic Offensive Arms, signed at the same time as the Treaty on the Limitation of Anti-Ballistic Missile Systems 1972 it was agreed that "each party undertakes not to interfere with the national technical means of verification of the other Party" (15). Indeed such are their importance (though initially the U.S.S.R. objected to the use of surveillance satellites (16)) that it is reasonable to assume that, without a satellite system to monitor compliance with the Outer Space and Test Ban Treaties, neither state would have adhered to them (17). Additionally J. E. S. Fawcett stated that the problem of adequate inspection "has always been a major obstacle to disarmament" (18).

While the above agreements prohibited the use of A.S.A.T. systems, they did not prevent their development. In fact Soviet anti-satellite development is thought to go back as far as 1962 when two satellites had a test rendezvous, though this experiment can be put down as being just a general experiment to test manoeverability in space. However in 1968, and significantly perhaps only one year after the signing of the Outer Space Treaty, the U.S.S.R. put into orbit COSMOS 248. A day later COSMOS 249 was launched on a rendezvous orbit, was seen to pass rapidly by COSMOS 248, and then explode (19). Such experiments were carried

15. 23 U.S.T. 3435; T.I.A.S. 7504; Article V, Paragraph 2.

16. U.N. DOC.A/AC 105/C2/L6 (1963); A/AC 105/C2/L1 (1962).

17. E. STEIN, "Legal Restraints in Modern Arms Control Agreements", 66 American Journal of International Law, (1972), p.263.

18. J.E.S. FAWCETT, International Law and the Uses of Outer Space Manchester University Press, (1968), p.33.

19. H. SCOVILLE and K. TSIPIIS, "Can Space Remain a Peaceful Environment?", The Stanley Foundation, (July 1978), pp.5 & 6.

intermittently until December 1971 when the S.A.L.T. I agreement, which provided for the non-interference with reconnaissance satellites, was signed. Soviet experiments began again in 1976, possibly in response to China placing a reconnaissance satellite into orbit.

The above facts do not of course mean that the United States has not itself been attempting to develop a similar capability, however they have limited their efforts to non nuclear, non explosive devices which accomplish their task by colliding with the target vehicle at a speed in excess of 17,500 miles per hour (20). Clearly the essential difference in the two systems is that the U.S.A. attempts to destroy a reconnaissance satellite by the use of a heat seeking satellite scoring a "direct hit", whilst the U.S.S.R. manoeuvres its killer satellite close to the target and explodes it, thus destroying the target. The capability of the Soviet killer satellites has prompted the U.S.A. to "harden" its reconnaissance satellites against such an attack.

In 1978 President Carter proposed to the Kremlin that the U.S.A. and U.S.S.R. should agree to forgo weapons which could destroy observation satellites (21). The proposal seems not to have been taken up since in the unratified Strategic Arms Limitation Treaty II 1979, there is only a re-iteration of the Treaty on the Limitation of Anti-Ballistic Missile Systems 1972, i.e.

"For the purpose of providing assurance of compliance with the provisions of the Treaty, each party shall use national technical means of verification at its disposal in a manner consistent with generally recognised principles of international law.

Each Party undertakes not to interfere with the national technical means of verification of the other party operating in accordance with Paragraph 1 of this Article." (22)

20. R.J. ZEDALIS and C.L. WADE, "Anti-Satellite Weapons and the Outer Space Treaty of 1967", California Western International Law Journal, (1978), p.455.
21. D. GOEDHUIS, "The Changing Legal Regime of Air and Outer Space", International and Comparative Law Quarterly, (1978), p.585.
22. Article XV.

The development of ASAT systems has continued right up to the present since Sir Bernard Lovell commented recently that on January 21st, 1981 the target vehicle COSMOS 1241 was launched, COSMOS 1243, the interceptor satellite, being launched on February 2nd, with the aim of destroying the target vehicle. No mention is made as to whether it was successful or not (23).

The main defect with the Soviet ASAT system is that, unlike the U.S. system where the interceptor satellite will be launched from an air mobile launch platform, which can be flown to a point where the target can be reached at a certain time, the interceptor has to wait until a suitable launch "window" for a certain target appears, and this may take several days (24). It is because of the above defects that the Soviet Union has been working in recent years towards an operational directed energy weapon in which very highly charged atomic particles are projected at the speed of light at a target (25). This is not to assume that the U.S.A. has not been involved with this area of research, but just that the U.S.S.R. has had a stronger interest in particle beam research; the U.S.A. still being at the feasibility study stage.

Directed energy weapons fall into two categories comprising of high energy lasers and particle beam weapons. Since the engagement of these types of weapons against targets is virtually instantaneous in terms of actual engagement their potential is phenomenal, particularly against high velocity targets such as ballistic or guided missiles and satellites, both of which, it is alleged, could eventually be destroyed at a range of 3000 miles. At present the U.S.A. is more interested in high energy laser

23. SIR BERNARD LOVELL, How the Battle Lines were Drawn for the Space War, The Guardian, March 19th 1981.
24. F. ASBECH, "The Militarisation of Space", 2 Armament and Disarmament Information Unit Report, (1980), p.1.
25. G.S. ROBINSON "Soviets Push for Beam Weapon", 106 Aviation Week and Space Technology, (May 1977), pp.11 & 16.

technology, spending \$198.8 millions in 1980, as opposed to \$28.5 millions in 1980 on particle beam research (26), whereas the U.S.S.R. has tended to concentrate more on particle beam systems.

Before discussing the legal implications of the development of these systems it should be stressed that although they are still very much in the development stage, and both suffer from fundamental problems ranging from technological problems of beam penetration through the atmosphere, and beam control and direction over large distances, there are indications that these weapons will be operational in the foreseeable future. Additionally, though both systems were regarded in the past as being too large, immobile and requiring too great amounts of power, they are now very much more practical both in terms of size and cost effectiveness contrary to past opinions (27). This is established by the fact that the U.S.A. has succeeded in destroying a missile with a high energy laser mounted in an aircraft.

The first question that must arise on being presented with the possibility of directed energy weapons being placed in orbit, or on celestial bodies, or in space, is that do they fall within the category of "nuclear weapons or any kind of weapons of mass destruction", as contained in Article IV, Paragraph 1 of the Outer Space Treaty? In assessing whether such a weapon is within Article IV reference must be made to the nature of the beam being used. It is suggested by Zedalis and Wade that if the beam projected is a result of either the process of fission or fusion then it must be regarded as a nuclear weapon (28). It would appear therefore that only particle beam weapons would fall into this category since laser technology does not depend on the atomic processes of fission and fusion for its power. However, because of the high energy required to produce a

26. Supra Note 24.

27. Supra Note 24 at p.2.

28. ZEDALIS and WADE, (1978), p.466.

laser of the capacity needed to destroy a satellite it is possible that nuclear processes may be required in order to produce such a high energy laser. Even here it is possible that such a weapon is outside Article IV since it may be suggested that a directed energy weapon is only a nuclear weapon if the nature of the beam itself is of a nuclear character. This is not the case with a laser since this only consists of amplified light, however it may be conceivable, unlikely though it may be, that the power to produce a destructive beam may need the total capacity of a nuclear powerstation. In such a case would the beam then be considered to be a nuclear weapon? If it is the weapon would come within the auspices of Article IV, and if not the situation would arise that any high energy laser weapon of the type that the U.S.A. is concentrating on would be legal, whilst the U.S.S.R.'s particle beam weapon would be considered illegal since this operates by particles being charged through either of the two nuclear processes described above. It should, however, be borne in mind that either system could be regarded as illegal if they cause "superfluous injury or unnecessary suffering" contrary to Article 35 (2) of the Protocols Additional to the Geneva Conventions of 12th August, 1949, and Relating to the Protection of Victims of International Armed Conflict of June 1977 (29). It should also be noted that this provision is not new by any means since the Hague Convention (IV) Respecting the Laws and Customs of War on Land 1907, Article 23(e) states that it is forbidden to employ arms, projectiles, or material calculated to cause unnecessary suffering (30). The second question that may be asked of direct energy weapons is that is it possible to install such weapons on the Moon or other celestial bodies without being in breach of Article IV? Paragraph 1 of Article IV merely prevents the installation of "nuclear weapons or any other kinds of weapons

29. Command 6927; U.K. Misc. 19, (1977).

30. Command 5030; U.K.T.S. 9, (1910).

of mass destruction" on celestial bodies, and thus it is essential that directed energy weapons be defined as to whether they fall into either of these categories. It has already been seen above that it is possible that particle beam weapons could be classed as nuclear weapons, whereas high energy lasers are not and thus could be deployed quite legally on celestial bodies. It is also unlikely that either type of weapon could be classed as a weapon of mass destruction, as defined by A. J. Goldberg and C. R. Vance (31), since their primary role is an anti-satellite one. Depending therefore on how one defines a directed energy weapon there is nothing illegal in placing these weapons on celestial bodies, nor in placing them in orbit around such a celestial body. With regard to these types of weapons the question again must be put as to whether the term "celestial bodies" includes the Moon? With regard, firstly, to paragraph 1, if directed energy weapons are regarded as non-nuclear then, as already stated, such weapons could be put into orbit or installed on or around celestial bodies perfectly legally, and there would appear to be prima facie, no reason in Paragraph 1 why such weapons could not be placed into orbit or installed on the moon (32). If however, directed energy weapons are regarded as nuclear weapons then clearly the placing into orbit or the installation of such weapons around or on celestial bodies must be regarded as illegal, with the resulting problem of defining whether or not the term "celestial bodies" includes the moon. The problem is a significant one since if the term does exclude the moon there would appear to be no problem in either installing a directed energy weapon either on the moon or in orbit around it, and proceed to use it against either satellites or earth based targets.

31. Supra Note 8.

32. Article IV Paragraph 2 does not prevent the placing of weapons on the moon or on celestial bodies, but only the "testing of weapons on these bodies. However note the possible effect of the clause that the "moon and other celestial bodies shall be used ... exclusively for peaceful purposes". See below p.140.

It is suggested by Matte that the term "celestial bodies" does not include the moon:-

"... in accordance with the *stricto sensu* interpretation of the law of treaties, the fact that the expression "the moon and other celestial bodies" is used at the beginning of the second paragraph of the same article, and also in some other articles and more importantly in the title of the treaty might mean that the expression "celestial bodies" when used by itself should be interpreted as excluding the moon. The result of such an interpretation would mean that the installation of nuclear weapons on the moon would be permissible" (33).

Not all agree with Matte and J. E. S. Fawcett has stated that:-

"... the omission of the moon must either be intentional, or an egregious mistake, only to be saved by saying that the whole tenor requires that the expression "celestial bodies" in that sentence must include the moon." (34)

One solution to this problem of interpretation would be Article 31 of the Vienna Convention on the Law of Treaties 1969 (35), which entered into force on the 27th January 1980, and states:-

- "1. A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.
2. The context for the purpose of the interpretation of a treaty shall comprise in addition to the text ... its preamble and annexes ...
3. There shall be taken into account, together with the context:-
  - a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions.
  - b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation,
  - c) any relevant rules of international law applicable in the relations between the parties.
4. Any special meaning shall be given to a term if it is established that the parties so intended."

33. N. MATTE, Aerospace Law, Sweet and Maxwell, (1969), p.299.
34. J.E.S. FAWCETT, International Law and the Uses of Outer Space, Manchester University Press, (1968), p.35. Also C.K. WEHRINGER, "The Treaty on Outer Space", American Bar Association Journal, (1968), pp.586-587.
35. U.N. DOC.A/CONF. 29/27 May 22nd 1969; Command 4818; 63 A.J.I.L. (1969), p.875.

Clearly, by virtue of paragraph 1 above, any provision contained in the Outer Space Treaty must be interpreted in its context and in the light of its object and purpose, and thus since the purpose of Article IV of the treaty is to attempt to demilitarise space, then the moon should be interpreted as being included in the term "celestial bodies". Additionally since the Vienna Convention Article 31 Paragraph 1 states that treaties should be interpreted in their ordinary meaning, on looking at the term "celestial bodies" it would appear that the moon is such a body within the "ordinary meaning" of that expression. This textual approach thus tends to give a satisfactory result as far as Fawcett is concerned. However the Vienna Convention also permitted something of a qualification to this approach by incorporating a teleological approach within it by allowing further reference to the "object and purpose" of the terms of a treaty, though only when a "manifestly absurd or unreasonable" interpretation would result (36).

In adopting a teleological approach to the interpretation of the term "celestial bodies" difficulties of the type enunciated by Matte (37), could easily occur, since Article IV does appear to make a distinction between that term and the moon, and the international courts will not give effect to the object and the purpose of the treaty if the outcome of this would be to override the clear meaning of the text (38). However, the international courts, as in the Corfu Channel case (39), do have a discretion in taking the teleological approach, in the sense of giving effect to its object and purpose, as summed up in the maxim *UT RES MAGIS VALEAT QUAM PEREAT*, in providing a solution. The great danger with this approach, in a radical form is of not merely interpreting the treaty but

36. Ibid, Article 32.

37. MATTE, (1969), p.299.

38. Interpretation of Peace Treaties Case (Second Phase) I.C.J. REPORTS (1950), p.221.

39. I.C.J. REPORTS (1949), p.4.

actually amending it in order to give effect to what is thought to be the correct purpose of the treaty, thus achieving an interpretation not contemplated by the parties. Indeed it was stated in the South West Africa Cases that such an approach does not warrant an interpretation which revises a treaty or operates contrary to the letter or spirit of a treaty (40).

Quite apart from the above methods of interpreting Article IV Paragraph 1 a further method of interpretation may be used which is normally called the "intention of the parties" or "founding fathers" school of interpretation, as embodied in Article 31 Paragraph 4 of the Vienna Convention. Such a principle of interpretation may include the moon in the "celestial bodies" term of Paragraph 1 because the hallowed principle of the Outer Space Treaty is that the:

"... use of outer space including the moon and other celestial bodies shall be carried out for the benefit and in the interest of all countries." (41)

Further in the preamble to the treaty it is stated:-

"The States Parties to this Treaty ... Recognising the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes; believing that the exploration and use of outer space shall be carried on for the benefit of all people ..." (42).

Thus, further authority is given to the principle of interpretation as contained in Article 31 Paragraph 4, as has the General Assembly Resolution 1962 (XVIII) (43), and General Assembly Resolution 1884 (44), both of which were recalled in the preamble to the Outer Space Treaty, and both of which were expressly drafted to prevent the deployment of arms in space. Similar authority is found in Article IV Paragraph 2 of the Outer Space Treaty itself where there is a requirement that the moon and other celestial bodies shall be used for peaceful purposes.

40. SOUTH WEST AFRICA CASES, 2nd PHASE, I.C.J. Reports (1966) at p.48.

41. Outer Space Treaty, 1967, Article 1, Paragraph 1.

42. Preamble to the Outer Space Treaty, 1967.

43. G.A. RESOLUTION 1962 (XVIII); U.N. DOC.A/C1/L331 (1963).

44. G.A. RESOLUTION 1884 (XVIII); U.N. DOC.A/C1/L34A/RES/1884 (1963).

It would appear therefore that if the three principles of treaty interpretation are applied to Article IV Paragraph 1 then the term "celestial bodies" would be interpreted so as to include the moon and thus any deployment of nuclear weapons on or around the moon would be in contravention of Article IV Paragraph 1 and illegal. Thus any directed energy weapons, classified as nuclear weapons, placed on or around the moon would be in violation of international law (45).

In the above discussion relating to the use of directed energy weapons in orbit around celestial bodies or the moon, and the stationing of such weapons on those bodies it was assumed that these weapons were nuclear devices. The conclusion drawn from that assumption was that such weapons would violate international law if they were placed in orbit, installed on celestial bodies (a term which was interpreted as including the moon), or stationed in outer space. What would be the position however if such weapons were not regarded as nuclear weapons (nor weapons of mass destruction)? It is well established that neither the placing in orbit, the stationing in space, nor the installation of conventional weapons on celestial bodies is in violation of international law (46). However it should be borne in mind that the preamble to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed To Be Excessively Injurious Or To Have Indiscriminate Effects, recalls that it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the environment (47). If the term "celestial body" is correctly held to include the moon then there would appear to be no restriction on the use of conventional weapons on the moon. However the

45. ZEDALIS AND WADE, (1978), p.466.

46. MARKOFF, (1976), p.16.

47. United Nations Conference on Prohibitions or Restrictions of Use of Certain Conventional Weapons: Final Act U.N. DOC.A/CONF. 95/15 of October 27th 1980. I.L.M. Vol.XIX No.6, November 1980, p.1523.

provisions of Article 1 Paragraph 1 must be read in the light of Paragraph 2 which declares that:-

"The moon and celestial bodies shall be used ... exclusively for peaceful purposes ... The establishment of military bases, installations and fortifications, the testing of ANY type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden." (48)

The term "install", as stated above (49), would tend to suggest more than mere presence on a celestial body and would tend to imply a degree of permanence. If that is the case there would seem to be no objection to the temporary placing of a conventional weapon on a celestial body prior to it being stationed in outer space or placed in orbit around a celestial body. Similarly there would appear to be no objection, at least initially, to the building of a conventional A.S.A.T. weapon on a celestial body prior to it being stationed in space or placed in orbit around a celestial body. It is almost certainly to prevent such an eventuality that Paragraph 2 declares that "the moon and celestial bodies shall be used ... exclusively for peaceful purposes" and forbids "the testing of any type of weapons." Thus while it may appear to be possible to place a conventional weapon on the moon it is thought that the provision declaring the moon to be used "exclusively for peaceful purposes" will be a bar to this type of action, although the actual meaning of this phrase is open to debate and will be discussed below.

A further point of discussion affects Article IV of the Outer Space Treaty and that is that Paragraph 1 only deals with nuclear weapons which orbit around the earth, are installed on celestial bodies, or are stationed in space. As mentioned earlier (50) no reference is made to weapons such as I.C.B.M.s which do not complete a full orbit and thus do not come

48. Article IV Paragraph 2 (emphasis added).

49. Supra at p.128.

50. Supra at p.127.

within Paragraph 1 (51). The requirement to make one full orbit before a weapon comes within the treaty has been open to question (52) since there is nothing in Article IV Paragraph 1 that requires a full orbit to be made. Zedalis and Wade (53) suggested that the proper method to decide whether or not an object came within Paragraph 1 should not be based on a directional or locational definition (i.e. one that would require a full orbit), but on the absence or existence of a time analogy between the weapon launched and that of an I.C.B.M. Thus if the length of time spent in space is comparable to that of an I.C.B.M. then the use of that weapon is permissible. Such a method of assessing the legality of a weapon, though it may be consistent with the intentions of the U.S.A. and U.S.S.R. in that there was no intention to restrict the use of I.C.B.M.s (54), is, it is suggested, impracticable since it is unrealistic to expect states to time a missile in order to decide whether or not the nuclear weapon launched is a I.C.B.M. or an orbiting weapon.

Any suggestion that the Outer Space Treaty applies to weapons placed in partial orbit, because of the lack of definition of the term "orbit", is also without foundation, since as stated above it was the clear intention of the U.S.A. and U.S.S.R. that I.C.B.M.s would be excluded from the provisions of the treaty. This may be shown by the fact that prior to the signing of the treaty it was disclosed to the United States Congress by Secretary of Defence McNamara that the U.S.S.R. had developed fractional orbital bombardment system (F.O.B.S.). In his report to Congress, McNamara was questioned as to whether such a weapon violated Article IV Paragraph 1 and he stated that:-

51. M.G. MARKOFF, "Disarmament and the 'Peaceful Purposes' Provision in the 1967 Outer Space Treaty", 4 Journal of Space Law, (1976) p.4. E. STEIN, "Legal Restraints in Modern Arms Control Agreements", American Journal of International Law, (1972), p.255.
52. S. GOROVE "Arms Control Provisions in the Outer Space Treaty: A Scrutinising Reappraisal" 3 Georgia Journal of International and Comparative Law, (1973), p.116.
53. ZEDALIS and WADE, (1978), pp.464 & 465.
54. MATTE, (1969), p.240.

"... the so called F.O.B.S. would not accomplish a full orbit ... and was, like ballistic missiles that go through space in their trajectories, not covered by the treaty and thus are no more than I.C.B.M.s." (55)

That the treaty covers weapons which do not complete one full orbit is further disputed by reference in the treaty to "station". This term is thought to refer to geostationary orbit (56), whereby an object, as already stated in Chapter 1, orbits the earth in a fixed orbit in relation to a point underlying the satellite and at the same rotational speed of the earth. If this is the case then the orbiting object need never make more than one orbit of the earth since it appears to hang above the planet, and thus would be outside the ambit of Article IV Paragraph 1. In order to prevent this interpretation the treaty expressly forbids the stationing of nuclear weapons above the earth. Two additional factors should perhaps be noted here; firstly, as already stated, the term "station" is thought by Poulantzas (57) to go further than just geostationary orbit, but includes every manner in which nuclear weapons might be placed in space or on or around celestial bodies, because the actual phrase used in Paragraph 1 is "... station such weapons in outer space in any other manner" (58). Secondly, there would appear to be no restriction on orbiting nuclear weapons or weapons of mass destruction around celestial bodies since the actual wording relating to orbiting in Paragraph 1 relates only to the earth. Two explanations may account for this apparent omission in Paragraph 1. Firstly, the placing of such a weapon in an orbit around a celestial body other than the earth would be of no practical significance at the present time nor in the foreseeable future; and secondly, if the wide interpretation of the term "station" as explained by Poulantzas was intended then such action would be considered illegal anyway.

55. Ibid.

56. GOROVE, (1973), p.117.

57. POULANTZAS, (1967), pp.67-68.

58. Article IV Paragraph 1.

2. THE INTERPRETATION OF THE TERM "PEACEFUL" IN ARTICLE IV PARAGRAPH 2

The second paragraph of Article IV Paragraph 2 states that:-

"The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for the peaceful exploration of the moon and other celestial bodies shall also not be prohibited."

This paragraph contains one of the most controversial aspects of the Outer Space Treaty, in that the term "peaceful" has been given two conflicting interpretations. The first interpretation, which is supported by the authorities of several Western States, states that the term "peaceful" means that activities in space should be of a "non-aggressive" nature (59). The effect of this interpretation is that all military non aggressive action is permitted, subject to those activities actually prohibited under Article IV Paragraph 1. It is the lack of prohibitive measures which is pointed to as being evidence, according to this "non-aggressive " theory, that "peaceful" does not mean "non-military". Such an interpretation was adopted in the debate on the Treaty's notification by the Senate Committee on Foreign Relations (60).

The second school of interpretation takes the term "peaceful" as meaning "non-military", and thus precluding all military involvement in space, even those concerned with defensive measures. This interpretation takes the

59. Staff of the U.S. Senate Committee on Aeronautical and Space Sciences 90th Congress 1st Session, Report on the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies: Analysis and Background Data 1967 p.26 (in future cited as "Staff Report"). Also A. MEYER, "Interpretation of the Term "Peaceful" in the Light of the Space Treaty", Proceedings of the 11th Colloquium on the Law of Outer Space, (1969), p.24.
60. Treaty on Outer Space, Hearing on Executive D Before the Committee on Foreign Relations, U.S. Senate, 90th Congress, 1st Session 1967, p.59.

diametrically opposing view that no military activities can be conducted on the moon and other celestial bodies, except those specifically permissible under Paragraph 2, i.e. the use of military personnel for scientific research. Such a view has predominated mainly in the Soviet Union and in the opinions of Soviet writers (61), though not exclusively so (62). However it should be noted that Article IV Paragraph 2 alone cannot justify such an argument in favour of a ban on military activities in SPACE since this area is not included in the paragraph, which relates only to the "Moon and other celestial bodies".

The first school of interpretation refers to several factors as being authority for their view. Firstly since Article III of the Outer Space Treaty adopts international law and the Charter of the United Nations, this is referred to for the meaning of the term "peaceful", and it is pointed out that the Charter does not prohibit military activities in general but merely outlaws threats to peace, breaches of peace, and acts of aggression (63). Secondly, in the view of Markoff, the non-aggressive interpretation of "peaceful" lies in the failure of a complete disarmament in outer space. He suggests that this failure was in turn based on the lack of international control over the development and deployment of all arms, whether nuclear or conventional, and that without such controls it is unrealistic to attempt to prohibit intercontinental missiles or non-nuclear,

61. G.P. ZHUKOV "On the Question of the Interpretation of the term "Peaceful Uses of Outer Space", Proceedings of the 11th Colloquium on the Law of Outer Space", (1969)
62. C. CHAUMONT "Le Droit De L'Espace", 1970, p.96, D. GOEDHUIS, "General Questions on the Legal Regime of Space in the International Law Association", 50th Report 1962. Both quoted in M.G. MARKOFF, "Disarmament and 'Peaceful Purposes' Provisions in the 1967 Outer Space Treaty", 4 Journal of Space Law, 1976, p.7 note 13.
63. S. GOROVE referring to Article 2 U.N. Charter in "Arms Control Provisions in the Outer Space Treaty: A Scrutinising Reappraisal", 3 Georgia Journal of International and Comparative Law, (1973),

military, space objects (64). The supporters of this definition also point to the fact that if the Outer Space Treaty intends to prohibit certain activities it should expressly state them. Thus Finch in "Outer Space for Peaceful Purposes" states:-

"It should be noted that when an express prohibition is intended, the Treaty clearly does so, such as its prohibition against "the testing of any types of weapons" in outer space in Article IV. No such similar prohibition is recited against military activities per se. The "Treaty must be read as a whole ... military personnel are expressly authorised" for scientific research or for any other "peaceful purposes". How can it now any longer be said in the light of this language, that "peaceful purposes" means non-military?" It can only mean "non-aggressive". (65)

The treaty appears then to be quite clear that if military personnel or equipment are used there is no automatic breach of the "peaceful purposes" provisions as defined by the supporters of the non-aggressive theory (66). It follows therefore that only "an attack upon, or stress against, the territorial integrity and independence of another state ..." violates the peaceful purposes clause (67). Thus because the treaty fails to strike out all possible military activity then any suggestion that "peaceful purposes" means anything else but non-aggressive should be regarded as erroneous. However Zedalis and Wade state that this approach to justify the non-aggressive interpretation fails to point out that because military personnel are used for scientific research this does not necessarily imply that non-aggressive military activity can be undertaken. The fact that the use of military personnel and equipment is permitted only reflects upon the nature of the character and not upon the purpose of the undertaking (68). This comment is given added authority by Markov in that,

64. M.G. MARKOFF, "Disarmament and "Peaceful Purposes" Provisions in the 1967 Outer Space Treaty", 4 Journal of Space Law, (1976), p.7.

65. E.R. FINCH, "Outer Space for Peaceful Purposes", 54 American Bar Association Journal, (1965), pp.365-366.

66. E. GALLOWAY, "Interpreting the Treaty on Outer Space", Proceedings of the 10th Colloquium on the Law of Outer Space, (1967), pp.143 & 145.

67. A. MEYER, "Interpretation of the Term "Peaceful" in the Light of the Space Treaty", Proceedings of the 11th Colloquium on the Law of Outer Space, (1968), p.27.

68. ZEDALIS and WADE, (1978), p.472.

"The basic criterion for "peaceful" ... is not the civil or military status of the crew or of the installations on board a space engine, but the real purpose of a given space activity. Its goals are to be revealed given the specific object of the mission as well as by the resulting records." (69)

The advocates of the second school of interpretation, that "peaceful purposes" means "non-military", also rely on several factors as being in support of their interpretation of Article IV Paragraph 2. One method used to justify this interpretation is to examine other treaties with analogous provisions. The most well known of these is the Antarctica Treaty of 1959 which entered into force in 1961, Article I of which states:-

- "1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, inter alia, any measures of a military nature, such as the establishment of bases and fortifications, the carrying out of military manoeuvres, as well as the testing of any type of weapons.
2. The present Treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose". (70)

The term "peaceful" in this treaty has been held out as signifying complete demilitarisation (71). A similar interpretation is placed on Article II of the Statute of the International Atomic Energy Agency, 1956 (72) which states:-

"The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose." (73).

The supporters of the "non-military" interpretation see a direct interpretative connection between these two documents and Article IV Paragraph 2

69. M.G. MARKOV, "The Juridical Meaning of the Term 'Peaceful' in 1967 Space Treaty", Proceedings of the 11th Colloquium on the Law of Outer Space, (1968), p.34.
70. 402 U.N.T.S. 71; 54 American Journal of International Law, (1960), p.477.
71. G. GAL, "The Peaceful Uses of Outer Space - After the Space Treaty", Proceedings of the 10th Colloquium on the Law of Outer Space, (1967), p.135.
72. 276 United Nations Treaty Series 3; T.I.A.S. 3873; U.S.T. 1093, (1956).
73. G. GAL, (1967). S. GOROVE, "Distinguishing "Peaceful" from "Military" Uses of Atomic Energy: Some Facts & Considerations", 30 Ohio State Law Journal, (1969), p.495.

of the Outer Space Treaty, so as to provide a solution to the problem of the meaning of the term "peaceful". Thus,

"That "peaceful" signifies, according to the genuine semantic sense of the word, "non-military", and not merely "non-aggressive" in the language of all newly created international agreements, is to be seen in Article II of the Statute of the Atomic Energy Agency and particularly in Article I of the 1959 Antarctic Treaty, where the provision "Antarctica shall be used for peaceful purposes only" covers a regime of complete disarmament and non-militarisation of that area.

"Any measure of a military nature" (second sentence of Article I) is expressly prohibited. The analogy between this text and Paragraph 2 of the 1967 Treaty is obvious." (74)

Another factor relied on by the "non-military" school is that it is inconsistent with Article 31 Paragraph 2 of the Vienna Convention to interpret Article IV Paragraph 2 in vacuo from the rest of the treaty. This constructional approach to defining the term "peaceful" would seem to require some reference to Article I Paragraph 1 of the treaty, which states:-

"The exploration and use of outer space, including the Moon and other celestial bodies shall be carried out for the benefit and in the interests of all countries irrespective of their degree of economic or scientific development, and shall be the province of all mankind". (75)

Since this article requires that space activities be carried on for the benefit and in the interests of all countries it is alleged that although the defensive uses of outer space with conventional weapons is not expressly prohibited, it must be regarded as contrary to the general principle set out in Article I. In the opinion of several writers (76) the justification for such an interpretation is that no military activity could be carried "in the interest of all countries" since by its nature it can only be in the interest of one state, or at best a group of states. Whilst it must be said that

74. M. MARKOFF, "Disarmament and 'Peaceful Purposes' Provisions in the 1967 Outer Space Treaty", 4 Journal of Space Law, (1976), p.19.

75. Outer Space Treaty 1967 Paragraph 1.

76. MARKOFF, (1976), p.7; MARKOV, (1968), p.31; G.P. ZHUKOV, "On the Question of Interpretation of the Term "Peaceful Uses of Outer Space" Contained in the Space Treaty", Proceedings of the 11th Colloquium on the Law of Outer Space, (1968), pp.36-38.

anything less than non-military would appear to be inconsistent with Article I, it must be pointed out that the three fundamental articles of the treaty, namely Articles I, II and III, which provide the basic principles and rules of space law, do not make any reference to the term "peaceful". Indeed it is significant to the whole question of the interpretation of the term "peaceful" in Article IV Paragraph 2 that during the drafting of the treaty an attempt was made to include the term in Article I but failed to have the unanimity required (77). Similarly, a further proposal by India to widen the area of application of the clause "exclusively for peaceful purposes", as contained in Article IV Paragraph 2, to the entire area of outer space generally also failed to gain the necessary support, primarily because the treaty did not, as already examined, exclude all military activities and therefore such an application of the clause would be inconsistent with the rest of the treaty (78). Though the term "peaceful" occurs in the preamble there is nothing in that to indicate how the term may be interpreted, and anyway in this context it can only be regarded as a declaration of intent or expectation in which "everybody shares and believes in" (79), but has no binding force as a contractual obligation of the treaty.

It has been said that the attempt to have the term "peaceful" included in Article I, and to widen the application of the clause "exclusively for peaceful purposes", failed because states could not have assumed such a step in isolation from an undertaking to negotiate general disarmament measures (80), since in essence this is what they would be doing in taking

77. U.N. DOC.A/AC 105/C2/S.R.65 (1966), p.11.

78. U.N. DOC.A/AC 105/C2/S.R.66 (1966), p.6.

79. A.J. GOLDBERG, Ambassador of the United States to the United Nations, Hearings on Executive D Before the Committee on Foreign Relations, U.S. Senate 90th Congress, 1st Session 1967, p.6.

80. U.S.S.R. representative Mr. Morozov in U.N. DOC.A/AC 105/C2/SR66 1966, pp.6-7.

such action. Any attempt to adopt such a course would have been contrary to the whole tenet of the Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space, which has never been authorised to take any action in the area of general disarmament (81). It would perhaps be said that it is because of these restrictions on states that Article I Paragraph 1 has been drafted in its present form and thus an attempt has been made to formulate the principle of non-military use of space by way of reference to the "common interests" provision rather than the term "peaceful" in order to avoid any conflict with general disarmament issues. Thus the "non-military" military school of interpretation has attempted to show that Article I Paragraph 1 really means that space should only be used for "peaceful purposes" and that this term in this context excludes all military uses of outer space.

In order to establish the above interpretation of Article I Paragraph 1 the "non-military" school rely heavily on the discussions which took place between Arthur Goldberg, U.S. Ambassador to the U.N. and the Senate Committee on Foreign Relations in order to obtain their consent and approval of the signed treaty. In the Legal Sub-Committee, prior to these negotiations, there had been a proposal by the Indian delegate that the clause "the benefit and interests of all countries" in Article I Paragraph 1 should be removed and placed in the preamble (82) where it would cease to form part of any contractual obligation. This proposal was rejected by the Legal Sub-Committee, and Article I paragraph 1 was then unanimously accepted in the present form.

By leaving Article I in its original form and rejecting the attempt to remove part of it into the preamble must by implication have shown an intention to treat the article as binding under international law. However

81. MARKOFF, (1976), p.10.

82. U.N. DOC.A/AC 105/C2/SR63 (1966), p.7.

during the hearings of the Senate Committee on Foreign Relations, the U.S. Ambassador denied that there was any such obligation, stating that Article I was "quite general in character" and "intended to be a statement of goals and objectives" only. (83)

To understand the response to these comments by the Senate Committee one should be aware of the fact that international law consists of two types of provisions - those that are prohibitive and those that are said to be dispositive. Prohibitive provisions are proscriptive in their character and may permit only certain types of action or prohibit certain types of conduct, i.e. they may be of a positive or negative nature. Dispositive provisions, however, only establish guides to the aspirations and consensus of member states, to be more strictly defined into prohibitive provisions at a later stage, though they are not necessarily of a pactum do contrahendo nature. Nevertheless, dispositive provisions if they form part of the body of the treaty are regarded as binding, and their violation is regarded as illegal (84). Article I Paragraph 1 is regarded as a dispositive provision in that it establishes prescriptive guidelines to be followed in the exercise of permissible conduct, and thus every state party to the treaty must give effect to the principles contained in the article. Thus, any party exploring or using outer space will be required to do so "in the interest of all countries", and since military activity is regarded as only benefitting one country this must be regarded as illegal (85).

During the meeting of the Senate Committee on Foreign Relations several members of the committee expressed concern that Article I Paragraph 1 seemed "vague" (86) and uncertain. The Ambassador then stated that the

83. Supra note 79 at p.52.

84. ZEDALIS and WADE, (1978), p.478.

85. A. AMBROSINI, "The Meaning of the Romantic Enunciations of Article I, Paragraph 1 of the Space Treaty of January 1967", Further Outlooks on Space, No.11 as cited in ZEDALIS and WADE (1978), p.479.

86. Supra Note 79.

Article I provision was of a non-obligatory nature and that it was only intended to be a statement of a general principle that would require further discussions before it would be considered as binding rule of international law (87). This response by the Ambassador must be regarded as erroneous even if Article I Paragraph 1 is interpreted as dispositive, since such provisions are still binding on states party to the treaty in that they must act in accordance with the provisions albeit statements of general principles or aspirations (88). It would seem that the Senate Committee also remained unconvinced by the response of the Ambassador and indeed seemed to indicate that he had given away a great deal more than he had intended to, that is the possible military potential of space. Indeed it was stated by Senator Gore as follows:-

"If Article I were a preamble that would be one thing. But it is an article, and a treaty obligation, and I think it brings us into an obligation to make the use of outer space available to all countries, to treat our use of that for the benefit and in the interests of all countries. Indeed that is exactly what it says." (89)

Ambassador Goldberg in order to support his statement that Article I did not confer any obligation on the United States also stated that this was a non self-executing provision. The concept of the self-executing and non self-executing provision is not known in English Law, since here the method by which a treaty is recognised in domestic law is an attempt to reconcile the powers of the executive with those of the legislative. This reconciliation is required because otherwise it could be possible for the executive to alter the domestic law without the need to consult Parliament. Because of this treaties subject to ratification are subject to the constitutional convention entitled the "Ponsonby Rule" whereby they are laid on the tables of both Houses for 21 days prior to ratification (90). Not all

87. Supra Note 79 at pp.12 & 35.

88. Supra Notes 84 & 85.

89. Supra Note 79 at p.59.

90. J.D.B. MITCHELL, Constitutional Law, W. GREEN & SONS, (1968), p.179.

treaties require legislation in order to enact the provisions of the treaty, and generally speaking it is only those which affect the private rights of British citizens, or involve any modification of the common or statute law, or impose financial obligations on the Government, or involve the cession of British territory, inter alia, that require enacting legislation.

The United States concept of self-executing and non self-executing treaties is not based on the reconciliation of the powers of the executive and the legislative, but on the United States Constitution, which by Article VI Paragraph 2 declares that treaties are "the supreme law of the land". However while all treaties become part of the U.S. Legal system, the courts have declared that certain treaties, i.e. non self-executing ones, require legislation in order to be adopted and applied within the domestic legal system. Whether a treaty or the provisions of a treaty are self-executing or not is found by examining the intention of the signatories and any other relevant factors. Thus in *SEI FUJII v THE STATE OF CALIFORNIA* (91) it was held that the human rights provisions in the Charter of the United Nations were not self-executing, whereas the articles conferring rights and privileges on the United Nations were self-executing. In the light of the self-executing and non self-executing doctrine it would seem that the Ambassador, by alleging that Article I Paragraph 1 was non self-executing, was attempting to reduce, if not extinguish, the binding nature of international law on the United States domestic arena. Certainly if the article is non self-executing then the American courts will not be bound until the relevant legislation is passed. Nonetheless by virtue of the Constitution of the United States it is regarded as a binding force. As explained by M. Markoff it is:-

91. Supreme Court of California, 38 CAL. (2d), (1952), p.718.

"The efficacy, not the validity of the norm or its binding force, (which) is affected by its non self-executory nature."  
(92)

In reply to the Ambassador's comments Senator Gore, who seemed clearly unimpressed with the whole handling of the acceptance of the "common interests" provision in Article I by the U.S. negotiators commented:-

"Any article is operable. If this were a preamble it might be interpreted in one way, but this is not a preamble. Article I is just as operable as Article IV or Article V or Article VII and this business of the treaty being non-operable in part and operable in other parts, self-executing in part and non self-executing in part is ambiguous." (93)

After the above debate in the Senate Committee it was proposed that a reservation should be adopted on the interpretation of Article I so that any possible national interests would not fall into the area of operation of the "common interests" expression. This proposal has been interpreted as indicating that the United States reserved the right to use outer space for "non-aggressive" military activities (94). No official reservation has ever been put forward by the United States, primarily because the treaty had then been signed, and to do so at that point would have created "very substantial" difficulties (95). However the fact cannot be avoided that the United States, having realised that it had perhaps given away more than was intended, only recognises Article I Paragraph 1 as being a dispositive statement of general objectives and aspirations to be considered when planning activities in space.

It would appear therefore that there is a possibility that Article I is attempting to prevent any military involvement in space, as endorsed by the informal reservation of the United States. It would also appear that this reservation has no validity anyway in international law since the

92. MARKOFF, (1976), p.13. Emphasis has been added.

93. Supra Note 79 at p.33.

94. MARKOFF, (1976), at p.14.

95. MR. D. RUSK, Secretary of State, Ibid Note 79, at p.37.

Vienna Convention on the Law of Treaties makes no provision for such a reservation (96), and thus the United States would continue to be bound by the provisions of Article I, assuming that is that they are of an obligatory nature. Although the above interpretation of the United States' involvement with Article I and the ineffectiveness of the reservation may be correct, the poor drafting of that Article may give the United States an alternative method of avoiding the provision by way of the principles contained in the Lotus Case (97). In this case it was stated that if no principle of international law exists prohibiting a state from asserting jurisdiction, then that state may make such an assertion. Applying this logic to Article I it could be argued that, because of its lack of clarity, non aggressive military activities are not prohibited, and thus the United States is free to involve itself in such activities. While such an argument could be founded it is generally regarded as untenable in modern international law since it would tend to undermine the whole concept of *pacta sunt servanda*.

The use by the "non-military" school of Article I Paragraph 1 in the interpretation of the term "peaceful" in Article IV Paragraph 2 is convincing, since it is reasonable to say that the prohibitive provisions of the Outer Space Treaty should be read in the context of the dispositive provisions in Article I Paragraph 1. Such an approach would be consistent with Article 31 of the Vienna Convention which would seem to indicate that the treaty should be read as a whole (98).

However a rider should be added to this line of interpretation since Article IV Paragraph 2 does not state that outer space shall be used for "peaceful purposes", but "that the Moon and other celestial bodies shall be used by

96. Article 23.

97. THE S.S. LOTUS, (1927), P.C.I.J. Rep. Ser A, No.10 J.L. BRIERLY, "The Lotus Case", 44 Law Quarterly Review, (1928), p.154.

98. Vienna Convention of the Law of Treaties 1969 Article 31, Para.2.

all States Parties to the Treaty EXCLUSIVELY for peaceful purposes" (99). Thus there is a clear distinction made between the Moon and celestial bodies and deep space and earth orbital space, which would tend to suggest that non-aggressive military activity may take place in the latter areas (100). It has been put forward that the term "peaceful" in this context is meant to allow the use of these areas for "defensive" military activities (101), and indeed to allege that defensive action in space is illegal could be interpreted as being contrary to the right of self defence as contained in Article 51 of the Charter of the United Nations.

Certainly such an approach would tend to correspond to the different levels of intensity to which the expression "peaceful" is put in the treaty. Additionally such an approach would relate to the present practice of states and the apparent customary rule allowing the use of military non-aggressive satellites. It has been stated that such practice of states is "irrelevant" and that "no consensus could be presumed on the basis of a practice limited to a few states" (102). This must be regarded as unrealistic since the fact that states have chosen to ignore the non-military definition must make it relevant, and provide at the very least a tacit consensus on the use of outer space for non-aggressive purposes. Even if the term "peaceful" can be interpreted as meaning "non-military" it is quite apparent that such an interpretation is unworkable in the present day context. The reason for this was summed up very early on by the Soviet writer Larionov:-

"Indeed it is not always possible to draw a line of distinction between the exploration of outer space for military and peaceful purposes, because a rocket carrier can equally place in orbit around the earth a spy satellite, intended for reconnoitering ground objectives, and a weather-mapping satellite or a civilian telecommunications satellite." (103)

99. Emphasis has been added.

100. With the exception of nuclear weapons etc. as restricted by Article IV Paragraph 1.

101. J.E.S. FAWCETT, International Law and the Uses of Outer Space, Manchester University Press, (1968), p.35.

102. MARKOFF, (1976), p.14.

103. V. LARIONOV "The Doctrine of Military Domination in Outer Space", International Affairs, (1964), p.25.

The traditional Soviet view that "peaceful" means non-military has undoubtedly undergone a complete change, and over the years their ability to criticise the surveillance satellites has been restricted by their approval of reconnaissance satellites to monitor compliance with Strategic Arms Limitation Treaties. Thus Article IV of the unratified SALT II reads:-

"... each party shall use national technical means of verification at its disposal in a manner consistent with generally recognised principles of international law." (104)

Such a change was bound to occur since to suppose that the techniques used to detect fish at depths of up to 200 feet would not be employed to detect submarines (105) would display extreme naivety. Similarly it would be fatuous to argue for the complete demilitarisation of space whilst being engaged on "killer satellite" research (106).

## CONCLUSION

The provisions of the Outer Space Treaty undoubtedly reflects the concern of mankind at the need to prevent the spread of the arms race into a new environment. In 1973 it was stated that Article IV Paragraph 1 "should be hailed as a significant step in this general direction" (107), and while this was undoubtedly true, the word "general" in this statement must reflect the impace of Article IV in practice. It is also consistent with the above statement to state that Article IV mirrors the state of world politics with all its suspicions, and the reluctance on the part of the super-powers to adopt an attitude of complete disarmament in space. This reluctance may be seen in the persistance of these powers, particularly it would seem the U.S.S.R. to develop anti-satellite systems. Research on these systems has

104. SALT II 79 Dept. State Bull. 23, 1979.

105. E.R. FINCH and A.L. MOORE, "Outer Space Can Help the Peace", International Lawyer, (1973), p.897.

106. ZEDALIS and WADE, (1978), pp.454 & 455.

107. S. GOROVE, "Arms Control Provisions in the Outer Space Treaty: A Scrutinising Reappraisal", Georgia Journal of International and Comparative Law, 1973 p.123.

gone on unrestrained merely because conventional weapons, on the wording of Article IV, may be used or stationed in space, and may be put into orbit around the Moon, celestial bodies or even the earth itself. A similar attitude is taken with regard to nuclear weapons since there are no restrictions on I.C.B.M.s, which because they do not complete a full orbit do not fall within the treaty (108). Perhaps most importantly of all is that while Article IV, and its *raison d'être* - Article I Paragraph 1 purports to reserve certain parts of the environment for "peaceful purposes", there is no agreement as to the correct interpretation of the term "peaceful" itself.

The different interpretations of "peaceful" have indeed produced some astounding inconsistencies on the part of some observers. Thus, Markoff rightly or wrongly appears to point to the fact that the United States interpretations of "peaceful" as meaning non aggressive is artificial, and an excuse for militaristic adventures in space. He also seems to state that the United States interpretation is inconsistent with the proceedings which took place before the Committee on the Peaceful Uses of Outer Space, and the enquiries made of its United Nations Ambassador before the Senate Committee as discussed above (109). While pointing out these inconsistencies he fails to balance the point to the same extent in that the U.S.S.R., while apparently adopting a non-military interpretation of the term "peaceful", is in fact openly engaged in research on "killer satellites" (110). Further inconsistencies are also pointed out by Jaksetic (111); thus, Vereshetin has stated that the Outer Space Treaty provided for the complete demilitarisation of the Moon and other celestial bodies, but only partial demilitarisation of outer space (112); Zhukov has stated that the principle

108. Ibid at p.116.

109. MARKOFF, (1976), p.8.

110. ZEDALIS and WADE, (1978), pp.454 & 455.

111. E. JAKSETIC, "The Peaceful Uses of Outer Space: Soviet Views", American University Law Review, (1979), p.495.

112. V.S. VERESHETIN, "Basic Principles of Space Law", Soviet Yearbook of International Law, (1968), p.125.

of the peaceful uses of outer space does not preclude retaliation against an aggressor made via outer space, provided it is in accordance with Article 51 of the Charter of the United Nations (113); Hopkins has stated that the use of satellites for military surveillance is aggressive because it threatens the territorial integrity and national sovereignty of the nation state under surveillance (114); finally, Kolosov has stated that satellites may be used to ensure compliance with certain treaties such as the Anti-Ballistic Missile Treaty of 1972 (115). All these statements are a complete departure from the Soviet interpretation of "peaceful" as meaning non-military. Russian theory on the peaceful uses of outer space and its practice are clearly contradictory.

In the light of current state practice it is suggested that Article IV of the Outer Space Treaty only establishes a dispositive principle in that it lays down proscriptive guidelines, that are to be followed when utilising outer space. Such a line of thought is particularly more acceptable than the suggestion that Article IV establishes a prohibitive principle, when it is considered that the Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space was not, in the opinion of Markoff, authorised to take any decision in the field of general disarmament (116). However whilst states are supposed to comply with the principles contained in Article IV it is clear that no such regard is being paid to the article, and, thus it would appear that the non-military interpretation of the article has given way to a customary international rule permitting the military use of space, supposing such a rule was required anyway because of the restrictive area of application of Paragraph 2. Indeed, there could be no other

- 113. G.P. ZHUKOV, "American Plans for the Use of Outer Space with Aggressive Purposes and the Security of States", Soviet Yearbook of International Law, (1962), pp.202 & 203.
- 114. G.L. HOPKINS, "Legal Implications of Remote Sensing of Earth Resources by Satellite", Military Law Review, (1977), pp.57,85 & 86.
- 115. Y. KOLOSOV, "Space and International Law", International Affairs, (1977), pp. 54 & 58.
- 116. MARKOFF, (1976), p.10. As regards the Moon and celestial bodies Article IV would of course be regarded as a prohibitive principle.

explanation for the signing of the Treaty on the Limitation of Anti-Ballistic Missile Systems, which specifically allows a state party the use of "national technical means of verification at its disposal in a manner consistent with generally recognised principles of international law" (117). Perhaps complimenting the above argument is the suggestion that it is erroneous to attempt to analyse the provisions of Article IV in isolation from the whole question of nuclear strategy. The basis of nuclear strategic deterrence lies on what has been described as the "balance of power" between the United States and the U.S.S.R. In reality this should be termed "mutually assured destruction", for the whole basis of nuclear deterrence is the threat that any attempt at a pre-emptive strike will be met by final and total destruction. That such a method of ensuring peace is tenuous to say the very least, and could more forthrightly be described as the "balance of terror". In recent years however there has been an attempt to mutually limit nuclear weapon research and deployment, but this has been hampered by the technical means to verify compliance with such delimitation treaties, particularly since the U.S.S.R. has refused to allow on-site inspection (118). Thus the Anti-Ballistic Missile Systems Treaty, together with the Interim Agreement on Certain measures with respect to the Limitation of Strategic Offensive Arms (119), not only sought to limit the number of offensive weapons but also, as stated above, sought to secure an undertaking that states could take whatever measures within their technical means to verify compliance with the treaties, and that no attempt should be made to interfere with those systems. Indeed it may be argued that the principle of nuclear deterrence relies on a state's ability to show off its weaponry to its rivals' reconnaissance satellites in order to deter any pre-emptive action.

117. Supra Note 22.

118. E.R. FINCH and A.L. MOORE, "Outer Space Can't Help the Peace", International Lawyer, (1973), p.891.

119. Supra Note 15.

It is clear that Article IV of the Outer Space Treaty does not purport to introduce a complete ban on the military use of space, as suggested in some quarters. It is argued that the use of reconnaissance satellites has not militarised space but only operated to legalise a specific activity, and that "new futuristic military uses are still prohibited" (120). Such an argument would appear artificial and erroneous since nowhere in the Outer Space Treaty is there any scope for such an interpretation. Further there is no reason to suppose that if the A.B.M. Treaty is not renewed the super-powers will not consider deploying anti-satellite and anti-ballistic missile system, which by implication appear to have been banned by that treaty (121). The deployment of such systems, whether in space or otherwise, would undoubtedly be a de-stabilising influence on world peace (122), particularly when it is considered that these systems could conceivably comprise of directed energy weapons, certain types of which are not regarded as being contrary to the Outer Space Treaty because they are not considered as nuclear weapons (123). Undoubtedly if no further agreement to restrict the deployment of anti-satellite and anti-ballistic missile systems, with particular reference to directed energy weapons, is forthcoming then the first state to utilise such a system must dominate the use of space. The reason for such concern may be seen by the fact that these systems could conceivably destroy a moving missile at a range of 3000 miles, and thus satellites, so necessary for the verification of attacks, for communications, and for the guidance and control of counter strike systems, would be extremely vulnerable. Unfortunately SALT II while amending the Outer Space Treaty by not only prohibiting nuclear weapons or weapons of mass destruction from being placed in earth orbit, but also developing and deploying systems for this purpose, made no attempt to curtail such activities.

120. ZEDALIS and WADE, (1978), p.480.

121. F. ASBECK, "The Militarisation of Space", 2 Armament and Disarmament Information Unit Report, (1980), p.2.

122. Stockholm International Peace Research Institute, Outer Space - Battlefield of the Future? (1978).

123. See discussion on particle beam weapons versus high energy lasers above.

It is in the light of such possible lack of restrictions and the growing concern over recent technological advances that the U.S.A. proposed to the U.S.S.R. that talks should begin on the limitation of anti-satellite systems. These talks began in Helsinki in 1978 and were followed by discussions in Berne the next year. It would appear however that they are unlikely to be continued by the new Reagan administration, particularly since the deterioration of relations with the U.S.S.R. caused by the Afghanistan crisis. The aim of the United States in these discussions was to agree to a ban on the interference with the national technical means of verification, to prohibit attacks on satellites and to attempt to limit anti-satellite systems. The agreement was not achieved despite an indication that such an agreement was expected to be forthcoming at the Brezhnev-Carter summit meeting at Vienna in 1979 (124). The main stumbling block appeared to be that the U.S.S.R. in return for such an agreement wanted a moratorium on the use of the United States space shuttle which they regarded as having an anti-satellite role.

It is certain that the United States proposal was a genuine step in the direction of achieving a complete demilitarisation of space, though one which was unlikely to succeed whilst satellites remained the only method of verifying compliance with the various arms limitation treaties. This is further emphasised by the fact that as from 1982, when the A.B.M. Treaty was to be renewed, there would be nothing to prevent the establishment of a directed energy weapon in space to be used against ballistic missiles. The Outer Space Treaty of 1967 has from the above information undoubtedly failed to keep pace with the technology and complexities of nuclear strategy in the present day. It has however served its purpose in providing a sound principle that space should be used for peaceful purposes only. Because of the failure of the treaty to recognise just how sophisticated

124. F. LEY, "Space Law - A New Proposal", 8 Journal of Space Law, (1980), p.47.

satellites were to be become, it is now clear that a new initiative is required to update the Outer Space Treaty in order to put it on a modern footing. The mechanism by which this has been attempted has come in two forms.

Firstly, it should be recalled that great difficulties had occurred with the application of the Outer Space Treaty to the Moon, particularly with regard to the question that did the term "celestial bodies" include the Moon and vice versa. By virtue of the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies 1979 (125), both terms include the other. Thus, Article I states:-

"The provisions of this Agreement relating to the moon shall also apply to other celestial bodies within the solar system, other than the earth, except insofar as specific legal norms enter into force with respect to any of these celestial bodies."

Further the Moon Treaty, as it has become known, also expands and clarifies the provisions of the Outer Space Treaty which dealt with the use or stationing of weapons either on, in or around the Moon or celestial bodies. The treaty also deals with the possibility of any use or threatened use of force, or any other hostile act on the Moon or other celestial body.

Thus Article 3 states:-

- "1. The Moon shall be used by all States Parties exclusively for peaceful purposes.
2. Any threat or use of force or any other hostile act on the Moon is prohibited. It is likewise prohibited to use the Moon in order to commit any such act or to engage in any such threat in relation to the earth, the Moon, spacecraft, the personnel of spacecraft or man-made space objects.
3. States Parties shall not place in orbit around or other trajectory to or around the Moon objects carrying nuclear weapons on or in the Moon.
4. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on the Moon shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for the peaceful exploration and use of the Moon shall also not be prohibited."

On December 5th 1979 the General Assembly adopted Resolution 34/68 without a vote. The Agreement was annexed to that resolution and was opened for signature on December 18th 1979, thus creating indication what must be regarded as a substantial expansion of the reciprocal provision in Article IV of the Outer Space Treaty 1967. Quite evidently the new agreement has avoided the problems associated with the terms "install" and "station" and has categorically stated what weapons can or cannot be used, and in what circumstances. Perhaps one disappointing feature of the treaty is, that while even the threat of a hostile act has been banned on the moon and against spacecraft and their personnel, there is only a ban on nuclear weapons being placed in orbit or other trajectory around the moon and not conventional weapons. It may well be that the drafters anticipated that Paragraph 2 would cover the situation where conventional weapons were placed in orbit around the moon, but this is certainly not clear and in fact the paragraph tends to imply that it only applies to threats from weapons stationed or placed on the moon itself. If that is the case then it would seem perfectly possible for the conventional types of directed energy weapons to be carried aboard spacecraft in the vicinity of the moon. Since these types of weapons must grow in importance strategically as they become more efficient it would seem that there is a serious omission in not barring the use of such weapons. One possible reason for this omission is the many years it has taken to get the acceptance of the U.S.S.R. for the agreement, and thus rather than attempt to introduce a new element and wait several more years the treaty was left in its present form. Nevertheless the Moon Treaty is a step forward in providing a more coherent set of rules regulating the future use of the Moon and its immediate vicinity.

The adoption of the Moon Treaty was the first mechanism by which the principles contained in Article IV of the Outer Space Treaty relating to the

Moon have been expanded and set on a more modern footing. The second mechanism by which an attempt has been made to strengthen the "peaceful purposes" provision in the Outer Space Treaty comes in the form of an Italian proposal that space should be used exclusively for peaceful purposes. The proposal was first made in 1978 to the United Nations Special Session on Disarmament, when the General Assembly on the suggestion, of inter alia, Italy stated that:-

"In order to prevent an arms race in outer space, further measures should be taken and appropriate international negotiations held in accordance with the spirit of 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." (126)

The next year at the General Committee on Disarmament Italy followed up the above suggestion by submitting a draft protocol to the Outer Space Treaty of 1967. Along with the draft protocol was an explanatory memorandum (127) in which Italy discussed how Article IV of the 1967 Treaty had failed to keep pace with space technology, in particular the development of "interceptor/destroyer" satellites, and other weapons not specifically prohibited by the article, such as directed energy weapons. In the memorandum Italy also suggested that the most suitable method of international security would be to impose a complete ban on all military activities, though the use of satellites for reconnaissance, surveillance or communications purposes would be preserved since these would reinforce strategic stability.

Article I of the draft protocol firstly declares that "outer space, including the Moon and other celestial bodies, shall be used for peaceful purposes only". Thus there is an attempt here to turn space into a de-militarised zone as found in Antarctica, and on the Moon and other celestial bodies since the Moon Treaty.

126. Paragraph 80 of the "Programme of Action" in the Final Document of the Tenth U.N. Special Session on Disarmament.

127. U.N. DOC.CD/9 March 26th, 1979.

Article I then goes on to state:-

"States Parties to this Protocol undertake to refrain from engaging in, encouraging or authorising, directly or indirectly, or in any way participating in any measures of a military or other hostile nature, such as the establishment of military bases, installations and fortifications, the stationing of devices having the same effect, the launching into earth orbit or beyond of objects carrying weapons of mass destruction or any other types of devices designed for offensive purposes, the conduct of military manoeuvres, as well as the testing of any type of weapons."

Thus the ban contained in Article IV of the 1967 Treaty is extended to cover ALL armaments and not just nuclear weapons, or any other kinds of weapons of mass destruction. Article I Paragraph 2 of the Protocol does allow the use of military personnel or equipment for scientific research or for any other peaceful purposes, which includes participating in systems established in order to ensure compliance with disarmament and security agreements.

The Italian initiative in bringing disarmament in space into the general disarmament arena has placed it in its proper context. Since, as already stated, one reason for the deficiency of the 1967 Treaty in providing for a complete demilitarisation of space is that the United Nations Committee on the Peaceful Uses of Outer Space could not take initiatives on matters that were considered part of wider issues, particularly those relating to disarmament. Whilst this formerly fundamental problem may now be said to be solved, the draft protocol itself contains certain deficiencies which highlight other serious fundamental difficulties which must be overcome in order to control the arms race in space. Firstly, one great problem associated with the Outer Space Treaty was that it only outlawed the stationing of nuclear weapons in space without recognising that conventional ASAT/ABM systems (128) could pose just as great a threat to peace.

However whilst the draft protocol sought to remedy this situation by

128. i.e. Anti-satellite/Anti-Ballistic Missile systems.

banning the stationing of weapons in space, the most modern systems are in fact earth based and therefore fall outside this provision, which would probably only cover space based directed energy weapons. To this argument it may be countered that Article I of the draft protocol also bans "the launching into earth orbit or beyond of objects carrying weapons of mass destruction or any other types of devices designed for offensive purposes", however ASAT and ABM systems are, it may be argued, not "offensive" weapons but defensive. If this argument is used then it is difficult to envisage any treaty that could seek to prevent states from developing such systems, since no state could afford to ignore the need for such a system as long as there exists a possibility that its own satellites could be attacked.

The second fundamental problem with the draft protocol is the task of distinguishing spacecraft with offensive roles from those which are defensive in character. This problem must not be under-estimated since any spacecraft that is capable of being manoeuvred to an in-orbit rendezvous could be regarded as a potential ASAT system. Possibly the only feature that really classifies such a manoeuvre as being of a military nature is the fact that either the interceptor craft explodes on reaching the target, or is deliberately manoeuvred on to a collision course. An illustration of the problems involved may be seen in relation to the example given earlier of the U.S.S.R.'s COSMOS 248 and 249 (129). In that example if COSMOS 249 had not exploded there would have been no means of distinguishing the role of that spacecraft from any other. Undoubtedly the draft protocol attempts to extend the Outer Space Treaty by attempting to prohibit the development and testing of offensive space systems, however the effectiveness of such a prohibition must be queried when it is considered that offensive and non-offensive space technology is often identical in nature (130). The same is also true of military and civilian developments, and

129. Supra on p.130.

130. F. ASBECK, "The Militarisation of Space", 2 Armament and Disarmament Information Unit Report, (1980), p.3.

any prohibition of in-orbit rendezvous manoeuvres would almost certainly be rejected, especially when one considers that the most promising developments in space rely heavily on such manoeuvres.

One method by which the above two problems to the viability of the Italian initiative could be reduced, if not eliminated, would be the establishment of an independent disarmament monitoring agency. The creation of such an agency was suggested by France (131) and was co-sponsored by Italy. In a report presented to the XXXIVth General Assembly on September 14th 1979 (132), a group of French experts considered that such an agency could work provided it had full independence and the support of the States concerned in the development and utilisation of space. However both the U.S.A. and the U.S.S.R. considered that such an agency was unworkable because, for instance, it would be extremely difficult to conciliate any decisions of the agency with those of national interests, and anyway the cost would be prohibitive (133).

Undoubtedly then the Italian initiative has brought the issue of disarmament in space out of the insular atmosphere of the United Nations Committee on the Peaceful Uses of Outer Space, and placed it firmly in the general disarmament spectrum. Although this committee achieved a great deal in producing the 1967 Treaty and laying down the principles by which space should be utilised in the future, it must be said that the difficulties involved in getting agreement between the membership has allowed both events and technology to pass Article IV of the Treaty by. As already stated above the involvement of states in space must be connected with the wider issues of general disarmament and the place for this would seem to be not only within the United Nations Disarmament Commission but also within the General Assembly itself. Unfortunately the prognosis for a

131. France's initiative is incorporated in Resolution 71/XXXIII of December 14th 1978.

132. U.N. DOC.SMA/WP/5 (1979).

133. F. LEY, "Space Law - A New Proposal", 8 Journal of Space Law, (1980), p.48.

multilateral treaty on disarmament in space is not good since the self interest of states in such sensitive issues tends to lend, not unnaturally, to protracted negotiations. Certainly this has been the record in the Committee on the Peaceful Uses of Outer Space and would thus be even more so within the General Assembly itself. The result of such protracted negotiations would no doubt be an agreement that was already outdated.

The above attitude can be seen in two separate events. Firstly, prior to the first session of the United Nations Disarmament Commission, an international symposium was held on 10-13th May 1979 in New York (134).

At this symposium, while the majority of participants were in favour of the Italian proposal, both a U.S. and an Eastern European delegate suggested that because of the negotiations that were then being undertaken by the U.S.A. and the U.S.S.R. any decision to start multilateral discussions would be premature particularly when there was no precise agreement as to what space activities were to be included in the ban. Despite this attitude the conference concluded that a review of the Outer Space Treaty, and in particular Article IV, which should be amended to include a ban on all weapons and any other device that could be used for hostile purposes in space was necessary, thus widening the scope of Article IV substantially.

The second event which illustrates the non-committal attitude of certain states occurred in New York in July 1979 at the 22nd Session of the United Nations Committee for the Peaceful Uses of Outer Space. In the committee the Italian proposal was well received and thus in the draft report to the General Assembly it was stated:-

"The Committee took note of the concern expressed by some delegations on the possible extension of the arms race to outer space. In this connection, reference was made to the proposal tabled by Italy on 26th March 1979 in the Committee on Disarmament for an additional protocol to the 1967 Treaty ..." (135).

134. Report on the Tenth Annual Conference on United Nations Procedures (10-13th May 1979): "Comprehensive Programme of Disarmament", The Stanley Foundation, (1979).

135. U.N. DOC.A/AC 105/L113/ADD5 (1979).

Just prior to the final approval of this statement the delegation for the U.S.S.R. decided to oppose it on the basis that they had no authority to approve such a statement because of an apparent tradition that decisions of the Committee must be unanimous.

On the basis of the above information it would seem that whilst the Italian proposal has provided an interesting discussion point on how Article IV of the Outer Space Treaty of 1967 should be reformed, it is unlikely to have any significant effect on space related arms control. Clearly the possibility of producing a contemporaneous space treaty which controls the military involvement of states in space on a multilateral basis is improbable because of the complexities in achieving agreement. It is further improbable when it is also considered that while the majority of the member states of the United Nations Committee on the Peaceful Uses of Outer Space may reach a consensus, because of the unanimity rule any one state can in effect veto that majority decision. It would thus seem that any way forward lies in bilateral discussions between the U.S.A. and the U.S.S.R., though even here the difficulties involved in achieving agreement should not be underestimated, particularly in the present political climate.

## CHAPTER 4

### REMOTE SENSING AND DIRECT TELEVISION BROADCASTING IN RELATION TO STATE PRACTICE

Undoubtedly amongst the problems for which the Outer Space Committee is attempting to formulate international rules, the two most immediate and contemporary issues are those of remote sensing and direct television broadcasting. Unlike other problems such as the formulation of the Moon Treaty (1), which tended to distort the work of the Committee, both these areas are of extreme practical importance to the development of this planet, and are already in operation. Since the Outer Space Treaty 1967 (2) makes no mention of either issue (principally because remote sensing only became feasible in 1972) and no other agreements have been reached controlling remote sensing and direct television broadcasting, it can be seen that the increasing pace of technology is beginning to outstrip the means of controlling it. Such a situation is likely to continue whilst the Outer Space Committee allows itself to be sidetracked by such hypothetical issues as the Moon Treaty. One of the potential benefits of direct television broadcasting includes a vast improvement in global communications, which is particularly important when it is understood that three-quarters of the world's population live in areas of "primitive communications" (3).

1. U.N. DOC.A/34/664, (1979), 18 I.L.M. 1434, (1979).
2. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 1967, 3 U.S.T. 2410, T.I.A.S. No.6347.
3. D. GOEDHUIS, "The Changing Legal Regime of Air and Outer Space", 27 International and Comparative Law Quarterly, (July 1978), p.586.

Certainly direct television broadcasting (D.T.B.) will have an important role to play in education and health services throughout the world, particularly in third world countries. To a large extent the effects of D.T.B. are for the near future, however the benefits of remote sensing satellites are being realised now since such satellites are already beginning to contribute to the increase in food output, mineral exploration, the monitoring of environmental pollution, and the exploitation of energy resources. In the near future therefore there is unlikely to be very many areas of life not involved, to a greater or lesser degree, with these types of satellites. Nevertheless these operations are not without their legal problems, caused to a certain extent by ideological differences between the West and the East, though these have not prevented technological advances in these fields and the use of such technology on a world wide basis.

Undoubtedly some progress has been made in discussions for the setting up of legal regimes to cover both D.T.B. and remote sensing, but for the most part fundamental differences still exist. In the absence of any specific rules therefore, state practice has taken over and adopted the general principles embodied in the Outer Space Treaty, though certain aspects of these principles have been distorted by the attitude of States in the light of the practical use of remote sensing and D.T.B. It is thus intended to analyse remote sensing and D.T.B. in turn, assess the legal problems associated with each, assess the discussions aimed at producing legal rules to solve those problems and how state practice may have distorted any principles laid down in the Outer Space Treaty.

## I REMOTE SENSING

Remote sensing has been defined as:-

"... a methodology to assist in characterising the nature and/or condition of phenomena on, above or below the Earth's surface by means of observations and measurements from space platforms." (4)

The means by which remote sensing is achieved is by incorporating sensing devices on satellites, which may or may not be in geostationary orbit. The first remote sensing satellite to be launched, ERTS-1 (Earth Resources Technology Satellite) in July 1972 (5), used three Vidicon television cameras and a piece of equipment known as a "Multispectral Scanner", which obtained information in the red, blue or green spectral ranges of visible light and in infra-red light. It also possessed monitors to measure radiant energy, laser beams, spectrometers and radar scanning equipment (6). All this equipment produced a great deal of information about the earth's surface, though in its unprocessed form was of little value until it had been interpreted and combined with other pieces of corroborative information (7). The processing of the remotely sensed information is carried out at the Goddard Space Flight Center, which then transfers the refined information to the Earth Resources Observation Systems Data Center in South Dakota (8).

Landsat I, was put into a polar orbit at an altitude of 496 nautical miles which thus allows information to be collected from the same spot at the

4. M. BOURELY, "Remote Sensing of Earth Resources from Outer Space - A European Approach to its Legal Implications", 23 Netherlands International Law Review, (1967), p.180 & 183.
5. J.J. HAHN, "Developments Towards a Regime for Control of Remote Sensing from Outer Space", 12 The Journal of International Law and Economics, (1978), p.421. ERTS-1 & 2 later became known as Landsat 1 & 2. Future references refer to it as Landsat 1.
6. G.L. HOPKINS, "Legal Implications of Remote Sensing of Earth Resources by Satellite", 78 Military Law Review, (1978), p.62.
7. U.N. DOC.A/AC 105/PV155 (1975).
8. M.A. DAUSES, "National Sovereignty and Remote Sensing of Earth Resources by Satellites", Proceedings of the 16th Colloquium on the Law of Outer Space, (1974), p.121.

same time every 18 days (9). The area viewed by this satellite measured 115 miles square (10) and it took pictures once every 26 seconds (11). The latest satellite, Landsat D launched in 1981, orbits the Earth fourteen times a day at an altitude of 570 miles and is able to detect features of thirty metres across (12), as opposed to between fifty and eighty metres by the earlier satellites (13). The information once collected is transmitted to one of sixteen ground stations where the information is processed and analysed (14).

According to a United States Senate Committee on Aeronautical and Space Sciences Staff Report (15) it was stated that the United States remote sensing technology was a great deal more advanced than the U.S.S.R.'s, which do not tend to stay in space for very long and are not as sophisticated (16). With the aid of the space shuttle it is anticipated that this lead will be increased. Already Landsat D is somewhat out of date since the French S.P.O.T. programme, to be launched in 1983, will be capable of having a resolution of ten to twenty metres across (17).

9. D.A. LANDGREBE, "Analysis Research for Earth Resource Information Systems: Where Do We Stand?", Advances in Astronautical Science, (1973), p.258.
10. K. NOZARI, Law of Outer Space, Norstedts, (1973), p.152.
11. HOPKINS, (1978), p.62. Repeated photography is needed for comparison purposes and because of adverse cloud conditions.
12. NASA Activities, February 1979, p.16.
13. Characteristics and Capabilities of Sensors for Earth Resources Surveys, 32 U.N. GAOR, Committee on the Peaceful Uses of Outer Space, U.N. DOC.A/AC 105/204, (1977), at p.15.
14. E.M. IFFT AND S.E. DOYLE, "Scientific and Legal Aspects of International Co-operation in Remote Sensing", Proceedings of the 21st Colloquium on the Law of Outer Space, (1979), p.271.
15. Staff of Senate Committee on Aeronautical and Space Sciences, 94th Congress, 2nd Session, I Soviet Space Programs, 1971-75, Overview, Facilities and Hardware, Manned and Unmanned Flight Programs, Bioastronautics, Civil and Military Applications, Projections of Future Plans, (1976), p.377.
16. Oversight: President's Civilian Space Policy: Hearing Before the Committee on Science and Technology. United States House of Representatives, 96th Congress, 1st Session, 1979.
17. The Satellite Probative d'Observation De La Terre (S.P.O.T.) is to be used in researching coastal pollution, mineral resources and terrestrial vegetation. H. DESAUSSURE, "Remote Sensing by Satellite: What Future for an International Regime?", American Journal of International Law, (1977), p.721.

The legal problems that have evolved from the current practice of remote sensing operations have arisen principally because of the fact that there are no specific rules of international law applying to them. It is however erroneous to state that remote sensing is completely unregulated since it is now generally accepted that the Outer Space Treaty provided for the basic legal regime (18). However since the possibility of remote sensing only evolved after the acceptance of the treaty, no part of it applied specifically to remote sensing. In general terms though Articles I and III of the treaty have laid down the basic rules on the conduct of remote sensing activities. Article I states that:-

"The exploration and use of outer space ... shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development ..."

In other words the Article imposes an obligation on space nations to distribute any benefits derived from their use of outer space (19). Such a principle supports the United States position on the free distribution of remotely sensed material.

Article III of the treaty states that:-

"States Parties to the Treaty shall carry on activities in the exploration and use of outer space ... in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding."

Thus the Outer Space Treaty, as applying to remote sensing, embraces the principles of the United Nations Charter, Article I Paragraphs 2 and 3 of which state:-

"... (2) To develop friendly relations among nations based on respect for the principles of equal rights and self-determination of peoples, and to take other appropriate measures to strengthen universal peace;

18. DAUSES, (1974), p.127.

19. O.F. BRITAL, "Survey from Space of Earth-Resources", Proceedings of the 13th Colloquium on the Law of Outer Space, (1971), pp.197-99.

- (3) To achieve international co-operation in solving international problems of an economic, social, cultural, or humanitarian character ..." (20).

Remote sensing therefore embodies the very principles of the Charter since the data collected by such means directly contributes to the solving of world economic and social problems. Indeed because of the acceptance of the Charter by the Outer Space Treaty, any remote sensing activities must be carried out in a manner consistent with the principles embodied in the Charter. Nevertheless there is a view that remote sensing, far from complying with the Charter, is in fact completely contrary to its principles in that it threatens peace because any data may be used for military purposes and, further, could be used by advanced western nations to exploit the natural resources of the less-developed nations of the world (21). Both these allegations will be examined more thoroughly later.

Other international rules applying to remote sensing satellites are concerned with the return of space objects to their launching States by states on whose territory they may land and on the liability of launching states for damage sustained by another state on whose territory a space object may land. Both these situations are covered by, firstly, the Agreement on the Rescue of Astronauts, The Return of Astronauts and the Return of Objects Launched into Outer Space 1968 (22) and, secondly, the Convention on International Liability for Damage Caused by Space Objects 1972 (23). However neither agreement deals specifically with remote sensing satellites but apply generally to all types of space objects.

Clearly, therefore, whilst remote sensing is subject to existing international law this only applies to the situation in general terms and fails to address

20. U.N. Charter Article I Paragraphs 2 & 3.

21. DAUSES, (1974), pp.128-130.

22. Agreement on the Rescue of Astronauts, The Return of Astronauts and the Return of Objects Launched into Outer Space 1968 6 U.S.T. 7570 T.I.A.S. No.6599.

23. Convention on International Liability for Damage Caused by Space Objects, 1972, 24 U.S.T. 2389, T.I.A.S. No.7762.

itself specifically to the problems created by the teledetection of the earth by satellites (24). The present situation is undoubtedly untenable and becomes increasingly so as remote sensing gains in importance because of world realisation as to the limited natural resources of the earth. The legal problems that have arisen so far can be divided into three categories: firstly, there are the legal questions raised as to whether remote sensing requires the consent of the state to be sensed: secondly, there are the questions raised because of the control of data processing and interpretation techniques by a few technologically advanced states; and, thirdly, and perhaps the most important area, the questions that have arisen concerning the dissemination of processed data gathered from satellites. Some observers have reduced these questions into three headings, being respectively, the "space segment", the "ground segment" and the "user segment". (25)

The first problem is in reality an extension of the sovereignty problem as discussed in Chapter One, since states who allege that such activities should only be undertaken after the consent of the state to be sensed has been obtained are basically laying claim to jurisdictional rights in outer space. Whilst there is some disagreement as to where airspace and outer space ends and begins it does seem that a customary rule of international law has arisen which tends to place the boundary at the lowest limit at which satellites can sustain their orbit (26). Since Article II of the Outer

24. HOPKINS, (1978), p.95. Also S. KRAAFT, "In Search of a Legal Framework for the Remote Sensing of the Earth from Outer Space", 4 Boston College of International and Comparative Law Review, (1981), p.456.

25. A. GÖTLIEB, C. DALFEN and K. KATZ, "The Transborder Transfer of Information by Communication and Computer Systems; Issues and Approaches to Guiding Principles", 68 American Journal of International Law, (1974), pp.227 & 242. Also E. AMBROSETTI, "The Relevance of Remote Sensing to Third World Economic Development. Some Legal and Political Aspects", New York University Journal of International Law and Politics, (1980), p.569.

26. See Chapter One of this work. Also HOPKINS, (1978), p.79.

Space Treaty states that "Outer space ... is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means", it would appear that there is nothing to prevent any state from remote sensing the territory of another. Further since the equipment of the United States satellites in particular is only regarded as experimental then Article I of the treaty also offers protection since it states that -

"There shall be freedom of scientific investigation in outer space ... and States shall facilitate and encourage international co-operation in such investigation." (27)

While it would seem settled that remote sensing is subject to the principles laid down in the treaty, R. F. Stowe raises the question that the degree of sophistication of modern devices takes them outside the parameters within which the Outer Space Treaty was negotiated. However he counters such a question by stating that such a position cannot be justified because of pre-treaty multinational participation in remote sensing activities, he points out that there has been no support for the view that remote sensing is outside Outer Space Treaty within the Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space (28).

Despite Stowe's opinion that there exists no treaty which inhibits the practice of remote sensing, there is still disquiet that it may reduce the control of a state over the development of its natural resources. It is this which is really at the centre of the debate over the use of remote sensing satellites and the information received from them. In fact Polter has remarked that -

"... What is really at stake is the right of disposal of information concerning natural resources, with widely divergent interpretations of state sovereignty at the centre of the controversy." (29)

27. Paragraph 3.

28. R.F. STOWE, "The Development of International Law Relating to Remote Sensing of the Earth from Outer Space", 5 Journal of Space Law, (1977), pp.104-5.

29. D.M. POLTER, "Remote Sensing and State Sovereignty", Journal of Space Law, (1976), p.106-7.

Nevertheless, whilst the position that remote sensing satellites are in outer space and thus outside the jurisdiction of underlying states, there is a body of states who maintain that prior consent to be remote sensed should be required. The two leading exponents of this argument are Brazil and Argentina, who as early as 1974 (30) identified themselves with this position. Other states, principally the developed western nations, have rejected such a suggestion arguing that the legality of the situation depends not on what is remote sensed but from where it is carried out i.e. in outer space. This latter position now seems to be accepted by the Legal Sub-Committee provided sufficient safeguards are adopted to protect the dissemination of data (31).

The stance taken by the U.S.S.R. on this question would appear to be contradictory since it had declared that the remote sensing of other states should be carried out under the auspices of bilateral or multilateral treaties (32). However a joint proposal of the U.S.S.R. and France makes no mention of any regulations for the acquisition of data (33). The U.S.S.R. has also stated that:-

"... there is no need for special legal rules to regulate the collection of remote sensing data other than those already established in international space law." (34)

Clearly a complete prohibition on remote sensing without a state's consent is unrealistic, not only because of possible technological problems, but also because of the virtual impossibility of enforcing such a measure, thus

30. Committee on the Peaceful Uses of Outer Space, Draft Principles Governing the Activities of States in the Field of Remote Sensing of Earth Resources by Means of Space Technology, Argentina and Brazil: Working Paper, U.N. DOC.A/AC 105/C1/1047, (1974).
31. U.N. DOC.A/AC 105/C2/SR.295 (1978).
32. Committee on the Peaceful Uses of Outer Space, Report of the Scientific and Technical Sub-Committee on the Work of its Fifteenth Session, U.N. DOC.A/AC 105/216 (1978), Paragraph 38.
33. Committee on the Peaceful Uses of Outer Space, Draft Principles Governing the Activities of States in the Field of Remote Sensing of Earth Resources by means of Space Technology, France and U.S.S.R. Working Paper, U.N. DOC.A/AC 105/C2/L99, 1974.
34. U.N. DOC.A/AC 105/219, 1978, at p.61 as contained in Ambrosetti (1980), p.575.

leading to a possible divergence between state practice and international law. Such a stance might also prevent remote sensing systems from coming into operation, to the detriment of the world community. Indeed in the face of the tacit acceptance of military "spy satellites" (35) by the majority of states it would be absurd to attempt to place restrictions on civilian remote sensing projects which might well deprive developing countries of the chance of economic and social advancement. It would appear that the best strategy for regulating remote sensing lies in controlling the processing and dissemination of data received from sensing activities, as raised in the last two questions arising from remote sensing, and sometimes referred to as the "ground" and "user segments". (36)

Undoubtedly such regulation is the chief concern of the developing countries since it is they who feel that remote sensing could interfere with their sovereignty over national resources. The reasoning behind this is that if remote sensed data is freely available to other bodies, whether they be national or commercial in character, then they are vulnerable to foreign exploitation. Such reasoning has been rejected by some authors, particularly Hopkins who correctly argued that remote sensing satellites are merely data gatherers and cannot capitalise on the results of their findings - that must be done by people on the ground (37). Further no one disputes the fact that a state possesses rights of national sovereignty over its natural resources since the United Nations General Assembly Resolution on Permanent Sovereignty Over Natural Resources 1803 (1962) in Paragraph 6 and 7 states that:-

6. "International co-operation for the economic development of developing countries ... shall be such as to further their independent national development and shall be based upon respect for their sovereignty over their natural wealth and resources;

35. GOTLIEB, DALFEN and KATZ, (1974), p.240.  
36. Ibid at p.227 & 242.  
37. HOPKINS, (1978), p.82.

7. Violation of the rights of peoples and nations to sovereignty over their natural wealth and resources is contrary to the spirit and principles of the Charter of the United Nations and hinders the development of international co-operation and the maintenance of peace." (38)

However the fact of the matter is that companies armed with detailed information from remote sensing sources are put in a favourable bargaining position when discussing explorative and exploitative concessions with a developing country. In reply to this it is stated that the leading remote sensing nation, the United States, makes all remotely sensed material freely accessible, and in fact actually informs a remotely sensed state of any promising information (39), thus giving that state the opportunity to protect its interests (40). Such protection might be carried out by the sensed state at the negotiation stage, by making itself aware of the data, and failing that by using various sanctions against the company in question, ending with the ultimate sanction of nationalisation (41). Such sanctions are not available however against "indirect exploitation". There are several examples of this but one type was described by I. M. Pikus:-

"If a particular nation's economy is heavily dependent upon the sale of a certain agricultural commodity on the world market, it is possible that a world-wide knowledge of the existence of oversupply of that commodity would produce an undesirable effect on prices. There is a converse to that proposition which would demonstrate a desirable effect on prices if the presence of an abnormally small supply were known." (42)

In the view of Hopkins such a suggestion gives too much sophistication to remote sensing since a 'whole variety of different types of information are required in order to exploit an economic situation in this way and remote sensing only provides additional information (43).

38. G.A. Resolution 1803 (XVII). G.A.O.R., 17th Session Supp.17, p.15, (1962).
39. U.N. DOC.A/AC 105/C2/SR.233, (1975), pp.61-65.
40. HOPKINS, (1979), p.83.
41. e.g. ANGLO-IRANIAN OIL CASE, I.C.J. Rep., (1962).
42. I.M. PIKUS, "Possibility of Technical Control over Resources Surveying From Space", Proceedings of the 16th Colloquium on the Law of Outer Space, (1974), p.147.
43. HOPKINS, (1978), p.84.

Thus the size of the part remote sensing plays in assessing the influencing pressures on commodity markets is open to question.

Nevertheless, in spite of the sanctions which developing countries can use against commercial entities seeking to exploit the natural resources of those countries (44) and, in spite of the way in which the importance of remotely sensed data is played down, many developing nations prefer to see restrictions placed on the dissemination of such material. It is here that the whole area becomes exceedingly complex since there is no agreement as to the degree of restrictions that should be placed on the dissemination of remotely sensed information. On the other hand there is the broadly Western viewpoint that adopts the free open data theory that prefers to allow all states access to any information obtained by way of remote sensing. A further complication is the view that raw, unprocessed data is in fact a completely different product from the refined, processed data, since here the sensing state by virtue of its refining input acquires an interest in the end product (45).

The basis of the objections of developing countries lies in the fact that while the United Nations has confirmed the sovereign rights of states over their natural resources in such resolutions as the United Nations General Assembly Resolution on Permanent Sovereignty Over Natural Resources 1962, (46) and the Charter of Economic Rights and Duties of States 1975 (47), there has been no confirmation of rights of sovereignty over natural resources information. This approach by the developing nations may be summed up in the words of the Nigerian delegate at the Legal Sub-

44. The single largest user of remotely sensed information was industry of which mineral and mining companies formed the largest group. BATTELLE LABORATORIES RESEARCH REPORT, SURVEY OF USERS OF EARTH RESOURCES. REMOTE SENSING DATE, 1976 p.19.
45. C.Q. CHRISTOL, "Remote Sensing and International Law", Annals of Air and Space Law, (1980), p.394.
46. G.A. Resolution 1803 (XVII), 17 G.A.O.R. Supp. No.17, (1962), p.15.
47. G.A. Resolution 3281, (XXX) 29 G.A.O.R. Supp. No.31, (1975), p.50; U.N. DOC.A/9946 (1975).

Committee meeting of the Committee on the Peaceful Uses of Outer Space in 1978 (48) when he stated that:-

"... countries should have a right to determine how the information on their natural resources should be disposed of."  
(49)

The proponents of the restrictive data theory tend to fall into two distinct groups. The most restrictive group consists of several Latin American countries, whose position was initially put forward by Argentina (50). This group proposes that any remote sensing activity relating to natural resources would require the consent of any state to be remotely sensed. The main problem with this position is that it may be tantamount to the banning of remote sensing since, from their technical aspects, satellites cannot discriminate between political boundaries (51) and therefore the requirement of consent could preclude the use of such satellites. However it is unlikely that such a state of affairs would occur since the technology to detect whether or not a state is being sensed does not exist and therefore it is likely that the states with the technology would simply ignore any restrictions. The Brazilian draft treaty of 1974 contained a provision that:-

"States Parties are entitled to take measures in accordance with international law, to protect that territory and maritime areas under their jurisdiction from remote sensing activities for which they had denied their consent." (52)

Such retaliation, even if the developing country had the technology and weapon systems to be able to destroy a remote sensing satellite, must be regarded as an illegal extension of national sovereignty into space and contrary to the provisions of the Outer Space Treaty of 1967. (53)

48. U.N. DOC.A/AC 105/C2/SR295 (1978).

49. Ibid, Para.33, as contained in E. AMBROSETTI, (1980), p.580.

50. U.N. DOC.A/AC 105/C2/L73, June 26th 1970.

51. M. LEIGH, "United States Policy of Collecting and Disseminating Remote Sensing Data", in N.M. MATTE and H. DeSAUSSURE, Editors, Legal Implications of Remote Sensing from Outer Space, (1976), p.149.

52. U.N. DOC.A/AC 105/122 (1974), Article 4.

53. See also R.F. STOWE's view, *supra*.

The more moderate position of those in favour of the restrictive data theory is that a sensed state should have the right to determine how and what data should be disseminated. This position has been taken up principally by the U.S.S.R. and France, who in a working paper in 1974 (54) proposed that each state had an inalienable right to dispose of their natural resources and of information concerning those resources (55). Further they proposed that:-

"A State which obtains information concerning the natural resources of another State as a result of remote sensing activities shall not be entitled to make it public without the clearly expressed consent of the State to which the natural resources belong or to use it in any other manner to the detriment of such a State. Documentation resulting from remote sensing activities may not be communicated to third parties, whether Governments, international organisations or private persons, without the consent of the State whose territory is affected." (56)

The only exception to this may be found in Paragraph 5C where the working paper allows for free transfer of information relating to natural disasters or phenomena likely to be detrimental to the environment generally. A similar set of proposals to restrict the dissemination of remotely sensed information was put forward by Chile, Nigeria and Sierra Leone. Additionally these states proposed that a sensed state should have the right to prior access to information concerning its own resources (57).

Western nations, particularly the United States, reject the whole principle of the restrictive data theory, preferring the open data theory. Under this all states whether sensed or the sensing will have free access to any information gathered by remote sensing satellites (58). The supporters of this theory also point out that the Outer Space Treaty supports remote sensing activities, as already discussed above, and that this clearly refutes

54. U.N. DOC.A/AC 105/133, Annex IV, June 6th 1974, U.N. DOC.A/AC 105/C2/L99. (1974).

55. Paragraph 2.

56. Paragraph 56.

57. U.N. DOC.A/AC 105/C2/SR295 (1978), Paragraphs 33, 37-38.

58. POLTER, (1976), p.105-106.

any rights of states to be sensed to require the sensing state to request their consent before being subject to the scrutiny of a satellite. Further supporters of the open data position maintain that the free dissemination of information is more likely to increase a sensed state's control over its natural resources rather than to diminish it (59). It is also felt that a restricted approach can only lead to a wider gap between the technological advanced countries and the developing countries (60).

The United States is an undoubted supporter of the open data system because of its own domestic legal requirements, to be found in its Freedom of Information Act (61), which allows U.S. citizens to have access to sensed data. The commitment to this ideal is so strong in fact that it has been decided by the Supreme Court of the United States that individuals cannot prevent the release of government documents by legal action (62). Additionally as early as 1958 in the National Aeronautics and Space Act (63) the United States, through NASA, is obliged to make data available to both military and civilian organisations as part of its objective to utilise its activities in the furtherance of peaceful and scientific purposes (64). It may be maintained therefore that the U.S. is legally, politically and philosophically bound to the unrestricted dissemination of remotely sensed material to its own citizens, who may subsequently pass that information to other states.

It has already been stated that the restricted data approach by developing countries is an attempt at claiming sovereign rights over information regarding their natural resources (65). To a certain extent this approach could be justified, but in relation to remotely sensed information these sovereign rights are being extended by restricting the competency of the

59. United States Mission to the United Nations Press Releases. U.S.U.N - 10 (75).

60. STOWE, (1977), p.106. Also LEIGH, (1976), p.149. -

61. 5 U.S.C. 552, (1976 and Supp. 1979).

62. CHRYSLER CORPORATION v BROWN, 440 U.S. 281, (1979), as contained in AMBROSETTI, (1980), p.582.

63. 42 U.S.C. 2451-2477, (1976).

64. Ibid 2451 (C) 4 & 6, (1976).

65. Supra Note 48 & 49.

sensing state to use that material. Such an extension is of further repugnance when it is considered that the sensing state also has an interest in the data in that it has not only acquired the data by virtue of its own technology but also interpreted that data into intelligible information. In relation to this the United States has stated, in the Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space, that:-

"The exercise of control over information about these resources ... is an extraterritorial extension of sovereignty" (66) which the Government of the United States cannot accept." (67)

Clearly the main principle of the restrictive theory is to impose one's sovereignty on another state - a principle that must be completely contrary to the whole concept of national sovereignty anyway. Moreover the reality of the whole situation must reveal its absurdity, since, to use Hopkins' example, how can the U.S.S.R. possibly direct the U.S.A.'s data centre at Sioux Falls, South Dakota as to whether it may release remotely sensed data on the U.S.S.R. or not? (68). Certainly it is difficult to accept such an interference when one considers that the U.S.S.R., in both its own original draft of legal principles governing remote sensing (69) and the combined draft with France (70) stated that:-

"States ... shall ... respect the Sovereignty of other States." (71)

To a certain extent Principle 2 of the 1974 U.S.S.R. draft of legal principles tends to contradict itself in terms of its effect since it goes on to state that:

"States ... shall respect the sovereignty of other States and, in particular, their inalienable right to control their own natural resources as well as information concerning such issues."

66. Supra Note 57.

67. AMBROSETTI, (1980), p.582.

68. HOPKINS, (1978), p.97.

69. U.S.S.R. Preliminary Draft of Legal Principles To Be Applied by States Utilising Space Technology in Exploring the Resources of the Earth. U.N. DOC.A/AC 105/111, (Feb. 1973).

70. Working Paper of France and U.S.S.R. on Draft Principles Governing Activities of States in the Field of Remote Sensing of Earth Resources by Means of Space Technology. U.N. DOC.A/AC 105/133, (June 1974), Annex IV U.N. DOC A/AC 105/C2 L99, (May 1974).

71. Ibid Note to Principle 2.

Thus if one accepts that by using its own technology to acquire data and to apply additional technology to interpret it that the U.S.A., for example, has a right to exercise sovereignty over at least part of the information, then it would seem, according to Principle 2, that it has inalienable right to control that information - if it so wishes.

The effect of imposing restrictions on the dissemination of processed information from remote sensing satellites must be to devalue the effectiveness and benefits of such techniques to such an extent that states will cease such operations except for their own purposes. It is far more likely that this will lead to other less developed nations becoming disadvantaged and discriminated against than by the free dissemination of information. Further, because of the regional nature of the information received, to be effective each neighbouring state should not attempt to develop remote sensing restriction (even if they could impose them), since this may make any analysis distorted. Thus, for instance, if India found that the growth of deltas at the mouth of their rivers was substantial enough to cause flooding or climatic changes then it may wish to examine the reasons for such growth. By examining satellite photographs of Nepal it may be found that the effect of deforestation would be to render the earth layer susceptible to rain and river erosion, thus creating the movement of large deposits of earth down to the coast so forming the deltas. Clearly such an analysis may be difficult to arrive at without several years study of the region if Nepal was able to refuse to allow its territory to remotely sensed. It must be accepted therefore that environmental and resource problems can only be solved on both a global and regional basis by an open regime for remote sensing and that a restrictive approach by one country could seriously limit the effectiveness of remote sensing, thus curtailing the efforts of other nations (72).

A further reason for the adoption of the open data theory is that it equips developing nations with the technical knowledge to make use of remotely sensed information. Thus for instance, until 1975 "scientific and research projects in progress using Landsat 1 data have taken place in 55 countries and in at least five major international organisations" (73). The use of Landsat 2 has been similarly organised and even before its launch studies involving investigators from 45 countries were proposed (74). Similar proposals were also made in connection with Landsat 3. Further the U.S.A. has made no secret of its willingness to train personnel, particularly in developing countries, in how to interpret remotely sensed information so that the best use can be made of the technology (75). Undoubtedly this technological transfer would put developing countries on a par with the more advanced states, particularly with regard to remote sensing, though not necessarily exclusively to this area. The acquisition of such technological know-how is particularly important to third world countries, which have tended in recent years to shift their economic policies towards the development of natural resources in the light of the failure of imported manufacturing industries to improve the social and economic lot of the population generally and substantial trading deficits (76). Since the acquisition of the technology to participate in remote sensing activities could play a fundamental part in the national economic planning of many countries, particularly those in the third world, it would seem unfortunate that this might be jeopardised by a too hawkish adoption of a restrictive data policy.

Despite the fact that the United Nations has been actively involved in discussions to regulate remote sensing since 1969 it has thus so far failed

73. U.N. DOC.A/AC 105/P.V. 155 (1975), p.5.

74. U.N. DOC.A/AC 105/P.V. 146, (1975), pp.54-55.

75. J.J. HAHN, "Developments Towards a Regime for Control of Remote Sensing from Outer Space", Journal of International Law and Economics, (1978), p.442.

76. AMBROSETTI, (1980), p.577.

to produce a satisfactory treaty on the subject, though there have been numerous proposals from member states. Such lack of progress has not therefore been due to a lack of drafting by the members of the Committee on the Peaceful Uses of Outer Space, but more to the wide ranging positions of its members on this subject.

The task of attempting to provide for international co-operation in this field began in December of 1969 when the Committee on the Peaceful Uses of Outer Space (COPUOS) was requested to investigate such a possibility by the General Assembly (77). This job was given to the Scientific and Technical Committee of the COPUOS who began to consider this new technology in April 1970. The first proposal for an agreement on remote sensing was submitted by Argentina in that year (78), and though it was reviewed by the Committee it failed to make an impact, principally because the Committee still had other work to complete. Nevertheless the Committee made recommendations to COPUOS who duly reported these to the General Assembly, who in turn requested the committee to set up a working group on earth resources surveying by satellites (79). Consequently in 1971 the Committee set up the "Working Group on Remote Sensing of the Earth by Satellites" (80). From its inception the working group was primarily concerned with the technical and scientific aspects of remote sensing, but by 1973 the legal implications of the technology began to appear and culminated in the U.S.S.R. submitting a preliminary draft of legal principles to be applied by states using space to explore the resource of the earth (81). This Soviet draft was not discussed within the Working Group and neither was it discussed within the Legal Sub-Committee, to

77. U.N. General Assembly Resolution 2600 (XXIV), (1969).

78. Draft International Agreement on Activities Carried Out Through Remote Sensing Satellite Surveys of Earth Resources, U.N. DOC. A/AC 105/C2/L73 (1970).

79. U.N. General Assembly Resolution 2733 (XXV), (1970).

80. U.N. DOC.A/AC 105/95, July 19th, 1971.

81. U.N. DOC.A/AC 105/111, February 14th, 1973.

which it was also submitted, because of lack of time (82). However after the Legal Sub-Committee had submitted its report to the full meeting of the COPUOS in 1973 it was specifically requested to spend part of its next session discussing the legal implications of remote sensing (83). In 1974 the Working Group noted that with regard to the legal implications of remote sensing, the Legal Sub-Committee not only had the item on its agenda but that it had now received five different sets of proposals on the legal aspects of remote sensing, from the U.S.S.R. (84), Canada (85), Argentina (86), Brazil (87), and France (88), together with a joint proposal submitted by the U.S.S.R. and France (89).

From this time the Legal Sub-Committee began to dominate the remote sensing arena and during its 1975 Session created a new Working Group to consider the legal implications of remote sensing. During this session a further proposal was submitted jointly by Brazil and Argentina, which replaced the two earlier and separate proposals submitted by them (90). In addition to this the United States submitted a working paper on the development of additional guidelines on remote sensing of the natural environment of the earth from outer space (91).

During the 1975 session the Working Group recognised that the proposals submitted could be attributed to three camps - France and the U.S.S.R., Argentina and Brazil, and the United States. From these different proposals five common elements could be found:-

82. G.J. MOSSINGHOFF and L.D. FUQUA, "United Nations Principles on Remote Sensing: Report on Developments 1970-1980", 8 Journal of Space Law, (1980), p.106.
83. U.N. DOC.A/AC 105/115, Annex III, April 27th, 1973. p.14.
84. Supra Note 81.
85. U.N. DOC.A/AC 105/C1/W. 4/L6, (28th November 1975).
86. U.N. DOC.A/AC 105/133, Annex IV, June 6th, 1974, pp.1-3.
87. U.N. DOC.A/AC 105/133, Annex IV, June 6th, 1974, pp.3-5.
88. U.N. DOC.A/AC 105/133, Annex IV, June 6th, 1974, pp.5-6.
89. U.N. DOC.A/AC 105/133, Annex IV, June 6th, 1974, pp.9-10.
90. U.N. DOC.A/AC 105/C1/1047, (1974).
91. U.N. DOC.A/AC 105/147, Annex III, March 11th, 1975, p.2.

- (a) that remote sensing was to be conducted for the benefit and in the interests of mankind,
- (b) that remote sensing was to be carried on in accordance with international law, including the Charter of the United Nations and the Outer Space Treaty,
- (c) that benefits could be obtained from remote sensing by all countries given an adequate level of international co-operation, particularly on a regional basis.
- (d) that States undertaking remote sensing activities should encourage international participation,
- (e) that remote sensing activities should be used to promote the environmental protection of the earth. (92)

During the 1976 Session these five elements were formulated into five corresponding draft proposals, together with a further sixth element that "States participating in remote sensing programmes should make available technical assistance in that area to other interested states on mutually agreed terms" (93). In addition to this draft proposal three new elements were identified:

- (a) that co-ordination and co-operation between states with regard to remote sensing be carried out by the United Nations,
- (b) that States engaged in remote sensing should make available as soon as possible any indications of an impending natural disaster to states that may be affected as well as interested international organisations
- (c) that the using of information gleaned from remote sensing activities should not be used to the detriment of other states (94).

92. U.N. DOC.A/AC 105/147, Annex III, March 11th, 1975, p.2.  
93. U.N. DOC.A/AC 105/171, Annex III, May 28th, 1976, p.2.  
94. U.N. DOC.A/AC 105/171, Annex III, May 28th, 1976, p.3.

During this session the working group also turned its attention to the establishment of a common vocabulary of terms to be used in relation to remote sensing activities though no decisions were come to. However this had the effect of influencing the Scientific and Technical Committee of the COPUOS to assess and adopt a structural analysis of the operational sequences involved in remote sensing, i.e. data acquisition (satellites and command stations); data reception (antennae and receivers); data pre-processing (recording); data storage and dissemination (archiving and reproduction); data analysis (interpretation); information utilisation (95). From this breakdown the Scientific and Technical Committee proceeded to define "data" and "information", which they re-named 'primary data' and 'analysed information'. 'Primary data' was defined as:-

"... those data which are acquired by satellite borne remote sensors and transmitted from a satellite either by telemetry in the form of electro-magnetic signals or physically in any form such as photographic film or magnetic tape, as well as the pre-processed products derived from those data which may be used for later analysis." (96)

Thus 'primary data' would refer to data acquisition, data reception, data pre-processing and data storage and dissemination above (97) 'Analysed information' was defined as -

"... the end product resulting from the analytical process performed on the primary data combined with data and knowledge obtained from sources other than remote sensing satellites." (98)

Thus the term 'analysed information' would refer to data analysis and information utilisation as stated above (99).

Also in 1977 the Scientific and Technical Sub-Committee received a working paper from the Soviet Union which submitted that remote sensing data should be classified in terms of spatial resolution as follows:-

95. U.N. DOC.A/AC 105/195, March 1st, 1977, pp.8 & 9.
96. Ibid at p.9 Definitions based on proposals submitted by Sweden U.N. DOC.A/AC 105/C1/L95, (1977).
97. Ibid at p.10.
98. Ibid Note 95.
99. Ibid Note 95 at p.10.

" - 'Global' information, with spatial resolution ranging from several hundred metres to several kilometres, and covering distances ranging from several hundred kilometres to 2,000 - 3,000 kilometres.

- 'Regional' information, with spatial resolution ranging from 50-100 to 300-500 metres, and covering distances ranging from 180-200 to 600-800 kilometres.

- 'Local' information, with spatial resolution ranging from several metres to 30-50, and covering distances of less than 150-180 kilometres." (100)

However in the Scientific and Technical Sub-Committee's report it was stated that no agreement could be reached on this concept nor on the numerical values enunciated for each category (101).

During the 1977 meeting of the Legal Sub-Committee the Soviet Union again urged for the adoption of the concept of classifying data by reason of spatial resolution. Under such a concept it was suggested that any resolutions of less than 50 metres would require the consent of the state to be remotely sensed (102). However no agreement appeared to have been reached in this area.

The Working Group of the Legal Sub-Committee in the 1977 meeting re-examined the five draft principles of 1976 and added a further five draft principles to those. However many words and phrases contained in those new principles were bracketed signifying a lack of consensus on those bracketed areas. Also included was a principle submitted by Mongolia which was unnumbered and entirely bracketed and stated that States should respect the principle of full and permanent sovereignty of all States and peoples over their wealth and natural resources, as well as their inalienable right to dispose of those natural resources (103).

100. U.N. DOC.A/AC 105/C1/L94, February 15th, 1977.

101. Supra Note 95.

102. BIN CHENG, "Legal Implications of Remote Sensing from Space", Proceedings of an International Conference on Earth Observation from Space and Management of Planetary Resources, (1978), p.606.

103. U.N. DOC.A/AC 105/C2/L107, (1977).

The 1977 meeting of the COPUOS recommended that the Legal Sub-Committee should accept the definitions of 'primary data' and 'analysed information' and adopt them into the draft Principles document (104).

However it also noted that the Scientific and Technical Sub-Committee had discussed the issue of spatial resolution. Seeing that no agreement had been reached on the concept they agreed that a study should be made on the subject and its application for discussion at the next session (105).

This study (106) was made by the Secretariat with the aid of the Committee on Space Research, International Council on Scientific Unions (COSPAR) and was discussed by the Scientific and Technical Sub-Committee at its 1978 Session, in which several conflicting views on the subject became apparent.

The report of the 1978 session of the Scientific and Legal Sub-Committee revealed two discussion points on the subject of spatial resolution. The first concerned the need for such a classification, and here some delegations were of the opinion that there was no scientific basis for such a classification, whilst some thought that although such a classification could not be made solely on spatial resolution basis such a classification could be adopted, provided other types of parameter were also taken into account. Moreover other delegations thought that such a classification was unnecessary whilst others considered it to be an important method of classifying remotely sensed data (107).

The second discussion point was concerned with the dissemination of primary data and analysed information. Here there were some seven differing views expressed, as follows:-

104. U.N. DOC.A/32/20, August 9th, 1977, p.9.

105. Ibid.

106. U.N. DOC.A/AC 105/204, (1977).

107. U.N. DOC.A/AC 105/216, March 6th, 1978, pp.7 & 8.

- (1) Certain delegations were of the opinion that a sensing state possessing primary data finer than a certain resolution about a sensed state should not disseminate such information without the consent of that State.
- (2) The U.S.S.R. and certain other delegations suggested that the spatial resolution limit in (1) above should be 50 metres, above which there should be free dissemination. Below this the economic and/or defence interests of the sensed States might be affected.
- (3) The United States in reply to (2) above noted that their Skylab programme produced photographs with a resolution of 15 to 20 metres, which were distributed on the same basis as the Landsat programme i.e. freely and openly, and were not aware of any problems having arisen from that situation.
- (4) Some delegations thought that primary data ought to be disseminated openly irrespective of its resolution and that all States should have equal access to that information.
- (5) Some delegations felt that primary data or analysed information ought to be accessible to the sensed State before it was disseminated to any third parties.
- (6) Other delegations felt that the dissemination of primary data, as well as analysed information to third parties should not be detrimental either economically or otherwise to the sensed States.
- (7) Finally the United States, together with some other delegations, felt that analysed information was the work of the analyser and therefore could not be treated in the same way as primary data (108).

As a result of the above views the Scientific and Technical Sub-Committee found itself, not surprisingly, unable to agree on any recommendations for the classification of data by way of spatial resolution, nor as to how such a classification could be made. Nevertheless it suggested that the studies carried on by the Secretariat, in association with COSPAR, should be continued in order to gather further information on how such a classification might be found.

During the 1978 session the Working Group of the Legal Sub-Committee incorporated the definitions of 'primary data' and 'analysed information' into the draft Principles document, together with a definition of 'remote sensing of the earth', though these were included on the understanding that there was no final agreement of these definitions (109). Since these

108. Ibid.

109. U.N. DOC.A/AC 105/218, Annex III, April 13th, 1978, p.5.

definitions were introduced as Principle I there was a re-vamping of the other Principle numbers. During this session the Working Group added six more draft principles, though again through lack of agreement these principles were entirely bracketed.

The 1979 session of the Working Group of the Legal Sub-Committee was spent mainly in considering various proposals from the U.S.S.R., the U.S.A., Roumania, and a joint proposal from Roumania and Iraq. However it also saw fit to remove the brackets from the words 'primary' and 'analysed' in Principle I, though the reservation as to requiring final agreement on these terms still remained in the form of a footnote. The Working Group also undertook a certain amount of time in re-numbering certain of the principles set out in the draft Principles document (110).

At the 1979 session of the full COPUOS meeting it was stated that whilst progress had been made in formulating draft principles, there were nevertheless certain outstanding issues which had to be finalised before the document on draft Principles could be closed (111). It therefore recommended that the Secretariat, along with COSPAR, should continue to gather information relating to the different classifications of data (112).

Following from this the Scientific and Technical Committee in its 1980 session also continued to examine methods of classifying remotely sensed data. However no agreement could be reached and delegates views varied between suggesting that data could be classified into the uses for which the data could be used, to the view that there were no objective reasons for categorising data into rigid categories (113).

In the 1980 meeting of the Legal Sub-Committee, the Working Group considered those principles on which no tentative agreement had been

110. U.N. DOC.A/AC 105/240, Annex I, April 10th, 1979, pp.7-11.

111. U.N. DOC.A/34/20, August 14th, 1979, p.7.

112. Ibid at p.5.

113. U.N. DOC.A/AC 105/267, February 15th, 1980, p.10.

reached, i.e. Principles I, VIII, IX, XII, XIV, XV and XVII. Agreement was eventually reached on a revised Principle VII which related to the use of primary data and/or analysed information in notifying other States of impending natural disasters or assisting them in dealing with such disasters (114). However the term "natural disaster" was to be subject to further discussion (115), though a tentative definition was reached by bringing a representative of the Office of the United Nations Disaster Relief Coordinator (UNDRO). This representative indicated that UNDRO did not consider a definition of this term necessary, though where it was necessary the definition used by the League of Red Cross Societies could be used. On that basis the Working Group suggested that the term "natural disaster" should mean "... an extreme or violent act of nature". However the view was also expressed that a footnote to the principle should be included, which stated that "a natural disaster means a sudden event which catastrophically affects a large number of people". (116)

The Working Group of the Legal Sub-Committee made no progress in formulating principles in connection with the dissemination of data and the classification of remote sensing based on spatial resolution. In fact this lack of progress was brought up in the full COPUOS meeting of that year when some concern was expressed at that lack of progress. One delegate expressed the view that the Committee, together with the Legal and Scientific and Technical Sub-Committee was not proceeding as fast as it could go because of the fact that it had failed to consider the many different roles of remote sensing satellites, from meteorological to surveillance satellites (117). Nevertheless the COPUOS urged the Legal Sub-Committee to carry on with this work at its next meeting.

114. U.N. DOC.A/AC 105/271, Annex II, April 10th, 1980, p.9.

115. Ibid.

116. Ibid.

117. U.N. DOC.A/35/20, August 7th, 1980, p.6.

In 1981 two working papers were submitted to the Legal Sub-Committee (118). The first from Columbia relating to Principle 1 and 15 of the existing Draft Principles. In Principle 1 Columbia suggested that "remote sensing of the Earth means an exploratory function which is performed by satellites, or by means of airborne platforms and other aeronautical or ballistic devices". (119) It was stated that by such methods "microscopic remote sensing" produced "information" that could be freely disseminated. However "microscopic remote sensing" could also take place on condition that the data or information acquired would only "be used and/or communicated to third parties only with the express consent of the State within whose jurisdiction the area which has been the subject of remote sensing or analysis is situated" (120). The definition of primary data remained the same, however, the definition of analysed information was expanded to incorporate "any intellectual or material product resulting from the evaluation performed on the primary data" (121). Columbia also proposed a revision of Principle 15 which related to the disclosure of sensed data and information. This stated that a sensing State would be prohibited from communicating to third parties "information on specific natural resources or agricultural crops in any other State or country which has been the subject of remote sensing without obtaining its prior consent" (122).

The second working paper was put forward by Mexico and was entitled "Principles Relating to Remote Sensing of the Earth, its Natural Resources and its Environment" (123) and contained 17 Principles. The Mexican draft tended to focus on the criteria required before a sensing state might engage in the remote sensing of a foreign State. Thus, for instance, a

118. U.N. DOC.WG/RS(1981)/WP.2; U.N. DOC.A/AC 105/288 Annex 1, 20th April, C.Q. CHRISTOL, The Modern International Law of Outer Space, Pergamon Press, (1982), p.749.

119. Ibid.

120. Ibid.

121. Ibid.

122. Ibid.

123. U.N. DOC.WG/R(1981)/WP2; U.N. DOC.A/AC 105/288, Annex 1, April 20th 1981, p.13.

sensing State would have to give "advance notification" to a sensed State (124), consult with the sensed state on the request of that State (125), provide "preliminary information and final results and conclusions" to the sensed State (126), and would be prohibited from disclosing its findings without the approval of the sensed State (127). Further the draft extended wealth and natural resources sovereignty to include "economic activity" (128) and placed a duty on States to pursue a process of peaceful settlement of disputes until a "solution" to the dispute was found (129).

The Mexican draft clearly did nothing to bring the two opposing views together by tending to favour the closed position rather than the open data approach. However, even though the draft imposed severe restrictions on remote sensing activities, it did acknowledge the right to remote sense per se. Further, whilst the document did nothing to alleviate the tensions that had emerged in the Legal Sub-Committee, it must be regarded as an important and concerted attempt to modify the previous draft Principles of the Sub-Committee, which had remained largely unaltered since 1979.

The text of the Draft Principles (130) at present contains seventeen draft principles (131) the majority of which are bracketed, either wholly or in part, indicating disagreement as to those areas. To date the vast majority of the principles have not been resolved and it would seem that an international treaty on this area is just as remote as it was in 1972 when the first remote sensing satellite was launched (132). Such a view holds

124. Ibid, Principle 12.

125. Ibid, Principle 13.

126. Ibid, Principle 14.

127. Ibid, Principle 15.

128. Ibid, Principle 16.

129. Ibid, Principle 17.

130. Text of Draft Principles with Respect to Remote Sensing of the Natural Resources of the Earth and its Environment as contained in the Report of the Legal Sub-Committee on the Work of its 1980 Session. U.N. DOC.A/AC 105/271, Annex II, April 10th, 1980, pp.7-11.

131. See-Appendix III.

132. HAHN, (1978), p.424.

particular credence when it is further considered that the disagreements in question are based on fundamental divergencies of views and not merely on a lack of communication (133). However unless some sort of compromise is reached the COPUOS will continue to study reports of the Legal and Scientific Sub-Committees and to initiate even more studies in its present 'long-winded' and convoluted fashion, without producing a concrete foundation on which to base a United Nations role. Certainly this would seem to be the direction that the proceedings in the COPUOS were taking since in 1981 no further progress was made, and in fact one may be dismayed to find that even at this late stage new criteria were introduced by Columbia and Mexico (134). Nevertheless the Committee observed that many States were actively engaged in the planning and establishment of remotely sensing receiving stations and the development of remote sensing satellites. Further, because of the use being made of remote sensing satellites by the space resource nations the attention of the Committee was drawn to the need for an "institutional framework to ensure equitable access at reasonable cost" (135).

Whilst progress on the above issues within the Committee on the Peaceful Uses of Outer Space is dependent on the active desire and political will of states to accomplish the necessary compromises, it is unrealistic to expect states to curb their remote-sensing activities until such a position is reached. In fact it is fortunate for the global community that the failure of the Committee to find a solution to the issues of remote sensing that states participating in such activities have not been inhibited by the lack of progress, but have rather established the ground rules for remote sensing by way of bilateral treaties and state practice.

133. MOSSINGHOFF & FUQUA, (1980), p.118. Also S.P. KRAFFT "In Search of a Legal Framework for the Remote Sensing of the Earth from Outer Space", 4 Boston College of International and Comparative Law Review, (1981), p.467.

134. Supra Note 118 & 123.

135. U.N. DOC.A/36/20, (1981), p.19.

Undoubtedly bilateral agreements are already laying down such a body of customary international rules that doubts must exist as to whether COPUOS is capable of producing legal rules that are capable of keeping pace with the technological changes taking place in space exploration and utilisation (136). Indeed Bueckling has questioned the whole usefulness of broad based treaties, such as that envisaged by the COPUOS in relation to remote sensing, on the basis that not only do they lack enforcement measures, but also on the basis that highly technical legal questions are hidden beneath generalised concepts and platitudinous phraseology (137).

It is the failure of the United Nations, and the COPUOS especially, to reach a consensus on remote sensing that has spurred the development of bilateral treaties in this field since many states now feel that teledetection will continue despite the legal and political uncertainties in which it operates. Further there is evidence to suggest that because these treaties are more modest in their aims, states are more likely to agree on their contents (138). Indeed there are instances in which certain states while adopting a restrictive data approach within the COPUOS, have negotiated an open data stance in a bilateral agreement. Brazil is typical of this position since it had adopted the restrictive data approach of the U.S.S.R. within the United Nations. In 1973, however, it negotiated a bilateral agreement with the United States whereby it adopted an "open data policy comparable to that of NASA and the other U.S. agencies participating in the program such that catalogues of all data processed, as well as the data themselves are made publicly available as soon as practicable to the

136. I. VLASIC, "Remote Sensing of the Earth by Satellites", International Manual of Space Law, (1979), p.334. (Editors N. JASEN-TULIYANA and R. LEES).

137. A. BUECKLING, "The Strategy of Semantics and the 'Mankind' Provisions of the Space Treaty", 7 Journal of Space Law, (1979), p.17-18, 22.

138. KRAFFT, (1981), p.474.

domestic and international community" (139). This agreement was extended in March 1976 and again in May 1976 (140). Similar agreements to the above have been concluded by the U.S.A. with Canada, Italy, Chile, India, Zaire and latterly negotiations took place in 1980 with the people's Republic of China (141).

139. BRAZIL: Memorandum of Understanding Between Brazilian Instituto De Pesquisas Espaciais and the United States National Aeronautics and Space Administration, April 6th 1973, 24 U.S.T. 898, 901 T.I.A.S. No.7600.
140. T.I.A.S. No.8391 and T.I.A.S. No.8393.
141. New York Times, January 25th 1980, p.1 as quoted in S.P. KRAFFT (1981), p.472. The agreement with Zaire (i.e. the Memorandum of Understanding Concerning Direct Access by a Zairian Ground Station to Data Generated by U.S. Earth Resources Technology Satellite (ERTS) and Availability to the National Aeronautics and Space Administration of the Data So Acquired (January 31st 1975) I.L.M. VOL.XV No.1, p.1475, January 1976), although not the first agreement to be negotiated by NASA for access to ERTS data, was according to the footnote on p.1475 of the International Legal Materials entry above to be used as a model for future negotiations. Thus the agreement with India (Memorandum of Understanding Concerning Access by an India Ground Station to NASA's LANDSAT Satellites and Availability to the National Aeronautics and Space Administration and Others of Data Acquired. With Related Note (January 3rd 1978) I.L.M. VOL.XCII No.3 May 1978), T.I.A.S. 9074. Extended on April 19th 1982); Indonesian (Agreement Relating to the Establishment and Operation of a LANDSAT System (July 30th 1981) I.L.M. VOL.XX No.6 1981); Canada (Agreement Regarding a Joint Program in the Field of Experimental Remote Sensing from Satellites and Aircraft (May 1971). This was extended on November 6th 1980 after being earlier amended and extended (T.I.A.S. 7125 and T.I.A.S. 8247); CHILE (Memorandum of Understanding Concerning Direct Access by a Chilean Ground Station to Data Generated by NASA LANDSAT satellites and Availability to the National Aeronautics and Space Administration of the Data So Acquired (September 8th 1975) I.L.M. VOL.XV No.1 January 1976) the European Space Agency (Memorandum of Understanding Concerning the Use of the European Space Agency's EARTHNET System to Receive and Process the National Aeronautics and Space Administration's LANDSAT Data (October 8th 1978). This was extended on June 17th 1982. I.L.M. VOL.XXI No.5 1982), all used the same basic model. Thus all such bilateral agreements contain a similar clause requiring an open data policy as can be seen above in the Brazilian text. The agreements also contain provisions as to the training and exchange of technical personnel and the free distribution of general information to the public. Generally the agreements last four years after which they may be extended by mutual agreement. Further the state operating the ground station must finance the project themselves though no doubt the U.S.A. will give aid in the building of the installation just as, according to the agreement, it supplies all necessary antennae and technical back up facilities.

From the point of view of developing states there is also a further fundamental reason for negotiating bilateral agreements since in making such an agreement it gives them the opportunity to acquire advanced technology and more importantly the training that goes with it. Undoubtedly this is in the interests of the U.S.A. since it requires ground stations to collect data and also by giving adequate training in the use of the technology increases the quality of the data and therefore its value. To the developing state it gives much needed aid but also reduces the chances of their being exploited by the use of remotely sensed information by other states or commercial interests (142).

The bilateral agreements entered into by the United States undoubtedly established it as the leader in remote sensing (143) and it is because of this lead it was able to lay down the criteria on which to base its activities. Since these activities have been acknowledged not only by those states party to the above agreements, but also by those participating in remote sensing experiments initiated by the United States, that it may be said that a rule of customary international law allowing remote sensing activities has been established.

Whether or not a rule of customary international law is established may be based on the following factors:-

- (a) Concordant practice by a number of States with reference to a type of situation falling within the domain of international relations.
- (b) Continuation or repetition of the practice over a considerable period of time,
- (c) Conception that the practice is required by, or consistent with, prevailing international law,

142. IFFT and DOYLE, (1979), p.276.

143. HAHN, (1978), p.442.

- (d) General acquiescence in the practice by other states (144).

With reference to these criteria, Hopkins considers that the state practice of the United States, with regard to remote sensing, has established a right in international law to orbit remote sensing satellites without the consent of underlying states because that practice has been accepted not only in bilateral agreements, but also by the participation of states in evolving the use of such practice and the general acquiescence of those and other states in those activities. Moreover in attempting to establish that a rule of international customary law exists or not it should be noted that the

144. D.A. PAM 27-161-1, para.II. A.1, p.8, as cited in HOPKINS (1978), p.79 Such a definition of customary international law, while in some aspects is accurate, is nevertheless simplistic. Generally international custom is defined by Article 38 of the Statute of the International Court of Justice "as evidence of a general practice accepted as law". Further in the Anglo-Norwegian Fisheries Case (I.C.J. Reports (1951) p.191) Judge Read stated that, "Customary international law is the generalisation of the practice of States". B.I. Brownlie in Principles of Public International Law (pp.6-11) also provides that international customary law requires four major elements: duration, uniformity, generality of the practice, opinion juris et necessitatis. Whilst the first three broadly fall into the same mould as the first three elements enunciated in the text above, the fourth, opinio juris et necessitatis, goes a great deal further than a mere "general acquiescence" since it maintained in the Statute of the International Court that there must be "a general practice ACCEPTED AS LAW". There is therefore a psychological element involved which requires a sense of legal obligation and not mere usage. Both in the Lotus Case (SER A, No.10, p.28) and in the North Sea Continental Shelf Cases (I.C.J. Reports (1969) p.3) the International Court was strict in requiring proof of opinio juris. In the latter case it was stated (I.C.J. Reports (1969) p.43):-  
"Although the passage of only a short period of time is not necessarily, or itself, a bar to the formation of a new rule of customary international law on the basis of what was originally a purely conventional rule, an indispensable requirement would be that within the period in question, short though it might be, State practice, including that of States whose interests are specially affected, should have been both extensive and virtually uniform in the sense of the provision invoked; - and should moreover have occurred in such a way as to show a general recognition that a RULE OF LAW OR LEGAL OBLIGATION IS INVOLVED".

By the use of the term "general acquiescence" there would seem to be implied usage rather than a legal obligation which is required in order to establish a rule of customary international law.

U.S.S.R., the chief proponent of the restrictive data theory, has itself been a party to several bilateral agreements with regard to remote sensing (145) and has in the past declared an intention to produce a remote sensing system in order to survey a number of resources (146).

It would appear therefore that whilst the U.S.S.R. accepts the Outer Space Treaty, this treaty is more closely aligned to the open data theory insomuch as its very broad terms will allow. In adopting the restrictive data approach the U.S.S.R. is not attempting to provide a consistent legal regime but to impose a protectionist approach in that it regards remote sensing as a threat to its ideological purpose. Undoubtedly in its bilateral agreements the U.S.S.R. has attempted to be consistent with the restrictive data approach and in its 1977 working paper the U.S.S.R. offered to co-operate with states participating in such agreements in conducting remote surveys and providing them with the data (147). The U.S.S.R. declared that these agreements would be "on the basis of equality and in accordance with international law with due regard to the inalienable right of States to exercise permanent sovereignty over their natural resources including the right to dispose of their own natural resources and of information concerning them" (148). Additionally the U.S.S.R. promises not to make the information gleaned from these surveys available to other states (149).

Whilst these declarations by the U.S.S.R. are consistent with its restrictive data position there are, what can only be described as inconsistent undertones; since, firstly, as Hahn points out (150) the last promise was limited to "data with a ground resolution of 50 metres" or better and interpreted information on natural resources (151). Thus the U.S.S.R. was making no

145. e.g. with Bulgaria - U.N. DOC.A/AC 105/125 (1974), p.12. More recently agreements have been concluded with several Eastern European Countries U.N. DOC.A/C 1/31/3 (1976), pp.2-3.

146. U.N. DOC.A/AC 105/C.I./S.R. 176 (1972), p.10.

147. U.N. DOC.A/AC 105/C.I./L96 (1977).

148. Ibid.

149. Ibid.

150. HAHN, (1978), p.456.

guarantees as regards data with a ground resolution of less than 50 metres.

However by restricting the data to interpreted information this could mean that the U.S.S.R. has the last say in what information would be transferred, whereas if the sensed state was given the primary data and the expertise to interpret it far greater use may be made of the information, possibly to the detriment of its neighbours or the U.S.S.R. itself. It is such a situation that the open data avoids since allowing information to be freely transferred no sensed state becomes subject to any other, except insofar as it chooses to ignore a piece of information to its own detriment. In fact it is debateable whether the U.S.S.R.'s approach is contrary, at least in principle, to the various United Nations resolutions regarding sovereignty over natural resources. Secondly, the working paper is silent as to remotely sensed material received on non-signatory states, and since it hardly seems likely that the U.S.S.R. will simply switch off its satellites as they pass over such states or develop a satellite capable of differentiating between such states, there would appear to be an inconsistency here with its restrictive data approach, together with its principle of respect for national sovereignty. Thirdly, by involving itself with bilateral agreements there may be an acknowledgement of the likely failure of the multilateral treaty within the United Nations, thereby increasing the likelihood of the remote sensing issues to be settled by the establishment of customary international law.

Because of the increase in the use of bilateral agreements to regulate the applications of remote sensing it would seem more and more likely that this activity will become subject to customary international law rather than by some multilateral treaty drawn up specifically to deal with remote sensing. Such a position may be justified on two grounds in that the politically charged atmosphere within the United Nations is not conducive to the

151. U.N. DOC.A/AC 105/C.1/L96, (1977) as cited in HAHN, (1978) p.456.

establishment of such a treaty, and also since no state has objected to remote sensing per se this would tend to promote and establish a system of regulation based on custom and usage, though within the broad terms of the Outer Space Treaty. The role of the United Nations would therefore seem to be changing from the role of supervisor to that of monitor (152) and it is suggested by at least one commentator that in the absence of a multilateral treaty, the United Nations should adopt a position of encouraging regional co-operation whilst confining its own activities to the solving of specific legal problems as and when they arise (153). Further the United Nations should attempt to limit its role to the provision of an administrative system to aid the promulgation of remotely sensed material. Nevertheless it is a disturbing feature of the United Nations that it is becoming less able to assert itself as the governing body of activities in outer space generally and when it does achieve this position by way of multilateral treaties state practice tends to distort the provisions in order for the practical application of new technologies to be realised. This problem is becoming apparent not only with regard to existing legal issues, but also in respect of possible future issues as may be seen in relation to direct broadcast satellites.

## II DIRECT SATELLITE BROADCASTING

Direct satellite broadcasting (D.B.S.) has been defined by Gotlieb and Dalfen as "the transmission of messages directly to the houses or communities of the general public via artificial space satellites" (154). In many respects this problem area of space law is very similar to that of remote sensing in that its regulation is in the process of following the same

152. HAHN, (1978), p.457.

153. KRAFFT, (1981), p.476.

154. A. GOTLIEB and C. DALFEN, "Direct Satellite Broadcasting: A Case Study in the Development of the Law of Space Communications", 7 Canadian Yearbook of International Law, (1969), p.33.

tortuous and convoluted path. Discussions on the subject have been taking place since 1968 when the COPUOS established a Working Group to look into the problems of this new technology, though the subject had been included on the agenda of the COPUOS and had been discussed technically in the I.T.U. prior to this date (155).

Though the initial discussions in the Working Group occurred just after the approval of the Outer Space Treaty in 1967, this treaty did not deal specifically with D.B.S. in any way but merely established general legal principles governing outer space. Undoubtedly certain articles, namely I and II, were applicable to D.B.S. in that they referred to freedom of use and the non-acquisition of territory in space, however the treaty restricted itself to activities in outer space and not those which have a direct effect on the earth, such as D.B.S. and remote sensing, even though they carry wide political implications.

The present conventional method of transmitting broadcast signals is based on a "point to point" system across the surface of the earth, from land station to land station (156). Where satellites are used their role is really one of distributor to enable the signals to be transmitted over large distances or to avoid the interference of certain types of obstacles e.g. mountain ranges, rather than as broadcaster. These types of satellites have a low transmission power and therefore require sophisticated receiving stations (157). Direct broadcast satellites, however, are situated in geo-stationary orbit and have a high transmission power, so that they may broadcast directly into home receivers (158). It is considered that such satellites substantially reduce the cost of setting up a television system since expensive land stations do not need to be constructed in anything like

155. J. FREEMAN, "Toward the Free Flow of Information: Direct Television Broadcasting via Satellite", 13 The Journal of International Law and Economics, (1979), pp.336 & 337.

156. B.I. EDELSON, "Global Satellite Communications", Scientific American, (1977), pp.58-73.

157. FREEMAN, (1979), p.331.

158. U.N. DOC.A/AC 105/83 Annex III, (1970).

the same numbers (159). Further these systems, because of their ability to cover large geographical areas, are able to broadcast to a far greater number of people, thus such systems are particularly attractive to developing countries where cost and the ability to transmit to a large audience over a wide area is particularly important. Indeed D.B.S. is less attractive to developed countries because of the existence of conventional systems. Nevertheless it is the developing countries who are most in favour of the strict regulations of D.B.S., even though it is they who will benefit more than any others, both economically, educationally and probably medically. D.B.S. systems come in two basic forms - those that broadcast to community receivers from where the broadcast is re-transmitted to private receivers, and those that broadcast directly to private receivers. It is the latter which promotes the most controversy since here there is no control as to what is actually broadcast (160).

The legal problems that have arisen out of direct broadcasting have their roots in the fact that this type of broadcasting covers an extremely large geographical area, and it is considered by at least one commentator on the subject that three satellites placed in different segments of a geostationary orbit could saturate ninety percent of the earth's surface (161). The ability to cover such a wide area creates the situation that programmes broadcast by one state may be beamed into countries with entirely different social, economic and political cultures; such programmes therefore could do irreparable harm to these states, though it may of course bring considerable benefits. The legal problems created may be said to threefold; firstly, there is the problem of spillover of broadcasts from one state to another;

159. U.N. DOC.A/AC 105/147 Annex II (1975); U.N. DOC.A/AC 105/117 Annex II (1973).

160. N.M. LESKO, "Legal Implications of Direct Satellite Broadcasting - The U.N. Working Group", 6 Georgia Journal of International and Comparative Law, (1976), p.565.

161. M.A. DAUSES, "Direct Television Broadcasting by Satellites and Freedom of Information", 3 Journal of Space Law, (1975), p.59.

secondly, the problems relating to the free flow of information by direct broadcast satellites into adjoining states and the impact on the national sovereignty of those states, and, thirdly, the problems arising out of the requirement of prior consent to direct broadcast by states which will be affected by such transmissions. All three of these problems have been raised before the Working Group on Direct Broadcast Satellites of the Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space.

With regard to the first problem it has already been mentioned that because of the wide distribution of transmission signals it is inevitable that some degree of spillover will occur from the intended area of transmission. The main fear associated with this is that, whilst it is accepted that some degree of spillover is unavoidable, some states may use this as an excuse to project propaganda into the overspill area. The Working Group has stated this problem as giving rise to the necessity "to elaborate criteria on a universally accepted basis to define what was and what was not unavoidable spillover in order to avoid possible problems of interpretation on this point" (162). In order to solve the problem of spillover being used for propaganda purposes several states have drafted proposals that in cases of unavoidable spillover, the state or broadcaster responsible should consult with the state subject to that spillover though no mention is made as to what the aims of such consultation will be (163).

Undoubtedly it is the second problem relating to the free flow of information and its relationship to national sovereignty that has caused the

162. Report of the Working Group on Direct Broadcast Satellites on the Work of its Fifth Session, U.N. DOC.A/AC 105/127, (1974), p.16.

163. Soviet Draft on Principles Governing the Use by States of Artificial Earth Satellites for Direct Television Broadcasting, Article VII, U.N. DOC.A/AC 105/W.G.3 (v)/CRP.1 (1974); Canadian Draft Principles Governing Direct Television Broadcasting by Satellites Article VII U.N. DOC.A/AC 105/W.G.3/L4, (1974); Argentine Proposal Article XIV U.N. DOC.A/AC 105/W.G.3 (v)/CRP.3. (1974).

greatest debate. The U.S.S.R. has always maintained that a state has a right to determine what should be broadcast to and received by its population, whilst the United States has always maintained that the Outer Space Treaty provides for the free use of outer space which would include direct satellite broadcasting (164). Further many third world countries are fearful over the use of direct broadcast satellites since there is a feeling that this could undermine their cultural independence (165). Since the U.S.A. and the U.S.S.R. are now technically advanced enough to develop D.B.S. technology and put it into operation, the third world countries' misgivings are not without foundation. In addressing oneself to the problem of the cultural subversion of third world states it should also be borne in mind that this can occur in a perfectly innocent inadvertent manner, since simple advertising portraying a certain way of life may have that effect. In fact virtually all possess some element of opinion or bias because this is in the nature of the writer and/or the producer of the programme (166). This problem is very difficult to rationalise and solve since both leading space nations point to some international agreement backing up their opinion. Thus the United States cite the Universal Declaration of Human Rights Article 19 as justifying their stance. This states that:-

"... everyone has the right to freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media regardless of frontiers."  
(167)

While Article 19 gives a great deal of support to the United States position there is a flaw in its argument since the United States has not adopted the Declaration.

164. Supra Note 2, Article I.

165. LESKO, (1976), p.567.

166. R. ERRERA, "Problems Raised by the Content of Television Programs Transmitted by Telecommunication Satellites", The International Law of Communications, (1971), p.88.

167. Universal Declaration of Human Rights, G.A. RESOLUTION 217 (III), U.N. DOC.A/810, (1948), Article XIX.

Similarly the U.S.S.R. looks to the United Nations General Assembly Propaganda Resolution of 1947 which states that:-

"The General Assembly ...

1. Condemns all forms of propaganda, in whatsoever country conducted, which is either designed or likely to provoke or encourage any threat to the peace, breach of the peace, or act of aggression ...". (168)

as backing up its position on direct broadcasting. A point in favour of the Soviet position is that the preamble to the Outer Space Treaty itself refers to this provision (169). whilst this provision relates fundamentally to political propaganda, in its draft proposals governing the use of space for direct television broadcasting (170) the Soviet Union extends this to include cultural propaganda. Whether one accepts the Soviet extension or not, it would seem to be certain that the principles relating to political propaganda would on the whole cause little dispute (171), though it would be debateable as to whether cultural propaganda is necessarily part and parcel of political propaganda anyway.

In order to solve this problem it is clear that some common ground must be found between freedom of information and national sovereignty. In the present mood of the COPUOS and its Legal Sub-Committee this would seem to be unlikely and to state otherwise would tend to ignore the fact that these bodies have come a long way since the early days of space law negotiations when there was marked evidence of the spirit of co-operation combined with respect for national sovereignty. Nevertheless the Argentinian Draft states in Article 13 that:-

"... the principle of freedom of information and the free flow of communications is not incompatible with the adoption of additional principles designed to harmonise the rights of states and to protect the economic, social and cultural values of their peoples." (172)

168. 1947 Anti-Propaganda Resolution, G.A. RESOLUTION 110, U.N. DOC.A/519 (1947).
169. Supra Note 2 Preamble.
170. Supra Note 163.
171. LESKO, (1976), p.567.
172. Supra Note 163.

The third problem which has emerged from the fact that direct broadcast satellites cover wide geographical areas arises mainly out of a proposal contained in Article V of the Soviet Draft which states that:-

"... States may carry out direct television broadcasting by means of artificial satellites to foreign States only with the express consent of the latter." (173)

It is thought that the term 'express consent' here is ambiguous since it does not specify whether positive consent is required (174), or whether an explicit refusal to allow a broadcast is the criteria (175). Further there is no mention as to whether the consent given relates to all programmes broadcasted or to individual programmes only (176).

Two major problems exist with the idea of prior consent. Firstly because direct broadcast satellites cover such wide geographical areas, the consent of several states would be required and the withdrawal of that consent by any one state could not only prevent transmission but ultimately render the whole system useless. Secondly the requirement of prior consent could cause considerable domestic problems within some states. Of particular note here is the United States since control over broadcasting would be contrary to its entrenched principle of freedom of speech. Further since the Outer Space Treaty provides that States should bear international responsibility for activities in Space (177), this would mean that the United States government would be required to limit the activities of private enterprise - an action that would appear to be contrary to the fundamental philosophy of the United States.

One method of solving the above problems would be to organise international agreements on a regional basis, grouping states of largely similar

173. Supra Note 163, Article V.

174. GOTLIEB and DALFEN, (1969), p.54.

175. Report of the Working Group on Direct Broadcast Satellites on the Work in its Second Session, U.N. DOC.A/AC 105/66 (1971), as contained in LESKO, (1976), p.570.

176. J. D'ARCY, "Direct Broadcast Satellites and Freedom of Information", The International Law of Communications, (1971), p.167.

177. Supra Note 2 Article VI.

political and cultural backgrounds. This would tend to make the refusal of consent more improbable, though not of course impossible. As Lesko points out even this has its limitations because of the likelihood of overspill into a state not within that regional group (178).

Just as for remote sensing, the negotiations for the control of direct broadcast satellites have been somewhat prolonged, since as early as 1959 the I.T.U. discussed the possibility of space communications. The opinions within this varied from a position of complete freedom to a position of a complete ban (179). The former category originally comprised of both the U.S.S.R. and the U.S.A., as a result the I.T.U. was able to allocate a number of narrow frequency bands for the experimental use of direct broadcasting (180). From the I.T.U. the discussion of direct broadcasting shifted to the COPUOS of the United Nations where discussions took place in 1966 when the United Arab Republic proposed a complete ban on direct broadcasting, with the U.S.S.R. supporting this position thereby reversing its original stance (181).

Following the proposal of the United Arab Republic the question of direct broadcasting was postponed until after the passing of the Outer Space Treaty, which failed to lay down any basic provisions relating to either remote sensing or direct broadcasting. However the treaty did establish the principle of freedom of use (182) subject to international law (183).

Once the Outer Space Treaty had been completed the COPUOS again turned its attention to discussing the issues of direct broadcasting, culminating in 1968 in the setting up of a Working Group on Direct Broadcast by the General Assembly (184). The terms of reference of the Working

178. LESKO, (1976), p.571.

179. J.E. GALLOWAY, "The Politics and Technology of Satellite Communications", LEXINGTON, (1972), p.75.

180. FREEMAN, (1979), p.337.

181. Ibid.

182. Outer Space Treaty 1967 Article 1.

183. Ibid Article III.

184. G.A. RESOLUTION 2453, 23 U.N. G.A.O.R. SUPP. No.18; U.N. DOC.A/7218 (1968).

Group was "to study and report on technical feasibility as well as social, cultural, legal and other implications" of direct broadcasting (185). At the second session of the Working Group all but the United States were in favour of some form of control in order to protect the social, cultural, legal and political integrity of individual states (186).

In 1972 two major documents on direct broadcasting appeared. The first came out of discussions within UNESCO and was entitled the "Declaration of Guiding Principles on the Use of Satellite Broadcasting for the Free Flow of Information, the Spread of Education and Greater Cultural Exchange" (187). The Declaration supposedly supports the principle of the free flow of information, but in fact on closer examination it requires states to reach prior agreements before broadcasts are transmitted (188). Further the Declaration accepts the rights of states to protect their cultural integrity (189) and to control the content of educational programmes (190). However the Declaration is of less importance than might be at first thought since it is not binding on member states and secondly, a large number of members abstained from the vote thereby precluding a consensus of the international community (191).

The second major document to appear in 1972 was the Soviet Draft Convention Governing the Use by States of Artificial Earth Satellites for Direct Television Broadcasting (192), which was introduced in the U.N. General Assembly, along with a resolution calling for the establishment of a treaty on direct television broadcasting by the COPUOS and its Legal Sub-Committee (193). Undoubtedly the Soviet Draft Convention was mainly

185. Ibid.

186. FREEMAN, (1979), p.339.

187. U.N. DOC.A/AC 105/109, (1973).

188. Ibid Article IX Paragraph 1.

189. Ibid Article VII Paragraph 2.

190. Ibid Article VI Paragraph 2.

191. K. QUEENEY, "Direct Broadcast Satellites and the United Nations", Sijthoff and Noordhoff (1978), pp.125-133.

192. U.N. DOC.A/8771 (1972).

193. U.N. DOC.A/8730 (1972).

concerned with the need for prior "express consent" (194), though this was not defined. Further, certain types of broadcast were prohibited and declared to be unlawful, a state being able to enforce those provisions by "the means at its disposal" (195), though again this was not defined but does not appear to rule out military intervention. The Draft Convention does not mention the principle of free flow of information.

The resolution of the U.S.S.R. calling for the drawing up of an international treaty on direct television broadcasting by the COPUOS was passed by 102 votes to 1, the sole dissenter being the United States who objected to any form of regulation. The United States based its position on the fact that the resolution did not recognise the positive advantages of direct broadcasting, but concentrated on the negative aspects in that direct broadcasting, *inter alia*, was an "external interference with sovereignty" (196). Secondly, the United States argued that since the technology was still very young, to negotiate such a treaty was premature. The United States therefore argued a 'wait-and-see' attitude in order to assess the impact direct broadcasting would make since it might never get beyond a regional form (197). Thirdly, the United States alleged that the resolution made no mention of the principle of freedom of speech, and finally, violated the principle of free flow of information provisions in the Universal Declaration of Human Rights (198).

Shortly after the passing of the above resolution the Soviet Union introduced an amended version of their Draft Convention entitled Principles Governing the Use by States of Artificial Earth Satellites for Direct Television Broadcasting ("Soviet Draft") (199). The new Draft Principles

194. Supra Note 192, Article V.

195. Supra Note 192, Article IX (1).

196. U.N. DOC.A/PV 2059-2093 (1976), pp.4 & 5.

197. Ibid.

198. G.A. RESOLUTION 217 (III), 3 U.N. GAOR 74, U.N. DOC.A/810 (1948) Art.XIX as contained in FREEMAN, (1979), p.344.

199. U.N. DOC.A/AC 105/WG 3(v)/CRPI and CORRI, (1974).

was very much the same as the Draft Convention and still required express consent (200). Further, militaristic, racist and culturally damaging programming was still illegal (201) and spillover was still restricted (202). However there were two major differences in that the list of prohibited activities was deleted and, secondly the remedies provision was watered down so that only lawful action could be taken by an offended state (203). This document, with its twelve principles, has changed very little since 1977 and has been debated widely within the COPUOS.

Also in 1972 a joint Draft Principles was submitted by Canada and Sweden though this is less restrictive than the Soviet Draft (204). Since this document only requires prior consent (205) rather than "express consent" it is argued by Freeman (206) that this may be regarded as a weaker standard since it is possible that consent may be implied here. The Canadian and Swedish Draft Principles also goes further in that it expressly preserves both national sovereignty and the free flow of information (207). Another difference between this and the Soviet draft is that this draft does not attempt to limit or prohibit specific types of broadcasting, and thus does not open itself up to possible interpretative difficulties in this area.

In 1974 the United States itself produced a set of draft principles (208) in which it attempted to promote the wide advantages of direct television broadcasting and that it should be regarded not only as a medium for the exchange of technological information, but also as a method by which differing viewpoints may be interchanged (209). The U.S. Draft therefore

200. Ibid Article V.

201. Ibid Article IV.

202. Ibid Article V.

203. Ibid Article IX.

204. U.N. DOC.A/AC 105/WG3/L4, (1973).

205. Ibid Article V.

206. FREEMAN, (1979), p.345.

207. Supra Note 204 Article II.

208. United States Draft Principles on Direct Broadcast Satellites, U.N. DOC.A/AC 105/W.G. 3(v)C.R.P.2 (1974).

209. Ibid Article VIII.

makes no mention of any requirement to obtain prior consent and places no restrictions on the type of information that may be transmitted. The U.S. Draft also tends to reject the more formal requirement of prior agreements in order to solve the problem of spillover, preferring that consultations only should take place in order to solve such problems (210). The U.S. Draft is thus in contradistinction to the Soviet Draft in that it allows for the free flow of information whilst not mentioning prior consent; conversely, the Soviet Draft requires prior consent while not mentioning the free flow of information.

In 1975 the Outer Space Committee drew up a set of draft principles which drew on the documents submitted by the U.S.S.R., Canada and Sweden, and the U.S.A. known as the Draft Principles on Direct Television Broadcasting (211). The Draft Principles follows a very similar format to the Draft Principles on Remote Sensing in that areas of contention are contained within brackets until agreement is reached. In 1980 the Draft Principles contained some thirteen discussion points to be included in whole or in part in any future treaty (212). The three most contentious issues relate to the 'duty and right to consult', 'consultation and agreements between States' and 'programme content'. The principle under the 'duty and right to consult' states:-

"Any state requested to do so by another State should promptly enter into consultations with the requesting State concerning any matter arising from those activities in the field of international direct television broadcasting by satellites that are likely to affect the requesting State, and such consultations should be conducted with due regard to the other principles in this document."

This principle is contentious because it places an obligation on a state to consult where spillover is likely. The problem associated with this proposal

210. Ibid Article X.

211. U.N. DOC.A/AC 105/218, Annex II, (1978).

212. U.N. DOC.A/AC 105/271 Annex I, (1980), pp.6-11. "

is that it does not state what form those consultations should take nor as to what conclusion such consultations should come to. Further because of the uncertainty of other draft principles it is not possible to say with what regard those consultations should be based on.

The second principle that is the centre of substantial disagreement is concerned with 'consultation and agreements between States'. It is this principle which is the main stumbling block to the satisfactory conclusion of discussions. This principle originally stated that:-

"A direct television broadcasting service by means of artificial earth satellites specifically directed at a foreign State, which shall be established only when it is not inconsistent with the provisions of the relevant instruments of the International Telecommunications Union, shall be based on appropriate agreements and/or arrangements between the broadcasting and receiving States or the broadcasting entities duly authorised by the respective States, in order to facilitate the freer and wider dissemination of information of all kinds and to encourage co-operation in the field of information and the exchange of information with other countries."

Whilst this principle purports to pay lip service to the concept of the free flow of information, it still contains provisions requiring prior consent - a concept which the United States has consistently argued against in that it is incompatible with the free flow concept. In 1975 the United States marginally altered its position by stating before the United Nations that a state wishing to undertake satellite broadcasting should be under two types of obligations:-

- "(1) Inform states within the intended reception area that it intends to establish a broadcasting system; and
- (2) Enter into consultation on any matter concerning the broadcasting system in the event that an intended receiving state makes a request for such consultation (213).

However whilst the U.S.A. stated that it could accept the requirement of consultation if couched in the above form, it did not actually table a

213. J. FREEMAN "Direct Broadcast Developments and Directions: The National Sovereignty and Cultural Integrity Positions", 74 American Society of International Law Proceedings, (1980), p.315, under Remarks by Stephen Bond.

motion to that effect until 1979 (214). The United States justified such an approach on the grounds that no state would undertake direct satellite broadcasting against another state which was unhappy about such broadcasts. Further it is unlikely that programme sponsors would take part in broadcasts where such a situation existed. More particularly it is unrealistic to advertise products where they are not available. The United States also stated that any disputes could be resolved merely by consultation, though a number of states were not convinced by this argument. The next approach of the United States really followed a United Kingdom proposal in 1977 (215), in that a state engaged in DBS had to comply with the I.T.U. Regulations laid down in the 1977 World Administrative Radio Conference in that it had to adhere to the radio frequencies allocated to it. It was further stated in the Legal Sub-Committee in 1980 that paragraph 1 of the principles was unnecessary because of Radio Regulations 6222 (formerly 428A) (216) which stated that:-

"In devising the characteristics of a space station in the broadcasting satellite service, all technical means available shall be used to reduce, to the maximum extent practicable, the radiation over the territory of other countries unless an agreement has been previously reached with such countries."

As in response to the working paper submitted by the United Kingdom in 1980 (217), several states including the U.S.S.R. rejected the idea that the I.T.U. regulations could replace paragraph 1. This attitude was adopted because, although these states accepted that the I.T.U. regulations do apply, broadcasts would be still technically possible should a state choose to ignore those regulations. Further it was thought that the regulations may not cover all the aspects of direct television broadcasting. Finally it was stated that because DBS interferes with national sovereignty then the problem should be solved on a political basis (218). This basis undoubtedly

214. Ibid at p.316.

215. U.N. DOC.A/AC 105/C2/AR 269 (1977), p.7.

216. WARC, 1971.

217. U.N. DOC.WG/DBS/1980/WP 4, (1980).

218. U.N. DOC.A/AC 105/271, (1980).

restricts the United States ability to reach a compromise and appears to have dealt a blow to their hopes of having suggested a solution to the problem in a technical manner. Thus the problem of the 'consultation and agreements' principle remains to be solved. It may be argued however that by attempting to reach a compromise the United States has stepped down from its position of maintaining a completely unregulated DBS regime. To a large extent though such a position may be unrealistic anyway since in all other forms of communication such as books, mail and records restrictions are the norm (219) and therefore the arguments of the United States against restrictions must be weakened considerably. Further, in practice in the final analysis an unregulated, free flow of information principle would simply be prevented by jamming by the receiving state, as in the cases of Radio Liberty and Radio Free Europe.

The present draft principle on 'consultation and agreement' reads as follows:-

- "1. (A direct television broadcasting service by means of artificial earth satellites specifically directed at a foreign State, which shall be established only when it is not inconsistent with the provisions of the relevant instruments of the International Telecommunications Union, shall be based on appropriate agreements and/or arrangements between the broadcasting and receiving States or the broadcasting entities duly authorised by the respective States, in order to facilitate the freer and wider dissemination of information of all kinds and to encourage co-operation in the field of information and the exchange of information with other countries).
2. (For that purpose a State which proposes to establish or authorise the establishment of broadcasting service by means of artificial earth satellites specifically directed at a foreign state shall without delay notify that State of such intention and shall properly enter into consultations with that State if the latter so requires.)
3. (No such agreements and/or arrangements shall be required with respect to the overspill of the radiation of the satellite signal within the limits established under the relevant instruments of the International Telecommunications Union.)

219. M.E. PRICE, "The First Amendment and Television Broadcasting by Satellite", 23 U.C.L.A. Law Review, (1976), p.890-2.

- ((b) No such agreements and/or arrangements or consultations shall be required with respect to the overspill of the radiation of the satellite signal within the limits established under the relevant instruments of the International Telecommunications Union).
- ((c) Delete paragraph 3).
- ((d) This principle shall not apply with respect to the overspill of the radiation of the satellite signal within the limits established under the relevant instruments of the International Telecommunications Union). (220)

The third major contentions issue within the Draft Principles relates to 'programme content'. This draft principle states:-

"(States or their broadcasting entities which participate in direct television broadcasting by satellite with other States should co-operate with one another in respect of programming, programme content, production and interchange of programmes.)

(The broadcasting of advertising, direct or indirect to the countries other than the country of origin should be on the basis of appropriate agreements between the countries concerned).

(Notwithstanding the foregoing, States undertaking activities in direct television broadcasting by satellites should in all cases exclude from the television programmes any material which is detrimental to the maintenance of international peace and security, which publicises ideas of war, militarism, national and racial hatred and enmity between peoples, which is aimed at interfering in the domestic affairs of other states or which undermines the foundations of the local civilisation, culture, way of life, traditions or language). (221)

The United States has considered this principle to be too vague and therefore open to abuse, however it is thought that most Western European states would accept such a principle, since they tend to accept state intervention in broadcasting anyway (222), though it is questionable whether such restrictions would be tolerated if they applied to domestic broadcasts which happened to spillover into a neighbouring state.

220. U.N. DOC.A/AC 105/271 Annex 1, (1980), pp.6-11.

221. Ibid.

222. FREEMAN, (1980), p.317.

Nevertheless the majority of developing countries feel that control of direct broadcasting by way of prior consent and consultation is needed to protect their cultural integrity, whilst strictly speaking this could be achieved merely by agreeing on the content of programmes for direct broadcasting. This particular line of argument may therefore be a compromise solution between prior consent and the concept of the free flow of information. The effect therefore of a set of content criteria would be to allow the free flow of information subject to that information complying with certain criteria. The usefulness of such a provision is 'twofold'. Firstly, direct broadcasting would not be subject to lengthy negotiations to reach agreements with several states; and secondly, the direct broadcasting station would be aware of the limitations imposed on its programme content and make such changes as appear necessary to comply with the content criteria.

Undoubtedly the difficulties of drafting a set of content criteria cannot be underestimated but in the face of the present differences within the COPUOS over the prior consent principle, there would seem to be nothing to lose in pursuing such a line of negotiations. It would be unrealistic also to assume that no consultations with other states would be required, since it is only reasonable that those nations which display anxieties over certain programmes in relation to their cultural integrity must be consulted in order to deal with any misgivings over the content of particular direct broadcast programmes.

Such a process can only serve to promote international co-operation since to a large extent conflict would be reduced, disputes being settled on the basis of co-operation and self-regulation. Nevertheless such an approach is not finding its way within the Working Group because of a lack of consensus as to the need for the regulation of programme content (223).

223. United Nations Committee on the Peaceful Uses of Outer Space, Report of the Legal Sub-Committee on the Works of its Nineteenth Session (10th March - 3rd April 1980), U.N. DOC.A/AC 105/271 Annex 1 (1980).

In 1981 the Legal Sub-Committee again re-established the Working Group on D.T.B., although it now restricted its activities to two areas - the Principles of "State Responsibility" and "Consultation and Agreements between States". However no concrete conclusions were agreed on and the Working Party merely acted as an arena for the discussion of various points of view. The lack of progress appeared to originate from the fact that the Working Party was still somewhat chastened and shocked by the widely divergent positions taken during the 1980 discussions (224).

Undoubtedly the most important development of 1981 was the submission of the twelve country working paper on April 3rd to the Legal Sub-Committee entitled, "Elaboration of Draft Principles Governing the Use by States of Artificial Earth Satellites for Direct Television Broadcasting" (225). The twelve nations consisted of Argentina, Brazil, Canada, Chile, Columbia, India, Indonesia, Iraq, Kenya, Mexico, Niger and Venezuela. The document itself consisted of a preamble and 10 draft principles, all of which had been discussed in one form or other within the Working Group or the Legal Sub-Committee. One major difference between the 1981 twelve nation draft and the draft considered by the 1980 Legal Sub-Committee was that the 1981 draft made no reference to the Principles dealing with "Programme Content".

The draft Principle on the "Duty and Right to Consult", presented as the seventh Principle in the draft of the group of 12, constituted a major alteration to the previous sub-committee drafts. Originally the previous drafts merely called for prompt consultations between all states concerning any matter arising from D.T.B. activities that were likely to affect the requesting State. The new draft Principle was a great deal more complex

224. CHRISTOL, (1982), p.697.

225. U.N. DOC.A/AC 105/C2/L131, 3rd April 1981; U.N. DOC.A/AC 105/228 Annex IV, 20th April 1981, p.1; U.N. DOC.A/36/20, Annex II (1981), p.20.

in that it was founded on the idea that States involved in broadcasting and receiving had to have an "established" service with each other. Those States and others either receiving or broadcasting "within the same service" were, on the request of a receiving State to a broadcasting State, to take part in consultation regarding their D.T.B. activities (226). Further any such consultations were not to prejudice other consultations which the broadcasting and receiving State "may undertake with any other State on that subject" (227).

Great differences also exist between the proposal of the group of 12 concerning "Consultation and Agreements between States", and the proposal contained in 1980 draft of the Legal Sub-Committee. The new proposal contained in draft Principle 10 stated that:-

"A State which intends to establish or authorise the establishment of an international direct television broadcasting satellite service shall without delay notify the proposed receiving State or States of such intention and shall promptly enter into consultation with any of those States which so requests." (228)

This form of the Principle uses the term "intends" rather than "proposes", and substitutes the phrase "the proposed receiving State or States" for the term "Foreign State". Thus the new version of the Principle requires consultation with any of those "States" so requesting as opposed to a "State", if it were to request such consultations (229). The effect of this could be to curtail bilateral agreements in favour of regional agreements.

Paragraph 2 of the revised "Consultation and Agreements between States" Principle stated that D.T.B. "shall only be established after the conditions set forth in paragraph 1 above have been met and on the basis of the agreements and/or arrangements in conformity with the relevant instruments of the International Telecommunication Union and in accordance with

226. U.N. DOC.A/36/20, (1981), p.22.

227. Ibid.

228. Supra Note 225, at p.22.

229. CHRISTOL, (1982), p.702.

these principles" (230). This provision made some minor changes, such as stating that future agreements on D.T.B. would have to be "in conformity with" rather than not being "inconsistent" with the relevant instruments of the I.T.U. However this draft Principle omitted to include the objective, contained in the original draft, allowing "the freer and wider dissemination of information of all kinds and to encourage co-operation in the field of information and the exchange of information with other countries" (231). This principle would not therefore appear to encourage the principle of the free flow of information.

The new draft Paragraph 2 would appear to lay down the principle that three requirements had to be fulfilled before D.T.B. could be operated. Firstly, there had to be prior consultations with receiving states as laid down in Paragraph 1; secondly, there had to be compliance with the rules and regulations of the International Telecommunication Union, including Regulation 6222; thirdly, there had to be compliance with the terms of the proposed principles (232).

A further feature of the draft Principle on "Consultation and Agreements between States" is that it made no mention of the need to facilitate "the freer and wider dissemination of information of all kinds and to encourage co-operation in the field of information and the exchange of information and the exchange of information with other countries" as contained in Paragraph 1 of the Sub-Committee's draft of 1980 (233). Also if one considers Paragraph 3 of the new draft principles it reads:-

"With respect to the UNAVOIDABLE overspill of the radiation of the satellite signal, the relevant instruments of the I.T.U. shall be exclusively applicable." (234)

230. Supra Note 225 at p.23.

231. U.N. DOC.A/AC 105/288 (Annex II, 20th April, 1981), p.6.

232. CHRISTOL, (1982), pp.702-3.

233. U.N. DOC.A/AC 105/271 Annex 1, (1980), pp.6-11.

234. Supra Note 225 at p.23.

This constituted a major departure from the 1980 draft Principles in that the need for agreements or consultation had been specifically eliminated in cases of overspill which nevertheless complied with the relevant instruments of the I.T.U. (235). Further the use of the word "unavoidable" emphasised the difference between overspill and D.T.B. specifically designed for reception in a Foreign State. According to Christol the effect of these two changes is to reflect the views of those States in favour of controls on the free dissemination of information and the imposition of constraints on international broadcasting (236). Indeed he points out that a large proportion of the 12 states are equatorial which for various reasons have produced a document that serves their own national interests (237). Nevertheless at the end of 1981 the draft Principles remained the same as the 1979 and 1980 documents.

It would have appeared therefore that the negotiations for an international agreement in the field of direct broadcasting had reached an impasse, however on December 10th 1982 the "Group of 12's" draft principles document was adopted by the General Assembly under the title "Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting" (238). The voting for the Resolution was 107 in favour, with 13 against and a further 13 abstentions, though it should be noted that all but one (U.S.S.R.) of the leading space nations were opposed to the Resolution, which would perhaps indicate the divergence between the Resolution 37/92 and the preceding negotiations that had taken place in the Legal Sub-Committee. Nevertheless the Group of 12 took the view that its set of Principles could prepare a way to an international convention on D.T.B. and this view was supported by other States. Thus, the issue came to be placed on the agenda of the General Assembly (239).

235. CHRISTOL, (1982), p.702-3.

236. CHRISTOL, (1982), p.703.

237. Ibid.

238. U.N. DOC.A/RES/37/92, 4th Feb.1983; (1983) XXII I.L.M. 451.

239. C.Q. CHRISTOL, "Prospects for an International Legal Regime for Direct Television Broadcasting", International & Comparative Law Quarterly, (1985), p.144.

In the discussions in the Special Political Committee in November 1982 the differences between the different sets of Principles were expressed both substantively and procedurally.

On the substantive issues it was argued by the opposers to the Group of 12 that attention should have been paid to the "international legal responsibility of States regarding the content of broadcasting and of the requirement of prior consent of 'receiving States' through a non-prejudicial reference to whatever international law requires on these matters" (240). It was argued that the proposed Resolution called for prior agreements or arrangements dealing with content and prior consent on a level far beyond existing technical and I.T.U. conceived restrictions, and anyway would be contrary to international law in that States would have to act in breach of Article 19 of the Universal Declaration of Human Rights in that such a principle would give States an "unconditional veto over this form of broadcasting" (241).

Procedurally it was argued by the United States representative that the adoption of Resolution 37/92 had left the traditional use of the consensus process within COPUOS in complete disarray and that the referral of issues still under negotiation to the General Assembly simply to obtain a majority vote would be unrewarding (242). He also stated that the consideration of the issue was premature in the light of the earlier intensive negotiations which had resulted in "substantial progress toward a consensus" (243).

Summing up it can be seen that the Group of 12's draft Principles, now expressed in General Assembly Resolution 37/92, places, not surprisingly, a far greater emphasis on the sovereign rights of States than had the draft

240. U.S./U.N. Press Release, 22nd Nov. 1982, No.140(82), p.2.

241. Ibid at p.2. CHRISTOL, (1985), pp.145-146.

242. U.N. DOC.A/AC 105/C.2/L131; U.N. DOC.A/AC 105/288, Annex 4, p.1, 20th April 1981; U.N. DOC.A/36/20, p.4 (1981).

243. Supra Note 240 at p.1.

of the Legal Sub-Committee. Further the Resolution enhances the vote of the I.T.U. since it mandates that an international D.T.B. service should only be established when it conforms to the relevant instruments of the I.T.U. It should also be stated that whilst Principle 10 on "Consultations and Agreements between States" does not expressly establish a requirement of prior consent on the part of the receiving State it is clear that good faith negotiations are required during which a potentially receiving State would be able to raise the objection of non-consent (244).

The Group of 12 had argued that they had taken the matter to the General Assembly in 1982 because D.T.B. had become operational in some countries already, that it had far-reaching and critical implications, that commercial interests were already assessing the potentialities of D.T.B. and that the early establishment of principles for international D.T.B. would advance the purposes and principles of the United Nations Charter (245).

Initial reactions, as far as the last point is concerned, suggests the opposite since the distribution of votes and the fact that Resolution 37/92 is of a non-binding status would tend to indicate that the international regulation of D.T.B. has still a long way to go before finally being put to bed.

## CONCLUSION

It would appear from analysing the issues of remote sensing and direct television broadcasting that in the arena of outer space, the United Nations and particularly the Committee on the Peaceful Uses of Outer Space is becoming less able to legislate effectively on new developments. The undoubted reason for this is the uncompromising ideological differences between the East and West and the failure to sustain the spirit of co-operation formally present in the drafting of the Outer Space Treaty.

244. CHRISTOL, (1985), p.149.

245. Ibid.

While it is useful to have discussions within the various bodies dealing with these two issues in order to delineate the problems relating to each individual question, the fact remains that in the absence of a moratorium the leading space nations will continue to develop their expertise and operations in these particular fields. Certainly the present negotiations will not prevent the establishment of direct satellite broadcasting systems, nor of the continued use of remote sensing systems. It thus seems highly likely that the law will develop through state practice and bilateral agreements until a body of customary international law develops. The use of bilateral agreements may be of particular benefit to third world countries since, within the present negotiations, they are torn between protecting their own national integrity whilst at the same time participating in the undoubted benefits that these two developments of outer space offer. By negotiating bilateral agreements they not only establish their national identity but also participate in those benefits - the best of both worlds. The Committee on the Peaceful Uses of Outer Space in the face of such developments would be reduced to a mere discussion and monitoring body, prevented from taking a participative role by virtue of apparent irreconcilable ideologies. It may be the case that the United Nations should abandon its attempts at reaching multilateral solutions but should concentrate on developing an administrative role to ensure that the benefits reaped from remote sensing and direct satellite broadcasting be disseminated as widely as possible within the world community. By taking on this role and encouraging regional agreements under the auspices of existing international space law a way may be found to reconcile the present difficulties and possibly allow for the future drafting of multilateral treaties, which at present are proving so elusive. Even if this is feasible the effectiveness of such treaties, in the light of the apparent distortion of present treaties by state practice, must be seriously open to question.

## A P P E N D I X I

### TREATY OF PRINCIPLES GOVERNING THE ACTIVITIES OF STATES IN THE EXPLORATION AND USE OF OUTER SPACE, INCLUDING THE MOON AND OTHER CELESTIAL BODIES, 1967

The States Parties to this Treaty,

Inspired by the great prospects opening up before mankind as a result of man's entry into outer space,

Recognising the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,

Believing that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development,

Desiring to contribute to broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes,

Believing that such co-operation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples,

Recalling Resolution 1962 (XVIII) entitled "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space", which was adopted unanimously by the United Nations General Assembly on 13 December 1963,

Recalling Resolution 1884 (XVIII), carrying nuclear weapons or any other kinds of weapons of mass destruction or from installing such weapons on celestial bodies, which was adopted unanimously by the United Nations General Assembly on 17 October 1963,

Taking account of United Nations General Assembly Resolution 110 (II) of 3 November 1947, which condemned propaganda designed or likely to provoke or encourage any threat to the peace, breach of the peace or act of aggression, and considering that the aforementioned resolution is applicable to outer space,

Convinced that a Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, will further the purposes and principles of the Charter of the United Nations,

Have agreed on the following:

## **Article I**

The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation.

## **Article II**

Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

## **Article III**

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding.

## **Article IV**

States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited.

## Article V

States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of registry of their space vehicle.

In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties.

States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary-General of the United Nations of any phenomena they discover in outer space including the moon and other celestial bodies, which could constitute a danger to the life or health of astronauts.

## Article VI

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorisation and continuing supervision by the State concerned. When activities are carried on in outer space, including the moon and other celestial bodies, by an international organisation, responsibility for compliance with this Treaty shall be borne both by the international organisation, and by the States Parties to the Treaty participating in such organisation.

## Article VII

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State party to the Treaty or to its natural or juridical persons by such object or its component parts on the earth, in air space or in outer space, including the moon and other celestial bodies.

## Article VIII

A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by

their return to the earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State, which shall, upon request, furnish identifying data prior to their return.

### Article IX

In the exploration and use of outer space, including the moon and other celestial bodies, States parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State party to the Treaty has reason to believe that an activity or experiment planned by it or its nations in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the moon and other celestial bodies, may request consultation concerning the activity or experiment.

### Article X

In order to promote international co-operation in the exploration and use of outer space, including the moon and other celestial bodies, in conformity with the purposes of this Treaty, the States parties to the Treaty shall consider on a basis of equality and requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States.

The nature of such an opportunity for observation and the conditions under which it could be afforded shall be determined by agreement between the States concerned.

### Article XI

In order to promote international co-operation in the peaceful exploration and use of outer space, States Parties to the Treaty conducting activities in outer space, including the moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. On receiving the said information, the Secretary-General of the United Nations should be prepared to disseminate it immediately and effectively.

## Article XII

All stations, installations, equipment and space vehicles on the moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

## Article XIII

The provisions of this Treaty shall apply to the activities of States Parties to the Treaty in the Exploration and use of outer space, including the moon and other celestial bodies, whether such activities are carried on by a single State Party to the Treaty or jointly with other States, including cases where they are carried on within the framework of international inter-governmental organisations.

Any practical questions arising in connection with activities carried on by international inter-governmental organisations in the exploration and use of outer space, including the moon and other celestial bodies, shall be resolved by the States Parties to the Treaty either with the appropriate international organisation or with one or more States members of that international organisation, which are Parties to this Treaty.

## Article XIV

1. This Treaty shall be open to all States for signature. Any State which does not sign this Treaty before its entry into force in accordance with paragraph 3 of this article may accede to it at any time.
2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of America, which are hereby designated the Depositary Governments.
3. This Treaty shall enter into force upon the deposit of instruments of ratification by five Governments including the Governments designated as Depositary Governments under this Treaty.
4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.
5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification of and accession to this Treaty, the date of its entry into force and other notices.
6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

### Article XV

Any State Party to the Treaty may propose amendments to this Treaty. Amendments shall enter into force for each State Party to the Treaty accepting the amendments upon their acceptance by a majority of the States Parties to the Treaty and thereafter for each remaining State Party to the Treaty on the date of acceptance by it.

### Article XVI

Any State Party to the Treaty may give notice of its withdrawal from the Treaty one year after its entry into force by written notification to the Depositary Governments. Such withdrawal shall take effect one year from the date of receipt of this notification.

### Article XVII

This Treaty, of which the Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

IN WITNESS WHEREOF the undersigned, duly authorized, have signed this Treaty. DONE IN ....., at the cities of London, Moscow and Washington, the .... day of ..... one thousand nine hundred and .....

## A P P E N D I X   I I

### AGREEMENT GOVERNING THE ACTIVITIES OF STATES ON THE MOON AND OTHER CELESTIAL BODIES, 1979

The States Parties to this Agreement,

Noting the achievements of States in the exploration and use of the moon and other celestial bodies,

Recognising that the moon, as a natural satellite of the earth, has an important role to play in the exploration of outer space,

Determined to promote on the basis of equality the further development of co-operation among States in the exploration and use of the moon and other celestial bodies,

Desiring to prevent the moon from becoming an area of international conflict,

Bearing in mind the benefits which may be derived from the exploitation of the natural resources of the moon and other celestial bodies,

Recalling the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, (1) the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, (2) the Convention on International Liability for Damage Caused by Space Objects, (3) and the Convention on Registration of Objects Launched into Outer Space, (4),

Taking into account the need to define and develop the provisions of these international instruments in relation to the moon and other celestial bodies, having regard to further progress in the exploration and use of outer space,

Have agreed on the following:

#### Article I

1. The provisions of this Agreement relating to the moon shall also apply to other celestial bodies within the solar system, other than the earth, except in so far as specific legal norms enter into force with respect to any of these celestial bodies.

2. For the purposes of this Agreement reference to the moon shall include orbits around or other trajectories to or around it.

3. This Agreement does not apply to extraterrestrial materials which reach the surface of the earth by natural means.

1. Resolution 2222 (XXI), annex. (6 I.L.M. 386, (1967) ).
2. Resolution 2345 (XXII), annex. (7 I.L.M. 149, (1968) ).
3. Resolution 2777 (XXVI), annex. (10 I.L.M. 965, (1971) and  
11 I.L.M. 250, (1972) ).
4. Resolution 3235 (XXIX), annex. (14 I.L.M. 43, (1975) ).

## Article II

All activities on the moon, including its exploration and use, shall be carried out in accordance with international law, in particular the Charter of the United Nations, and taking into account the Declaration on Principle of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, (5) adopted by the General Assembly on 24 October 1970, in the interests of maintaining international peace and security and promoting international co-operation and mutual understanding, and with due regard to the corresponding interests of all other States Parties.

## Article III

1. The moon shall be used by all States Parties exclusively for peaceful purposes.
2. Any threat or use of force or any other hostile act or threat of hostile act on the moon is prohibited. It is likewise prohibited to use the moon in order to commit any such act or to engage in any such threat in relation to the earth, the moon, spacecraft, the personnel of spacecraft or man-made space objects.
3. States Parties shall not place in orbit around or other trajectory to or around the moon objects carrying nuclear weapons or any other kinds of weapons of mass destruction or place or use such weapons on or in the moon.
4. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on the moon shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration and use of the moon shall also not be prohibited.

## Article IV

1. The exploration and use of the moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Due regard shall be paid to the interests of present and future generations as well as to the need to promote higher standards of living and conditions of economic and social progress and development in accordance with the Charter of the United Nations.
2. States Parties shall be guided by the principle of co-operation and mutual assistance in all their activities concerning the exploration and use of the moon. International co-operation in pursuance of this Agreement should be as wide as possible and may take place on a multilateral basis, on a bilateral basis or through international intergovernmental organisations.
5. Resolution 2625 (XXV), annex.

## Article V

1. States Parties shall inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of their activities concerned with the exploration and use of the moon. Information on the time, purposes, locations, orbital parameters and duration shall be given in respect of each mission to the moon as soon as possible after launching, while information on the results of each mission, including scientific results, shall be furnished upon completion of the mission. In the case of a mission lasting more than thirty days, information on conduct of the mission, including any scientific results shall be given periodically at thirty days' intervals. For missions lasting more than six months, only significant additions to such information need be reported thereafter.

2. If a State Party becomes aware that another State Party plans to operate simultaneously in the same area of or in the same orbit around or trajectory to or around the moon, it shall promptly inform the other State of the timing of and plans for its own operations.

3. In carrying out activities under this Agreement, States Parties shall promptly inform the Secretary-General, as well as the public and the international scientific community, of any phenomena they discover in outer space, including the moon, which could endanger human life or health, as well as of any indication of organic life.

## Article VI

1. There shall be freedom of scientific investigation on the moon by all States Parties without discrimination of any kind, on the basis of equality and in accordance with international law.

2. In carrying out scientific investigations and in furtherance of the provisions of this Agreement, the States Parties shall have the right to collect on and remove from the moon samples of its mineral and other substances. Such samples shall remain at the disposal of those States Parties which caused them to be collected and may be used by them for scientific purposes. States Parties shall have regard to the desirability of making a portion of such samples available to other interested States Parties and the international scientific community for scientific investigation. States Parties may in the course of scientific investigations also use mineral and other substances of the moon in quantities appropriate for the support of their missions.

3. States Parties agree on the desirability of exchanging scientific and other personnel on expeditions to or installations on the moon to the greatest extent feasible and practicable.

## Article VII

1. In exploring and using the moon, States Parties shall take measures to prevent the disruption of the existing balance of its environment whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra-environmental matter or otherwise. States Parties shall also take measures to avoid harmfully affecting the environment of the earth through the introduction of extra-terrestrial matter or otherwise.

2. States Parties shall inform the Secretary-General of the United Nations of the measures being adopted by them in accordance with paragraph 1 of this article and shall also, to the maximum extent feasible, notify him in advance of all placements by them of radio-active materials on the moon and of the purposes of such placements.

3. States Parties shall report to other States Parties and to the Secretary-General concerning areas of the moon having special scientific interest in order that, without prejudice to the rights of other States Parties, consideration may be given to the designation of such areas as international scientific preserves for which special protective arrangements are to be agreed upon in consultation with the competent bodies of the United Nations.

## Article VIII

1. States Parties may pursue their activities in the exploration and use of the moon anywhere on or below its surface, subject to the provisions of this Agreement.

2. For these purposes States Parties may, in particular:

- (a) Land their space objects on the moon and launch them from the moon;
- (b) Place their personnel, space vehicles, equipment, facilities, stations and installations anywhere on or below the surface of the moon.

Personnel, space vehicles, equipment, facilities, stations and installations may move or be moved freely over or below the surface of the moon.

3. Activities of States Parties in accordance with paragraphs 1 and 2 of this article shall not interfere with the activities of other States Parties on the moon. Where such interference may occur, the States Parties concerned will undertake consultations in accordance with article 15, paragraphs 2 and 3 of this Agreement.

## Article IX

1. States Parties may establish manned and unmanned stations on the moon. A State Party establishing a station shall use only that area which is required for the needs of the station and shall immediately inform the Secretary-General of the United Nations of the location and purposes of that station. Subsequently, at annual intervals that State shall likewise inform the Secretary-General whether the station continues in use and whether its purposes have changed.

2. Stations shall be installed in such a manner that they do not impede the free access to all areas of the moon by personnel, vehicles and equipment of other State Parties conducting activities on the moon in accordance with the provisions of this Agreement or of article I of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

### Article X

1. States Parties shall adopt all practicable measures to safeguard the life and health of persons on the moon. For this purpose they shall regard any person on the moon as an astronaut within the meaning of article V of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies and as part of the personnel of a spacecraft within the meaning of the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space.

2. States Parties shall offer shelter in their stations, installations, vehicles and other facilities to persons in distress on the moon.

### Article XI

1. The moon and its natural resources are the common heritage of mankind, which finds its expression in the provisions of this Agreement and in particular in paragraph 5 of this article.

2. The moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means.

3. Neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become property of any State, international, intergovernmental or non-governmental organisation, national organisation or non-governmental entity or of any natural person. The placement of personnel, space vehicles equipment, facilities, stations and installations on or below the surface of the moon, including structures connected with its surface or subsurface, shall not create a right of ownership over the surface or of the subsurface of the moon or any areas thereof. The foregoing provisions are without prejudice to the international regime referred to in paragraph 5 of this article.

4. States Parties have the right to exploration and use of the moon without discrimination of any kind, on a basis of equality and in accordance with international law and the terms of this Agreement.

5. States Parties to this Agreement hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible. This provision shall be implemented in accordance with article 18 of this Agreement.

6. In order to facilitate the establishment of the international regime referred to in paragraph 5 of this article, States Parties shall inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of any natural resources they may discover on the moon.

7. The main purposes of the international regime to be established shall include:

- (a) The orderly and safe development of the natural resources of the moon;
- (b) The rational management of those resources;
- (c) The expansion of opportunities in the use of those resources;
- (d) An equitable sharing by all States Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries, as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration.

8. All the activities with respect to the natural resources of the moon shall be carried out in a manner compatible with the purpose specified in Paragraph 7 of this article and the provisions of article 6, paragraph 2, of this Agreement.

## Article XII

1. States Parties shall retain jurisdiction and control over the personnel, vehicles, equipment, facilities, stations and installations on the moon. The ownership of space vehicles, equipment, facilities, stations and installations shall not be affected by their presence on the moon.

2. Vehicles, installations and equipment or their component parts found in places other than their intended location shall be dealt with in accordance with article 5 of the Agreement on Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space.

3. In the event of an emergency involving a threat to human life, States Parties may use the equipment, vehicles, installations, facilities or supplies of other States Parties on the moon. Prompt notification of such use shall be made to the Secretary-General of the United Nations or the State Party concerned.

## Article XIII

A State Party which learns of the crash landing, forced landing or other unintended landing on the moon of a space object, or its component parts, that were not launched by it, shall promptly inform the launching State Party and the Secretary-General of the United Nations.

#### Article XIV

1. States Parties to this Agreement shall bear international responsibility for national activities on the moon, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in this Agreement. States Parties shall ensure that non-governmental entities under their jurisdiction shall engage in activities on the moon only under the authority and continuing supervision of the appropriate State Party.

2. States Parties recognise that detailed arrangements concerning liability for damage caused on the moon, in addition to the provisions of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies and the Convention on International Liability for Damage Caused by Space Objects, may become necessary as a result of more extensive activities on the moon. Any such arrangements shall be elaborated in accordance with the procedure provided for in article 18 of this Agreement.

#### Article XV

1. Each State Party may assure itself that the activities of other States Parties in the exploration and use of the moon are compatible with the provisions of this Agreement. To this end, all space vehicles, equipment, facilities, stations and installations on the moon shall be open to other States Parties. Such States Parties shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited. In pursuance of this article, any State Party may act on its own behalf or with the full or partial assistance of any other State Party or through appropriate international procedures within the framework of the United Nations and in accordance with the Charter.

2. A State Party which has reason to believe that another State Party is not fulfilling the obligations incumbent upon it pursuant to this Agreement or that another State Party is interfering with the rights which the former State has under this Agreement may request consultations with that State Party receiving such a request shall enter into such consultations without delay. Any other State Party which requests to do so shall be in such consultations shall seek a mutually acceptable resolution of any controversy and shall bear in mind the rights and interests of all States Parties. The Secretary-General of the United Nations shall be informed of the results of the consultations and shall transmit the information received to all States Parties concerned.

3. If the consultations do not lead to a mutually acceptable settlement which has due regard for the rights and interests of all States Parties, the parties concerned shall take all measures to settle the dispute by other peaceful means of their choice appropriate to the circumstances and the nature of the dispute. If difficulties arise in connection with the opening of consultations or if consultations do not lead to a mutually acceptable settlement, any State Party may seek the assistance of the Secretary-General, without seeking the consent of any other State Party concerned, in order to resolve the controversy. A State Party which does not maintain diplomatic relations with another State Party concerned shall participate in such consultations, at its choice, either itself or through another State Party or the Secretary-General as intermediary.

## Article XVI

With the exception of articles 17 to 21, references in this Agreement to States shall be deemed to apply to any international intergovernmental organisation which conducts space activities if the organisation declares its acceptance of the rights and obligations provided for in this Agreement and if a majority of the States members of the organisation are States Parties to this Agreement and to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the moon and Other Celestial Bodies. States members of any such organisation which are States Parties to this Agreement shall take all appropriate steps to ensure that the organisation makes a declaration in accordance with the foregoing.

## Article XVII

Any State Party to this Agreement may propose amendments to the Agreement. Amendments shall enter into force for each State Party to the Agreement accepting the amendments upon their acceptance by a majority of the States Parties to the Agreement and thereafter for each remaining State Party to the Agreement on the date of acceptance by it.

## Article XVIII

Ten years after the entry into force of this Agreement, the question of the review of the Agreement shall be included in the provisional agenda of the General Assembly of the United Nations in order to consider, in the light of past application of the Agreement, whether it requires revision. However, at any time after the Agreement has been in force for five years, the Secretary-General of the United Nations, as depositary, shall, at the request of one third of the States Parties to the Agreement and with the concurrence of the majority of the States Parties, convene a conference of the States Parties to review this Agreement. A review conference shall also consider the question of the implementation of the provisions of article 11, paragraph 5, on the basis of the principle referred to in paragraph 1 of that article and taking into account in particular any relevant technological developments.

## Article XIX

1. This Agreement shall be open for signature by all States at United Nations Headquarters in New York.

2. This Agreement shall be subject to ratification by signatory States. Any State which does not sign this Agreement before its entry into force in accordance with paragraph 3 of this article may accede to it at any time. Instruments of ratification or accession shall be deposited with the Secretary-General of the United Nations.

3. This Agreement shall enter into force on the thirtieth day following the date of deposit of the fifth instrument of ratification.

4. For each State depositing its instrument of ratification or accession after the entry into force of this Agreement, it shall enter into force on the thirtieth day following the date of deposit of any such instrument.

5. The Secretary-General shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or accession to this Agreement, the date of its entry into force and other notices.

#### **Article XX**

Any State Party to this Agreement may give notice of its withdrawal from the Agreement one year after its entry into force by written notification to the Secretary-General of the United Nations. Such withdrawal shall take effect one year from the date of receipt of this notification.

#### **Article XXI**

The original of this Agreement, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations, who shall send certified copies thereof to all signatory and acceding States.

IN WITNESS WHEREOF the undersigned, being duly authorized thereto by their respective Governments, have signed this Agreement, opened for signature at New York on

## A P P E N D I X   I I I

### TEXT OF DRAFT PRINCIPLES WITH RESPECT TO REMOTE SENSING OF THE NATURAL RESOURCES OF THE EARTH AND ITS ENVIRONMENT AS CONTAINED IN THE REPORT OF THE LEGAL SUBCOMMITTEE ON THE WORK OF ITS 1980 SESSION

(U.N. Doc. A/AC.105/271 (10 April 1980), Annex II, pp.7-11)

#### Principle I

For the purpose of these principles with respect to remote sensing of the natural resources of the earth and its environment:

(a) The term "remote sensing of the earth" means "remote sensing of the natural resources of the earth and its environment".

(b) The term "primary data" means those primary data which are acquired by satellite-borne remote sensors and transmitted from a satellite either by telemetry in the form of electromagnetic signals or physically in any form such as photographic film or magnetic tape, as well as pre-processed products derived from those data which may be used for later analysis.

(c) The term "analysed information" means the end-product resulting from the analytical process performed on the primary data as defined in paragraph (b) above combined with data and/or knowledge obtained from sources other than satellite-borne remote sensors.

#### Principle II

Remote sensing of the earth from outer space and international co-operation in that field (shall) (should) be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and taking into consideration, in international co-operation, the particular needs of the developing countries.

#### Principle III

Remote sensing of the earth from outer space (shall) (should) be conducted in accordance with international law, including the Charter of the United Nations and the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, and the relevant instruments of ITU.

#### **Principle IV**

1. States carrying out programmes for remote sensing of the earth from outer space (should) (shall) promote international co-operation in these programmes. To this end, sensing States (should) (shall) make available to other States opportunities for participation in these programmes. Such participation should be based in each case on equitable and mutually acceptable terms due regard being paid to principles ...

2. In order to maximize the availability of benefits from such remote sensing data, States are encouraged to consider agreements for the establishment of shared regional facilities.

#### **Principle V**

Remote sensing of the earth from outer space (should) (shall) promote the protection of the natural environment of the earth. To this end States participating in remote sensing (should) (shall) identify and make available information useful for the prevention of phenomena detrimental to the natural environment of the earth.

#### **Principle VI**

States participating in remote sensing of the earth from outer space (should) (shall) make available technical assistance to other interested States on mutually agreed terms.

#### **Principle VII**

1. The United Nations and the relevant agencies within the United Nations system should promote international co-operation, including technical assistance, and play a role of co-ordination in the area of remote sensing of the earth.

2. States conducting activities in the field of remote sensing of the earth (shall) (should) notify the Secretary-General thereof, in compliance with article XI of the Treaty on Principles Governing the Activities of States in the Exploration and use of Outer Space, including the Moon and Other Celestial Bodies.

#### **Principle VIII**

Remote sensing of the earth from outer space should promote the protection of mankind from natural disaster. To this end, States which have identified primary data from remote sensing of the earth and/or analysed information in their possession which would be useful in helping to alert States to impending natural disasters, or in assisting States to deal with natural disasters should, as promptly as possible, notify those States affected or likely to be affected of the existence and availability of such data and/or information. Such data and/or information should, upon request, be disseminated as promptly as possible.

### Principle IX

Taking into account the principles II and III above, remote sensing data or information derived therefrom (shall) (should) be used by States in a manner compatible with the legitimate rights and interests of other States.

### Principle X

States participating in remote sensing of the earth either directly or through relevant international organisation (shall) (should) be prepared to make available to the United Nations and other interested States, particularly the developing countries, upon their request, any relevant technical information involving possible operational systems which they are free to disclose.

### Principle XI

(States (shall) (should) bear international responsibility for (national) activities of remote sensing of the earth (irrespective of whether) (where) such activities are carried out by governmental (or non-governmental) entities, and (shall) (should) (guarantee that such activities will) comply with the provisions of these principles.)

### Principle XII

A sensed State (shall) (should) have timely and non-discriminatory access to primary data obtained by remote sensing of the earth from outer space, concerning its territory, on (agreed) reasonable terms and (no later than) (before) access is granted to any third State. (To the greatest extent feasible and practicable,) this principle shall also apply to analysed information.)

### Principle XIII

( (A State which intends to conduct remote sensing of the earth from outer space shall give advance notification to the States whose territory will be sensed.) (A State (intending to conduct) (conducting) remote sensing activities of the earth from outer space shall notify the Secretary-General of the United Nations and (upon request) the States whose territory is intended to be covered by such activities (to the fullest extent feasible and as soon as practicable) of the intended launch, (nature of the) mission, duration and coverage of such activities. The Secretary-General shall publish information thus received.) )

### Principle XIV

(A State carrying out remote sensing of the earth (shall) (should) without delay consult with a State whose territory is sensed upon request of the latter in regard to such activity, (in particular dissemination of date and information,) in order to promote international co-operation, friendly relations among States and to enhance the mutual benefits to be derived from this activity.)

### **Principle XV**

(States carrying out remote sensing of the earth shall not, without the approval of the States whose territories are affected by these activities, disseminate or dispose of any data or information on the natural resources of these States to third States, international organisations, public or private entities.)

### **Principle XVI**

(Without prejudice to the principle of the freedom of exploration and use of outer space, as set forth in article I of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, remote sensing of the earth (should) (shall) be conducted with respect for the principle of full and permanent sovereignty of all States and peoples over their own wealth and natural resources (with due regard to the rights and interests of other States and their natural and juridical persons in accordance with international law) (as well as their inalienable right to dispose of their natural resources) (and of information concerning those resources) ).

### **Principle XVII**

(Any dispute that may arise with respect to the application of (activities covered by) these principles (shall) (should) be resolved by prompt consultations among the parties to the dispute. Where a mutually acceptable solution cannot be found by such consultations it (shall) (should) be sought through other (established) (existing) procedures for the peaceful means of settlement of disputes mutually agreed upon by the parties concerned.)

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