PROTECTION OF THE OUTER SPACE ENVIRONMENT: HISTORY AND ANALYSIS OF ARTICLE IX OF THE OUTER SPACE TREATY

by

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Introduction

Man has always tried to change the world around him. Since time immemorial, man has modified his environment, first to increase his chances of survival and then to improve his creature comforts. Initially, these modifications had little effect on the natural world. But through the centuries, with the development of tools and other means of technological transformation, the environment which provides the sustenance for man's existence was exposed more and more to damage — first temporary, then later, irreversible.

Since Sputnik I was launched on 4 October 1957, man has extended his environment into outer space. Has he learned his terrestrial history lessons? To what extent does the international law of outer space provide for the environmental protection of outer space, the Moon and other celestial bodies? It has been pointed out often that Article IX of the Outer Space Treaty(1) is the basic provision for this protection. The purpose of this paper is to investigate the substance, extent and effect of Article IX with respect to environmental protection through an historical analysis of the negotiating texts of that article and its predecessors.

(1) *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, UNGA Res. 2222 (XXI) 19 December 1966; 610 UNTS 205, 18 UST 2410, TIAS 6347 (opened for signature 27 January 1967, entered into force 10 October 1967).

Legal Genesis

A. Legal Declaration

1/ 1962

The legal genesis of Article IX of the Outer Space Treaty began in the Legal Sub-Committee of the Committee on the Peaceful Uses of Outer Space (COPUOS) on 6 June 1962, when the USSR delegation submitted its *Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space*(2) (USSR Declaration). Paragraph 6 of the USSR Declaration states:

> (Co-operation and mutual assistance in the conquest of outer space shall be a duty incumbent upon all States; the implementation of any measures that might hinder the exploration or use of outer space for peaceful purposes by other countries shall be permitted only after prior discussion and agreement upon such measures between the countries concerned.)

Paragraph 6 introduces two major elements of Article IX of the Outer Space Treaty: the principle of co-operation in carrying out activities in outer space and the principle of prior consultation when space activities might hinder the exploration or use of outer space by other states. To ensure co-operation, such consultations were felt to be necessary.(3) The importance of a co-operative effort for preventing space activities which might impede or make difficult the space activities of other states was stressed by the USSR and noted by other states.(4)

Two specific space activities were mentioned as motivation for the inclusion of Paragraph 6: high altitude nuclear explosions(5) and

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(2) A/AC.105/C.2/L.1; reproduced in A/AC.105/6. Unless otherwise indicated, all documents cited herein are UN documents.

(3) A/AC.105/C.2/SR.7 (USSR, 7 June 1962) 5.

(4) See A/C.1/SR.1210 (USSR, 4 December 1961) par 25 and A/AC.105/PV.10 (USSR, 10 September 1962) 38; A/AC.105/PV.5 (USSR, 20 March 1962) 11,26 and A/AC.105/PV.6 (Poland, 23 March 1962) 11; A/AC.105/PV.10 (USSR, 10 September 1962) 38; and A/AC.105/C.1/SR.11 (Czechoslovakia, 13 June 1962) 3.

(5) See A/AC.105/C.2/SR.5 (Hungary, 5 June 1962) 8, A/AC.105/C.2/SR.7 (USSR, 7 June 1962) 5 and A/AC.105/C.1/SR.11 (USSR, 13 June 1962) 4. For the US position and the USSR rebuttal, see A/AC.105/PV.11 (11 September 1962) at 4-5 and 35, respectively.

Project West Ford(6). The concern that dangers resulting from the former activity would impede space activities was eventually resolved by the prohibitions against nuclear testing in the atmosphere and outer space,(7) and against positioning nuclear weapons in orbit around the Earth, on celestial bodies or in outer space(8).

Project West Ford gave rise to the controversial "consultation and agreement" provision of Paragraph 6.(9) Nine days after the launching of the West Ford payload, the USSR informed the United Nations that the United States had "disregarded the dangerous consequences" of the experiment, which could hamper activities in outer space, and that the USSR Declaration had included a "stipulation that any activities of States which might interfere with the exploration and use of outer space by other States could not be carried out without consent of all parties concerned" — a specific reference to Paragraph 6.(10) The purpose of dual approval by consultation and agreement was to guarantee the prevention of future occurrences similar to Project West Ford.(11) "No one can have the right", stated the USSR representative to COPUOS, "to decide unilaterally what is good for humanity

(6) A/AC.105/C.2/SR.7 (USSR, 7 June 1962) 5. Project West Ford was a US communications experiment designed to release from a satellite 350-million long, hair-like copper filaments (dipoles) which were expected to form a narrow belt in space around Earth.

(7) *Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water*, 14 UST, TIAS 5433 (5 August 1963). Article I, par 1(a) states:

> Each of the Parties to this Treaty undertakes to prohibit, to prevent and not to carry out any nuclear weapon test explosion, or any other nuclear explosion, at any place under its jurisdiction or control in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas.

(8) Outer Space Treaty, *supra*, note 1. Article IV, par 1 states:

> States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or other weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any manner.

(9) H.S. Lay and H.J. Taubenfeld, *The Law Relating to Activities of Man in Space* (Chicago: U Chicago Press, 1970) 189.

(10) See A/AC.105/13 (USSR, Dangerous Activities in Outer Space, 18 May 1963) 1,2,4. Two days after the USSR statement, a proposal by the Czechoslovakian delegation to the Scientific and Technical Sub-Committee of COPUOS that the report of the Sub-Committee include a recommendation that a scientific opinion be expressed on Project West Ford was rejected as inappropriate, since it was felt that quicker results could be obtained if such a request went via a national scientific institution; see A/AC.105/C.1/SR.19 (28 May 1963) 75.

(11) A/AC.105/PV.22 (USSR, 13 September 1963) 21.

in the field of exploration of outer space when the results are definitely negative or in any case give rise to apprehensions on the parts of all State...". (12)

The US defended the experiment, stating that it "was undertaken only after the US was fully confident" that it would not have an adverse effect on any other space activity; moreover, the US stated it would "welcome the comments" of the Consultative Group on the Potentially Harmful Effects of Space Experiments (COSPAR-CG).(13) This stance had been put forward earlier at the United Nations General Assembly (UNGA) in December 1962 when the US representative stated that "all reasonable steps [should be taken] to avoid experiments and other activities which seriously threaten to deny or limit the use of outer space to other nations", and that the question of possible harms of space experiments "must be studied by competent and objective scientific bodies".(14)

The negotiating positions of the two dominant space powers with regard to prior consultations were clearly established. The USSR held that prior consultation as to whether a space activity would hinder space activities of other states should be established by consent of the international community; the US held that such prior consultation could be determined solely by the state carrying out the activity and only if that state had "reason to believe that [the activity] may create significant risk or harm".(15)

One of the two major objections to the entire USSR Declaration was the contention that the "consultation and agreement" provision

(12) A/AC.105/PV.16 (USSR, 14 September 1962) 6. See also, A/AC.105/PV.11 (USSR, 11 September 1962) 38 and A/AC.105/PV.12 (USSR, 12 September 1962) 26-27.

(13) A/AC.105/15 (US Space Communication Experiment, 6 June 1963). The COSPAR-CG was established by the Committee on Space Research (COSPAR) of the International Committee of Scientific Unions (a non-governmental organization composed of representatives of international scientific unions and national scientific organizations) to examine any possible effects of space experiments on other scientific activities and observations; see A/5785/Annex III at 5 and A/C.1/SR.1345 (COSPAR Observer, 5 December 1963) par 2.

(14) A/AC.105/15, *ibid.*, at 7.

(15) See J.A. Johnson, "Pollution and Contamination in Outer Space" in M. Cohen (ed.), *Law and Politics in Space* (Montreal: McGill UP) 37 at 44-45, and A/AC.105/PV.20 (US, 9 September 1963) 13. The US position would predominate in Article IX of the Outer Space Treaty, although both positions are in evidence: Prior consultation would be contingent on the state carrying out the activity having a reasonable belief that harmful interference could result.

constituted a veto.(16) This implied veto power was seriously objected to(17) and was opposed on four grounds. First, it was felt that this power would "virtually destroy" the freedom to explore and use outer space.(18) The US representative stated that the USSR provision "seemed much less effective" than international consultation through the COSPAR-CG and did not add to the COSPAR arrangements, but "could only lead to confusion".(19)

Two arguments were mounted to support the veto: (i) where the actions of a state violate the principle that outer space is *res communis* and would make international co-operation more difficult, every state has the "right of veto" over such actions(20) and (ii) consultation and agreement are not to be construed as a veto, but rather as a functional limit on the absolute freedom to use and explore outer space so as to avoid infringing on the freedom of others(21). From the point of view of environmental protection, the latter argument has some merit: Whether environmental harm will result from a space activity should be determined before the activity takes place, not during or after. Moreover, regulations to prevent any contamination of outer space were viewed as both legitimate limits to the freedom of use of outer space and an "imperative and urgent necessity".(22)

A second ground raised in opposition to the "consultation and agreement" provision was its assumption that "a policy decision on the measures of co-operation had already been accepted by governments".(23) Since there had been no such acceptance, formulation of a legal principle on this matter was premature.(24) Third, it was argued that in

(16) See A/AC.105/PV.16 (Czechoslovakia, 14 September 1962) 12, A/AC.105/C.2/SR.7 (US, 7 June 1962) 8-9, A/AC.105/C.2/SR.9 (France, 12 June 1962) 3 and A/AC.105/C.2/SR.10 (UK, 13 June 1962) 3.

(17) A/AC.105/PV.11 (US, 11 September 1962) 6.

(18) Johnson, *supra*, note 15 at 50.

(19) A/AC.105/C.2/SR.7 (US, 7 June 1962) 9. This position was explicitly endorsed by France at A/AC.105/C.2/SR.9 (France, 12 June 1962) 3 and by the UK at A/AC.105/C.2/SR.10 (UK, 13 June 1962) 3.

(20) A/AC.105/PV.16 (Czechoslovakia, 14 September 1962) 12.

(21) A/AC.105/C.2/SR.8 (Czechoslovakia, 8 June 1962) 5.

(22) A/AC.105/PV.3 (France, 20 March 1962) 48.

(23) A/AC.105/C.2/SR.9 (Canada, 12 June 1962) 7.

(24) *Id.* See also A/AC.105/C.2/SR.10 (UK, 13 June 1962) 3 and A/AC.105/PV.16 (Belgium, 14 September 1962) 7.

addition to the need for state governments to reach policy decisions, "the appropriate organ of the United Nations" would have to make the "necessary political decisions" before this issue could be "usefully considered" by the Legal Sub-Committee.(25) Finally, it was suggested that the provision was of a purely political nature, thereby enabling states to stall programmes on "scientific pretexts".(26)

2/ 1963

(a) Regular Session

After closure of the First Session of the Legal Sub-Committee, the UK and the US introduced their draft declarations of basic legal principles for the exploration and use of outer space.(27) These two proposals were debated at the Second Session of the Legal Sub-Committee in 1963, along with the USSR Revised Declaration(28).

Paragraph 1 of the UK Declaration provides, *inter alia*, that freedom for the use and exploration of outer space by all states "shall be exercised with due regard to the interests of other States in the exploration and use of outer space, and to the need for consultation and co-operation between States in relation to such exploration and use". The US Declaration contained no provisions relating to avoidance of activities that may hinder space activities of other states. The only change in Paragraph 6 of the USSR Revised Declaration was a minor, grammatical one.

The UK provision introduced the "due regard" principle, a third basic element of Article IX of the Outer Space Treaty. The principle of "due regard" establishes a crucial nexus between the principles of "co-operation" and "consultation"; the latter offers good faith evidence that states are taking the interests of other states into account and, by so doing, promotes international co-operation. This principle also limits the absolute freedom of use and exploration of outer space, since

(25) A/AC.105/C.2/SR.11 (Sweden, 14 June 1962) 7.

(26) A/AC.105/PV.13 (France, 13 September 1962) 17.

(27) *Draft Declaration of Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space*, A/C.1/879 (UK, 12 October 1962) [hereafter UK Declaration]; *Draft Declaration of Principles Relating to the Exploration and Use of Outer Space*, A/C.1/881 (US, 14 October 1962) [hereafter US Declaration].

(28) A/AC.105/C.2/L.6.

due regard for the interests of other states requires states to consider the effects of their space activities on the world community of states.

During negotiations for the Legal Declaration, the principle of cooperation was upheld by all.(29) Several states also embraced the concept of due regard as a necessary limit on the principle of freedom of exploration and use of outer space.(30)

The attitude of states was especially flexible in accepting the usefulness of the COSPAR-CG as a positive force for consultation in matters concerning experiments that could possibly hinder space activities of other states.(31) That the COSPAR-CG was considered an "authoritative consulting body"(32) indicated a slight shift in the position of the USSR delegation. A year earlier, states had been the final arbiters for both consultation and agreement; now states had only to reach agreement.

The role of the COSPAR-CG as an international consultant was reinforced when COPUOS approved a recommendation in the Report of the Second Session of the Scientific and Technical Sub-Committee. The recommendation "recognize[d] the importance of the problem of preventing potentially harmful interference with the peaceful uses of outer space". With that approval, COPUOS emphasized the need to avoid such interference and recognized "the scientific difficulty and competence required to assess properly the nature and possibility of such interference". COPUOS also noted that the assistance of the COSPAR-CG was available to UN organizations.(33)

The principle of "consultation and agreement" in Paragraph 6 of the USSR Revised Declaration was again vigorously opposed by many states as a veto and was felt to be the essential stumbling block in coming to any agreement.(34) On the one hand, several states, includ-

(29) A/AC.105/C.2/SR.22 (USSR, 24 April 1963) 4.

(30) A/AC.105/C.2/SR.21 (Canada, 23 April 1963) 6, A/AC.105/C.2/SR.22 (India, 24 April 1963) 7 and A/AC.105/C.2/SR.22 (Japan, 24 April 1963) 12.

(31) A/AC.105/C.2/SR.6 (USSR, 17 April 1963) 6, A/AC.105/C.2/SR.20 (US, 22 April 1963) 11, A/AC.105/C.2/SR.22 (India, 24 April 1963) 7, A/AC.105/C.2/SR.27 (Canada, 2 May 1963) 5 and A/AC.105/PV.21 (Austria, 12 September 1963) 7.

(32) A/AC.105/C.1/SR.12 (USSR, 14 May 1963) 13 and A/AC.105/C.1/SR.15 (USSR, 17 May 1963) 51.

(33) A/5549 at 8.

(34) A/AC.105/C.2/SR.24 (UK, 29 April 1963) 4.

ing the US, acknowledged the desirability and necessity of some form of consultation to ensure that space activities of one state did not hinder space activities of other states.(35) On the other hand, the USSR delegation held steadfastly to its position that consultation alone was not sufficient. Agreement among concerned states was still necessary to avoid unilateral or arbitrary(36) activities which might have potentially harmful effects, to provide greater confidence among space research scientists and to provide assurances that experiments likely to interfere with activities of other states would not be carried out.(37)

Several states made valiant efforts during the Legal Sub-Committee debates to achieve a compromise. The Canadian and Indian delegations believed that an agreement was possible and could be based on the principle of prohibition of potentially harmful experiments. These delegations differed, however, on the scope to which the prohibitions would extend; Canada proposed the environment of Earth and outer space,(38) while India proposed human life and further scientific experiments(39). The Australian representative noted that a duty to consult existed either explicitly or implicitly in the USSR, UK and United Arab Republic(40) proposals. He also felt that on the basis of statements by the US and the USSR, this duty could be explicitly linked to COSPAR.(41) But it was a suggestion of the representative of the

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(35) A/AC.105/C.2/SR.21 (Canada, 23 April 1963) 6, A/AC.105/C.2/SR.27 (Canada, 24 April 1963) 5, A/AC.105/C.2/SR.19 (Poland, 19 April 1963) 7 and A/AC.105/C.2/SR.22 (India, 24 April 1963) 7. In the latter document, it is incorrectly stated that the UK provision had proposed "consultation and agreement". The UK had opposed "consultation and agreement", arguing that acceptance of this principle would be tantamount to providing each state with a veto power; see A/AC.105/C.2/SR.10 (UK, 13 June 1962) 3.

(36) See A/AC.105/PV.21 (USSR, 13 September 1963) 30, where the representative of the USSR spoke of carrying out "arbitrary" experiments rather than "unilateral" ones, thereby anticipating the possibility of joint ventures being undertaken prior to consultation and agreement.

(37) A/AC.105/C.2/SR.22 (USSR, 24 April 1963) 4, A/AC.105/C.2/SR.28 (USSR, 3 May 1963) 12-13 and A/AC.105/C.1/SR.12 (USSR, 14 May 1963) 20.

(38) A/AC.105/C.2/SR.21 (Canada, 23 April 1963) 6.

(39) A/AC.105/C.2/SR.22 (India, 24 April 1963) 7.

(40) *Code for International Co-operation in the Peaceful Uses of Outer Space*, A/AC.105/L/6 (UAR, 14 September 1962).

(41) A/AC.105/C.2/SR.23 (Australia, 25 April 1963) 6 and A/AC.105/PV.21 (Australia, 12 September 1963) 16.

UK that not only resulted in the renewal of negotiations, but also provided the basic structure of Paragraph 6 of the Legal Declaration.

Acknowledging the conflict, the UK representative stated that she thought the ideas in Paragraph 6 of the USSR Revised Declaration merited "serious consideration" and could be redrafted into a format that would be acceptable to all. Since so many states had accepted the COSPAR-CG as the body for consulting on issues of potential harmful effects of space activities and since the views expressed in Paragraph 1 of the UK Declaration had been endorsed by many speakers, it was proposed that the new article contain two sentences. The first would reflect the substance of sentence 2 of Paragraph 1 of the UK Declaration(42); the second would include "a specific reference to the need for international consultation, particularly with appropriate scientific bodies".(43)

(b) Special Session

The 1963 session of the Legal Sub-Committee was unable to agree during its regular session on several principles contained in the draft Legal Declaration. However, as a result of private consultations among members of COPUOS, a working paper for the proposed Legal Declaration had been prepared for the Committee and was considered at a special session of COPUOS on 27 November 1963.(44) Following approval by COPUOS, the First Committee of the UNGA debated and approved by acclamation the Legal Declaration.(45) During these debates, the final provisions of the Legal Declaration were clarified.

Paragraph 6 of the Legal Declaration merited special importance since it was the first attempt to enunciate a principle calling for "international consultations in the case of dangerous activities".(46) Also, it took into account the recommendations of the 1962 Report of the Scientific and Technical Sub-Committee, which invited the attention of COPUOS to the "urgency and importance" of preventing potentially

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(42) See text immediately following, *supra*, note 28.

(43) A/AC.105/C.2/SR.24 (UK, 29 April 1963) 11.

(44) *Additional Report of the Committee on the Peaceful Uses of Outer Space*, A/5549 (27 November 1963) 1-2 [hereafter Additional Report].

(45) A/C.1/SR.1346 (5 December 1963) par 20.

(46) A/C.1/SR.1342 (USSR, 2 December 1963) par 14.

harmful interference with the peaceful uses of outer space.(47) According to this principle, freedom of space experimentation would be limited only to the extent that member states did not comply with the rules of co-operation and respect for the interests of others.(48)

Paragraph 6 was viewed as a statement of principle and, as such, would guard against any outer space activities which would cause potentially harmful interference with space activities of other states.(49) Although Paragraph 6 did not include a consultation procedure,(50) COPUOS could use this provision as "a starting point for working out the necessary preventive and precautionary measures and for finding means for their effective international application".(51)

Of central importance to Paragraph 6 was the acknowledgment that the COSPAR-CG "was now generally recognized as an appropriate forum for international consultations".(52) However, neither COSPAR nor the COSPAR-CG is specifically mentioned as the consultation body, since it was thought to be "inappropriate to specify one particular mode [of consultation] exclusively and for all time" in a statement of general principles.(53)

The omission of a specific reference to the COSPAR-CG may be attributed to the actions of the US delegation at the Second Session of the Scientific and Technical Sub-Committee. Initially, the draft recommendation concerning the potentially harmful effects of space experiments was to include a provision whereby COSPAR would make available to the United Nations or any of its specialized agencies results of any analysis where effects of experiments were potentially harmful.(54) However, the US delegation changed its position after

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(47) Additional Report, *supra*, note 44, Annex (Chairman, Legal Sub-Committee) 3 and A/C.1/SR.1345 (Czechoslovakia, 5 December 1963) par 9.

(48) A/C.1/SR.1343 (Hungary, 3 December 1963) par 14.

(49) Additional Report, *supra*, note 44, Annex (US) 7.

(50) *Id.*

(51) A/C.1/SR.1343 (Hungary, 3 December 1963) par 17.

(52) A/C.1/SR.1345 (India, 3 December 1963) par 5, A/C.1/SR.1345 (Australia, 3 December 1963) par 22, A/C.1/SR.1346 (Brazil, 5 December 1963) 5 and Additional Report, *supra*, note 44, Annex (US) 7.

(53) Additional Report, *id.*

(54) A/AC.105/C.1/SR.19 (US, 28 May 1963) 77.

the draft was completed, stating that the Sub-Committee would be overstepping its mandate if it were to lay down obligations or create precedents for customary international law.(55) It was sufficient that the recommendation "confirmed the authority of the UN and the need for prior agreement of space experiments", and supported the need for analysis of experiments by COSPAR.(56) To some delegations, this reversal meant that the Sub-Committee could take no action, thereby rendering the recommendation valueless.(57)

Two specific objections to Paragraph 6 were raised. First, there were no specific obligations to consult if experiments might have the effect of "modifying the natural environment of earth in a manner prejudicial to the well-being of human life and the interests of another State",(58) or if space activities "might radically modify the earth's environment or pose a threat to the human race"(59). Second, no provision was made for an international authority with power to act where consultations failed to achieve the desired end.(60)

However, a more important objection was not recorded. Whether to undertake international consultation was a subjective decision, based on the reasonable belief of the state proposing the activity. This oversight may be attributed to both the support for the US delegation which proposed this rule and the desire for compromise on the issue of consultation.(61)

3/ Paragraph 6 of the Legal Declaration(62)

The landmark Legal Declaration was approved by the UNGA on

(55) *Ibid.*, at 76; see also A/AC.105/C.1/SR.19 (Japan, 28 May 1963) 91.

(56) See A/AC.105/C.1/SR.20: (USSR, 29 May 1963) 90 and (US, 29 May 1963) 91.

(57) See A/AC.105/C.1/SR.19 (USSR, 28 May 1963) 78 and A/AC.105/C.1/SR.20 (India, 29 May 1963) 86.

(58) Additional Report, *supra*, note 44, Annex (Canada) 10. A Canadian representative rationalized this omission by noting that any state contemplating such an experiment "would spontaneously undertake consultation"; *id.*

(59) A/C.1/SR.1346 (Nigeria, 5 December 1963) par 7.

(60) A/C.1/SR.1344 (Peru, 4 December 1963) par 24.

(61) See, *supra*, text accompanying notes 13-15 and notes 38-43.

(62) *Declaration of General Principles Governing Activities of States in the Exploration and Use of Outer Space*, UNGA Res. 1962 (XVIII) 13 December 1963.

13 December 1963.(63) No revisions were made to Paragraph 6 of the draft Legal Declaration.

The obligations contained in the Legal Declaration were considered similar to those under a formal agreement and, in practice, did not "materially differ" from the effects one would expect to result from a treaty, since neither violations of nor protests against the principles of the Legal Declaration had occurred.(64) Therefore, it may be inferred from the theory of estoppel(65) that the Legal Declaration is evidence of customary international law and, as such, the principles it espouses — regardless of their generality — are binding on all states not parties to the Outer Space Treaty.(66) The vast majority of states have accepted the Legal Declaration on this basis.(67)

Paragraph 6 states:

> In the exploration and use of outer space, States shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space with due regard for the corresponding interests of other States. If a State has reason to believe that an outer space activity or experiment planned by it or its nationals would cause potentially harmful interference with activities of other States in the peaceful exploration and use of outer space, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State which has reason to believe that an outer space activity or experiment planned by another State would cause potentially harmful interference with activities in the peaceful exploration and use of outer space may request consultation concerning the activity or experiment.

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(63) A/5515 (13 December 1963).

(64) I.A. Vlasic, "The Space Treaty: A Preliminary Evaluation" (1967), 55 *Cal. Law Rev.* 507 at 519.

(65) N.M. Matte (ed.), *Space Activities and Emerging International Law* (Montreal: Centre for Research of Air and Space Law, McGill University, 1984) 77 [hereafter Space Activities].

(66) See I.A. Vlasic, "The Growth of Space Law 1957-65: Issues and Achievements", [1965] *Yrbk ASL* 365 at 374-80 for analysis of the status of the Legal Declaration.

(67) A/AC.105/C.2/SR.57 (12 July 1966): US at 5, USSR at 10. For contrary opinions, see A/AC.105/C.2/SR.57 (France, 12 July 1966) 10, A/C.1/SR.1345 (France, 5 December 1963) par 17 and A/AC.105/C.2/SR.61 (Bulgaria, 18 July 1966) 2-3.

Paragraph 6 establishes a link between the general principles of co-operation and due regard in sentence 1 and the two more specific provisions in sentences 2 and 3 concerning potentially harmful activities.(68) This connection limits both the need for co-operation and mutual assistance and the interests for which states should have due regard to those situations in which consultation is necessary, that is, in cases where states have a reasonable belief that space activities or experiments could harmfully interfere with other space activities. In sentence 2, a state carrying out a space activity has an obligation to consult prior to undertaking that activity if that state has a "reason to believe" that the proposed activity could cause potentially harmful interference with other space activities. In sentence 3, states other than the state carrying out the activity have a right to request consultation if they have "reason to believe" that the space activity under consideration could cause harmful interference with other space activities. The "consultation and agreement" principle was eliminated due to a compromise between the proponents of the "veto" and those states which were unwilling to grant anything in the nature of a veto to their space activities.(69)

The "measures" in Paragraph 6 of the USSR Revised Declaration have been more clearly delineated in sentence 2 and 3 so as to include "experiments" and "space activities". Now, commercial and public service activities as well as scientific ones are subject to consultation. But at the same time, states may avoid consultation under the "reasonable belief" rule for a greater number of activities. In practical terms, the ability to control or prevent possible harmful interference is diminished — especially so in light of the elimination of the "veto".

B. Outer Space Treaty

1/ Article 10 of the US Draft Treaty and Article VIII of the USSR Draft Treaty

COPUOS was content to let the Legal Declaration stand as its fundamental statement of general principles for outer space law.

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(68) C.W. Jenks, *Space Law* (London: Stevens & Sons, 1965) 276.

(69) *Id.*

However, on 7 May 1966, US President Lyndon B. Johnson stated that a treaty on general principles of space law was necessary. One principle that he proposed be included in this treaty was: "Studies should be made to avoid harmful contamination."(70)

In a little more than two months, the two major space powers, whose points of view had dominated COPUOS to date,(71) but would be especially forceful in the development of the Outer Space Treaty,(72) had submitted their respective draft treaties.(73)

Article 10 of the US Draft Treaty states:

> States shall pursue studies of and, as appropriate, take steps to avoid harmful contamination of celestial bodies and adverse changes in the environment of the Earth resulting from the return of extraterrestrial matter.

This statement was the first specific legislative provision submitted to COPUOS for avoidance of contamination, and follows the suggestion of President Johnson. While the US Draft Treaty contained no specific reference to Paragraph 6 of the Legal Declaration, Article 3 provided that "States shall facilitate and encourage international co-operation concerning celestial bodies". Article 4 provided that states should give prompt notice and report on any activities which were to take place on celestial bodies;(74) however, this notice was not prior notice.

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(70) P.G. Dembling, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies" in N. Jasentuliyana and R.S.K. Lee, *Manual on Space Law: Volume I* (Dobbs Ferry, NY: Oceana Publications, 1979) 6.

(71) N.M. Matte, *Space Policy and Programmes Today and Tomorrow: The Vanishing Duopole* (Montreal: Institute and Centre of Air and Space Law, McGill University, 1980) 20.

(72) *Ibid.*, at 41.

(73) *Draft Treaty Governing the Exploration of the Moon and Other Celestial Bodies*, A/AC.105/C.2/L.12 (US, 11 July 1966) [hereafter US Draft Treaty]; and *Draft Treaty on Principles Governing Activities of States in the Exploration and Use of Outer Space, the Moon and Other Celestial Bodies*, A/AC.105/C.2/L.13 (USSR, 11 July 1966) [hereafter USSR Draft Treaty].

(74) US Draft Treaty, *ibid.*, Article 4 states:

> A State conducting activities on a celestial body shall (a) promptly provide the Secretary-General of the United Nations with a descriptive report of the nature, conduct and locations of such activities and (b) make the findings of such activities freely available to the public and international scientific community.

Article VIII of the USSR Draft Treaty states:

> In the exploration and use of outer space, 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 activities on celestial bodies, with due regard for the corresponding interests of other States. States Parties to the Treaty shall conduct research on celestial bodies in such a manner as to avoid harmful contamination. If a State Party to the Treaty has reason to believe that an outer space activity or experiment planned by it or its nationals would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including activities on 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 outer space activity or experiment planned by another State Party would cause potentially harmful interference and activities in the peaceful exploration and use of outer space, including activities on celestial bodies, may request consultation concerning the activity or experiment.

This provision, while basically following Paragraph 6 of the Legal Declaration, broadened the scope of the latter by including a specific reference to activities on celestial bodies, thereby erasing any doubts whether activities in outer space included activities on celestial bodies. The introduction of the principle of avoidance of contamination in sentence 2 parallels that of Article 10 of the US Draft Treaty.

A comparison of sentence 2 of USSR Article VIII with US Article 10 is revealing. The scope of activities is broader in Article 10. "Studies" in Article 10 includes "research" in sentence 2 of Article VIII as well as commercial and government-sponsored activities. The use of this term is significant, since scientific, commercial and public service activities are all bound by the contamination avoidance rule. Furthermore, a parallel is achieved with the "space activity" and "experiment" categories for which consultation is deemed necessary.

The type and scope of the contamination to be avoided differs. Sentence 2 of Article VIII is ambiguous in the type of contamination(75)

(75) S. Gorove, in "Pollution and Outer Space: A Legal Analysis and Appraisal" (1972), 5 *NYU J Int'l Law and Politics* 53 at 55-56, states that "forward contamination" takes place through the introduction of undesirable elements into outer space by some form of human intervention, and that "back contamination" arises as a result of the introduction of undesirable extraterrestrial matter into the environment of Earth or undesirable use of such matter by similar human intervention.

it prohibits. Inclusion of forward contamination is almost certain, while back contamination may be inferred since "to avoid harmful contamination" has no indirect object. Article 10 is more specific, providing for forward and back contamination. However, the duty there is less strict. Only "steps to avoid" contamination need be taken, whereas contamination shall be avoided in sentence 2 of Article VIII. "Steps to avoid" could mean that contamination resulting from an activity could be permissible, notwithstanding the steps taken to avoid the contamination, thereby nullifying any recommended contamination procedure.

Sentence 2 of Article VIII does not contain specific references to the Moon or outer space; therefore, it may be interpreted to mean that harmful contamination is to be avoided only on celestial bodies other than the Moon. This provision could mean that when carrying out research on the Moon and in outer space, states need not avoid harmful contamination as long as the co-operation and due regard requirements of sentence 1 are met. In Article 10, the contamination to be avoided varies with the location: "harmful contamination" is to be avoided on celestial bodies, while "adverse changes" are to be avoided on Earth. The use of different expressions for each location raises serious concerns. Since adverse changes (for example, transformation of planetoid geography by an accidental explosion) may not necessarily constitute harmful contamination, such changes could be permitted on celestial bodies. Similarly, the importation to Earth of an extraterrestrial organism, which results in harmful contamination (for example, elimination of a bird species) would be permissible as long as adverse changes (such as permanent poisoning of the terrestrial water supply) do not occur. In addition, as with sentence 2 of Article VIII, the lack of specific references to the Moon and outer space implies that harmful contamination need not be avoided there.

Both proposals are enlightening for what they do not say. Neither considers the standard of permissible interference, mentions the avoidance of specific activities, nor makes it mandatory to avoid activities which could harmfully contaminate the outer space environment *per se*. Furthermore, no prohibitions are invoked.(76)

2/ Article IX of the Outer Space Treaty

During the COPUOS and Legal Sub-Committee meetings held in

(76) Y.M. Kolossov, "Legal Aspects of Outer Space Environmental Protection" (1980), 23 *Colloquium Law of Outer Space* 53 at 53.

1966 to clarify the content of the future Outer Space Treaty,(77) all states accepted that the Outer Space Treaty would contain a set of legally binding,(78) broad principles for regulating the conduct of states undertaking space activities,(79) and would provide "a firm foundation for subsequent and more detailed agreements"(80) since the intent of the Treaty was not to provide for every contingency(81).

Article IX of the Outer Space Treaty states:

> 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 nationals 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

(77) C.Q. Christol, *The Modern International Law of Outer Space* (NY: Pergamon Press, 1982) 137.

(78) A/C.1/SR.1492 (Austria, 17 December 1966) par 34.

(79) A/AC.105/C.2/SR.61 (Bulgaria, 18 July 1966) 2-3, A/AC.105/C.2/SR.63 (USSR, 20 July 1966) 4, A/C.1/SR. 1492 (US, 17 December 1966) par 6 and A/C.1/SR.1492 (USSR, 17 December 1966) par 12.

(80) A/C.1/SR.1493 (Canada, 17 December 1966) par 43 and A/C.1/SR.1493 (Belgium, 17 December 1966) par 50.

(81) A/C.1/SR.1492 (US, 17 December 1966) par 6.

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.

Although the structure of Article IX of the Outer Space Treaty reflects mutual agreement between the superpowers, even a fleeting comparison of Article IX with USSR Article VIII and US Article 10 reveals that the final product is based on the USSR submission. Essentially a preventative measure, USSR Article VIII was designed to guarantee the protection of the interests of all states and the international community as a whole from detrimental space exploration activities and contamination.(82) However, one major shortcoming of this provision is its narrower scope of application. While the Legal Declaration applies to all states, USSR Article VIII was intended to apply only to parties to the proposed treaty on general principles for the exploration and use of outer space. This restriction was included in Article IX of the Outer Space Treaty. The issue as to the rights and obligations of non-party states under the Treaty is unresolved.(83)

The principle of international co-operation and mutual assistance was considered to be the keystone of the Outer Space Treaty, with Article IX serving as an example of its practical application.(84) From this basic treaty principle could be derived the duties of states to prevent contamination and to co-operate in scientific research.(85)

The principle that due regard should be given to the corresponding interests of other states was considered to be "one of the most important points" in space law.(86) The representative of France contended that these corresponding interests were severely limited since they applied only to potentially harmful interference with space activities, harmful contamination to celestial bodies and adverse changes to the environment of Earth from back contamination caused by extraterrestrial organisms. He argued that the concern for corresponding interests should also account for certain effects on the territory of states in the broadest sense, including territorial waters, airspace

(82) See A/AC.105/C.2/SR.65 (Bulgaria, 22 July 1966) 6, A/AC.105/C.2/SR.57 (USSR, 12 July 1966) 12 and A/C.1/SR.1492 (US, 17 December 1966) 12.

(83) A/AC.105/C.2/SR.71 and Add. 1 (Romania, 4 August 1966) 18-19.

(84) A/C.1/SR.1493 (Belgium, 17 December 1966) par 49.

(85) A/AC.105/C.2/SR.60 (Argentina, 15 July 1966) 2-3.

(86) A/AC.105/C.2/SR.68 (26 July 1966) [hereafter Article IX debate], Canada at 10.

and land-based installations, and should include direct broadcast satellites, weather modification, "certain uses of high altitude photography" and congestion in outer space resulting from overcrowding of satellites, radio frequencies and spent satellites.(87)

With regard to the contamination provision, there was consensus that the final article should refer to both forward and back contamination,(88) thereby combining US Article 10 with sentence 2 of USSR Article VIII. It was also agreed that the scope for avoidance of forward contamination should be expanded to include outer space and the Moon as well as celestial bodies.(89) Finally, the provision in US Article 10 for "taking steps to avoid harmful contamination" where appropriate was modified and incorporated into sentence 2 of Article IX to allow for the adoption of appropriate measures, where necessary, to avoid harmful contamination to the environment of Earth caused by back contamination.

A bid by the Japanese delegation to have sentence 2 of Article IX amended to include more detailed regulation of contamination(90) was rejected. It was felt that since the issue of forward and back contamination was at an early stage of development and since the COSPAR-CG was consulting on the matter, care had to be taken not to establish "too rigid procedures" which might hinder future research.(91) The Japanese delegation, however, was not convinced that its proposal was covered by reading the due regard principle together with the proposed contamination provision, as "some delegations" had suggested.(92) Rather, the Japanese delegation "suspected that the space powers had not accepted its amendment mainly because they feared that it might tie their hands in future activities on celestial bodies."(93)

(87) A/AC.105/PV.47 (France, 17 April 1967) 27. J. Sztucki, in "International Consultation and Space Treaties" (1975), 17 *Colloquium Law of Outer Space* 159, cited in Christol, *supra*, note 77 at 139, states that potentially harmful interference with the functioning of a foreign satellite is covered under the consultation provisions of Article IX.

(88) Article IX debate, *supra*, note 86, USSR at 3 and A/AC.105/C.2/SR.63 (US, 20 July 1966) 2-3.

(89) Article IX debate, *id.*

(90) *Ibid.*, at 6 and A/AC.105/C.2/SR.58 (Japan, 13 July 1966) 7.

(91) Article IX debate, *supra*, note 86, US at 7.

(92) A/AC.105/C.2/PR.71 (Japan, 4 August 1966) 38-40.

(93) A/AC.105/C.2/SR.71 and Add. 1 (Japan, 4 August 1966) 13.

Moreover, the representative of India stated that the Legal Sub-Committee had been "following what [was] almost a blind alley" when drafting sentence 2 of Article IX.(94) He pointed out that the Scientific and Technical Sub-Committee had taken no real action on the contamination question, although scientific study of the issue had been urged on that Sub-Committee in order to assist the Legal Sub-Committee with its drafting task.(95)

Perhaps most importantly, the category of activities for which harmful contamination was to be avoided was widened to include exploration as well as research, combining "pursue studies" from US Article 10 and "conduct research" from USSR Article VIII. As indicated above, "studies" could include commercial, public service and scientific activities. Indeed, Article IX of the Outer Space Treaty refers to "pursuing studies" and "conducting exploration", totally eliminating the more restrictive concept of "research" and, in so doing, extends the avoidance of harmful contamination to include commercial and public service activities, notwithstanding an interpretation to the contrary(96).

From an environmental protection perspective, this expansion in sentence 2 of Article IX has its positive and negative aspects. On the one hand, the scope of activities where harmful contamination is to be avoided is widened. To the extent that scientific, commercial and public service uses may produce harmful contamination, states undertaking such uses are legally obliged to avoid harmful forward and back contamination and to adopt measures, where appropriate, for avoiding these activities. On the other hand, a balance had to be struck between the freedom to use and explore outer space, the Moon and other celestial bodies so as to leave space powers enough latitude to engage in useful enterprises without undue difficulty, and the safeguards contained in the principle of avoidance of harmful contamination.(97) These safeguards were considered to include maintenance of a contamination-free environment as a legitimate interest.(98)

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(94) A/AC.105/C.2/PR.71 (India, 4 August 1966) 23-25.

(95) A/AC.105/C.2/SR.71 and Add. 1 (India, 4 August 1966) 9.

(96) A/AC.105/C.2/PR.26 (France, 17 April 1967) 26.

(97) See A/C.1/SR.1492 (France, 17 December 1966) par 22 and A/AC.105/C.2/PR.47 (France, 17 April 1967) 27.

(98) A/C.1/SR.1493 (Sweden, 17 September 1966) par 14.

However, it was never intended that the protection offered by the avoidance of harmful contamination principle would extend to the environments of outer space, the Moon and other celestial bodies *per se*. Although it was suggested that possible environmental harms should be given a priority ranking, this listing was only to avoid interference of one activity with another; although the freedom of states to explore and use outer space was limited to non-threatening activities, threatening activities included only those which impinged on state sovereignty; and although it was argued that state parties should exercise "maximum care" to preserve the resources and milieu of celestial bodies, this preservation was solely to further scientific utility.(99) Therefore, widening the scope of activities subject to the avoidance of harmful contamination only serves to legitimize contamination activities and can only lead to a greater possibility of environmental harms in outer space and on the Moon and other celestial bodies.

The consultation provisions of Article IX of the Outer Space Treaty differ from USSR Article VIII only to the extent that the scope of exploration and use was widened to include the Moon as well as outer space and other celestial bodies. Sentence 3 provides that a state planning to carry out a space activity is under an obligation to consult if that state has a reasonable belief that its activity would cause potentially harmful interference with the space activities of other states. Sentence 4 provides that a state has a right to request consultation if it reasonably believes that a space activity planned by another state would cause potentially harmful interference with its space activities.

An amendment proposed to sentence 3 by the Japanese delegation provided that if a state intended to undertake a space activity or experiment which could result in potentially harmful interference, that state was under an obligation to give prior notice of that activity to the Secretary-General of the United Nations. Without such prior notice, states whose interests might be harmed by the activity would not be informed of it.(100) The USSR delegation rejected this proposal on several grounds. First, only voluntary notice to the Secretary-General was necessary. Second, such notice was not needed since the

(99) See A/AC.105/C.2/PR.47 (France, 17 April 1966) 26,27, A/AC.105/C.2/SR.71 and Add. 1 (Japan, 4 August 1966) 13, A/AC.105/C.2/SR.58 (Japan, 13 July 1966) 7 and Article IX debate, *supra*, note 86, Japan at 6. For a plea to extend the scope of contamination, see A/AC.105/C.2/SR.71 and Add. 1 (India, 4 August 1966) 9 and A/AC.105/C.2/PR.71 (India, 4 August 1966) 23-25.

(100) A/AC.105/C.2/SR.58 (Japan, 13 July 1966) 7.

provision to "undertake appropriate international consultations" meant that the state undertaking the activity would be giving prior notice when it provided information on the activity to the states concerned. Third, it was felt that the sentence 3 procedure was more effective than the Japanese proposal since the information would reach the parties quicker and would avoid giving the Secretary-General of the United Nations "a role in the application of the Treaty". Finally, it was stressed emphatically that provision of information concerning potentially harmful interference with space activities was compulsory. Consequently, notice to a second source would be redundant. As well, this compulsory provision of information was intended to apply to the sentence 4 consultation procedure as well as that of sentence 3.(101)

The consultation provision, then, was intended to serve a double duty:

> Every State Party would be obliged to transmit to other parties information on activities or experiments which might interfere with their own activities *and* undertake appropriate international consultations before proceeding with any such activity or experiment.(102) [emphasis added]

In the context of sentence 3, if a consultation situation arose, a state undertaking consultation would be obliged to provide information as to the nature of the activity or experiment for which consultation was sought. However, there is no requirement that the information be either complete or delivered in time for sufficient study prior to consultation. In sentence 4, if and when a state acceded to a request for consultation, the requesting state would have a right to receive information as to the nature of the activity for which consultation was sought.

Sentence 4 suffers from an additional weakness; it provides no obligation for the state undertaking the activity to accede to the request for consultation.(103) In response to this perceived weakness, the representative of the USSR noted that since the Outer Space Treaty would have compulsory force, "it would therefore be compulsory to comply with requests for which it provided".(104) On this basis, acces-

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(101) Article IX debate, *supra*, note 86, USSR at 5-8.

(102) *Ibid.*, USSR at 7.

(103) Article IX debate, *supra*, note 86, Lebanon at 9.

(104) *Ibid.*, USSR at 9.

sion to a request for consultation would be compulsory if the requesting state could demonstrate that potentially harmful interference would result from the proposed activity. However, as with the information provision, the lack of a time element for initiating consultation following a request effectively negates the compulsory force of the request.

The draft Outer Space Treaty was adopted by the First Committee of the UNGA without objection.(105) Two days later, the Treaty was endorsed unanimously by the UNGA.(106)

Analysis

Article IX of the Outer Space Treaty provides very little protection for the environment of outer space, including the Moon and other celestial bodies. Article IX attempts to regulate the unfettered freedom to use and explore the outer space environment by laying down some important rules of conduct for states when undertaking their space activities.(107) However, these rules fall short of the mark for two reasons: the decision-making process of COPUOS and the influence of the sci-lab perception.

In COPUOS, decisions are made by consensus.(108) To achieve the compromise required for consensus, lengthy negotiations and national policy rivalries often overshadow the critical issues. Politico-philosophical differences among states and groups of states tend to spread too thinly the results of consensus. Witness the struggle in achieving compromise for the consultation provision — the right of states to determine for themselves whether consultation is necessary versus the obligation of states to consult and agree. Also, the quest

(105) A/C.1/SR.1943 (Chairman, 17 December 1966) par 86.

(106) Dembling, *supra*, note 70 at 1.

(107) See Gorove, *supra*, note 75 at 60 and I.H.Ph. Diederiks-Verschoor, "Legal Aspects of Solar Power Satellites Impact on the Environment" (1982), 25 *Colloquium Law of Outer Space* 355 at 357.

(108) For a concise analysis of decision making in COPUOS, see P.P.C. Haanappel, "Decision Making and Law Making in the U.N. COPUOS". Prepared by the Centre for Research in Air and Space Law, McGill University in 1981 under a grant from the Social Sciences and Humanities Research Council of Canada on space activities and emerging international law. See also, Space Activities, *supra*, note 65 at 197-202.

for universal agreement demands the use of a somewhat questionable legislative drafting technique, whereby additions and deletions are made to a negotiating text as soon as the parties reach agreement.(109)

According to the sci-lab perception, the value of outer space, including the Moon and other celestial bodies, is limited to its use as a laboratory for scientific activity; consequently, any proposed space activity will be assessed as potentially harmful to the outer space environment if and only if it threatens the future use of outer space for scientific purposes. In other words, outer space is "there" to be used as the users see fit and has no value in itself. This attitude permeated all UN negotiations concerning Article IX of the Outer Space Treaty and its predecessors. As a result, protection of the outer space environment *per se* is ancillary to the objective of ensuring that outer space can be used for space activities.(110)

Article IX of the Outer Space Treaty is ineffective as an environmental protection regulation because the approach to drafting the text was not from an environmental point of view, but from the sci-lab perspective. With an environmental approach, protection of the outer space environment and its sub-systems is the priority. The regulator examines the total system under consideration, identifies the needs of the system and provides rules to manage that system in an ecologically beneficial manner. These rules would prohibit or limit activities if those activities would harm the system. Accordingly, total classes of activities could be eliminated.

With a sci-lab approach, the utility of the activity prevails. The regulator looks to the activity, then provides rules to prohibit or limit that activity to the extent that it will impede the future use of the system for other activities. Consequently, since all activities are *prima facie* acceptable, the scope of delimitation is much narrower.

For example, suppose mining activities take place on a celestial body. Following exploitation, strip-mining has defaced the celestial body, outer space itself is contaminated, but further mining is possible. Under Article IX of the Outer Space Treaty, no rule or regulation has been broken. From an environmental perspective, the activity

(109) H.L. van Traa-Engelman, "Environmental Hazards From Space Activities: Status and Prospects of International Control" (1982), 25 *Colloquium Law of Outer Space* 55 at 56.

(110) See H.A. Baker, "The Sci-lab Perception: Its Impact on Protection of the Outer Space Environment" (1987), 30 *Colloquium Law of Outer Space* [publication forthcoming].

would likely have been prohibited or, if permitted, would have been limited so as to avoid harm to the celestial body and its surroundings space environment.

The sci-lab perception goes to the root of Article IX — harmful activities, that is, those space activities which contaminate and those which interfere with other space activities. Several commentators have pointed out the difficulties of defining "harmful", "contamination" and "interference".(111) Miklody argues that it is for the scientist, not the lawyer, to define these terms; Dembling and Kalsi assume scientists will establish the parameters of these concepts.(112) However, the sci-lab perception provides the test for "harm" — a test which has nothing whatsoever to do with science. An activity will be harmful if it interferes with the future use of outer space, the Moon or other celestial bodies for space activities. This rule is based on the short-term goals of man, not the laws of nature as interpreted by the scientist. Therefore, harmful interference and harmful contamination have no direct connection with environmental concerns. Environmental protection in Article IX is only a fortuitous by-product.

Sentence 1 of Article IX limits the scope for international co-operation and mutual assistance and due regard to corresponding interests to those activities which could cause potentially harmful interference with other space activities, harmful contamination of outer space, including the Moon and celestial bodies, and adverse changes to the Earth environment from back contamination by terrestrial organisms. The sci-lab test for "harmful" further delimits this already restrictive list of activities.

Sentence 2 applies to scientific, commercial and public service activities. In addition to definitional problems inherent in the terms "harmful contamination" and "adverse changes", the former does not apply to the Earth environment, while the latter does not apply to outer space, the Moon or other celestial bodies. This oversight results from the patch-work process of drafting mentioned above: The "adverse

(111) See, for example, Gorove, *supra*, note 75 at 62-63; C.G.M. Reijnen, "Some Aspects of Environmental Problems in Space Law" (1977), 26 *Zeitschrift für Luft und Weltraumrecht* 23 at 23; Kolossov, *supra*, note 76, and P.G. Dembling and S.S. Kalsi, "Pollution of Man's Last Frontier: Adequacy of Present Environment Law in Preserving the Resource of Outer Space" (1973), 20 *Neth. Int'l LJ* 125 at 140-41.

(112) M. Miklody, "Some Remarks on the Legal Status of Celestial Bodies and Protection of Environment" (1982), 25 *Colloquium Law of Outer Space* 13 at 13 and Dembling and Kalsi, *ibid.*, at 140.

changes" provision of Article 10 of the US Draft Treaty was inserted in Article VIII of the USSR Draft Treaty without further consideration as to the effect of this move. Sentence 2 offers no direct environmental protection, since the test for harmful contamination is based on the future utility of the activity. Moreover, no activity is barred, only avoided, thereby allowing for harmful contamination by default. Avoidance may be the intent; it need not be the result.

The duty of states to impose limits on space activities which may cause harmful contamination is ambiguous and minimal. Regulations must be appropriate — where necessary. Although the test for necessity is not explicitly subjective, the negotiating history of Article IX and its results belie an objective test, especially when the "reasonable belief" test for consultation is taken into account. In any case, the sci-lab perception will govern what measures are appropriate; whether the test is subjective or objective becomes a matter of the quantity of contamination, not the quality of the environment.

Sentences 3 and 4 apply to scientific, commercial and public service space activities which may cause potentially harmful interference with space activities of other states. Harmful interference arises only where the future use of outer space, the Moon and other celestial bodies for space activities will be prevented; once again, environmental protection is incidental.

To strike a balance between freedom of space activity and the necessity of guaranteeing that due regard would be given to the corresponding interests of states, a consultation procedure was incorporated into Article IX to provide a forum for the scientific analysis of activities which could cause potentially harmful interference. States carrying out activities causing harmful contamination will be under a duty to consult only when those activities constitute potentially harmful interference, that is, when they prevent the future use of outer space for other space activities.

Although consultation could be a positive force for environmental protection, its effectiveness is severely restricted for several reasons. First, the reasonable belief test is subjective in a sentence 3 situation, thereby leaving it to the undertaking state to determine whether its activity will cause potentially harmful interference. Second, the sci-lab test for "harmful" makes it even less likely that a reasonable belief will arise. Third, although COSPAR was designated by COPUOS as the appropriate international body for consultation, it need not be the only body. Disputes may therefore arise prior to consultation on the question of the appropriate body for undertaking consultation. Also, the recommendations of consultation are not binding, nor is there

any indication of what use must be made of such recommendations if they are accepted. Fourth, if a consultation should arise, the state undertaking the activity is under no obligation to provide in a timely manner information which would enable the consulting body to reach a reasonable decision. Finally, no procedures for consultations or disputes arising therefrom are enumerated. Article III of the Outer Space Treaty provides that space activities are to be carried out "in accordance with international law, including the Charter of the United Nations, in the interest of ... promoting international co-operation and understanding", thereby enabling states to apply those dispute resolution procedures developed under international law and provided for in Chapter VI of the UN Charter. However, to invoke Earth-bound procedures for resolution of outer space disputes may distort the issue to fit the procedure. Different characteristics of outer space and terrestrial environments demand different approaches; although the principles may be identical, the details vary considerably.(113)

The sentence 4 provision may be used by those states wishing to protect the outer space environment, but only if they are parties to the Outer Space Treaty. Non-party states may be able to invoke Paragraph 6 of the Legal Declaration since its principles have been accepted by almost all states as indicative of international customary law.(114)

The reasonable belief test is to the advantage of the requesting state in sentence 4; yet several circumstances mitigate against the success of a request to consult. First, the requesting state must convince the undertaking state on the basis of the sci-lab test that the space activity of the latter could cause potentially harmful interference. Since environmental protection is subordinate to the ultimate utilitarian nature of the test, success in preventing such an activity on purely ecological grounds is out of the question. Second, it is not clear whether an independent body for consultation is required or whether the parties with an interest in the effects of the activity are to consult among

(113) See H. DeSaussure, "Maritime and Space Law: Comparison and Contrasts (An Oceanic View of Space Transport)" (1981), 9 *J. Space L.* 93 at 103; P.P.C. Haanappel, "Comparisons Between the Law of the Sea and Outer Space Law: Exploration and Exploitation" (1985), 28 *Colloquium Law of Outer Space* 145 at 147, and Space Activities, *supra*, note 65 at 175-79.

(114) It is reasonable to assume, however, that any state in a position to undertake space activities will become a party to the Outer Space Treaty prior to the time when its space activities are operational.

themselves. Third, although there is an obligation for a state to accede to a request for consultation, there are no provisions for a time limit within which consultation must take place or for the timely provision of information to the requesting state for substantiation of its allegations.

Conclusion

The time is ripe for a new convention which will provide adequate safeguards to guarantee the protection of the environment of outer space, the Moon and other celestial bodies. Protection of the outer space environment is an important area of space law.(115) The nature of the outer space environment and the Earthly experiences with pollution problems "demonstrate the need to come to an effective legal protection" before the continuing increase in space activities produces serious damage.(116) The drafting of a treaty for protection of the outer space environment should be a priority; attempts in this direction have already begun.(117)

Whatever form the new convention takes, its drafters must approach the convention with the attitude that protection of the outer space environment is a valid goal in itself. The Moon Agreement(118) points in the right direction by providing in Article VII, par 1 that "States Parties shall take measures to prevent the disruption of the

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(115) Environmental protection has been on the agenda of the annual meeting of the International Institute of Space Law (IISL) three times in the 1980s. See (1982), 25 *Colloquium Law of Outer Space*, (1984), 27 *Colloquium Law of Outer Space* and (1987), 30 *Colloquium Law of Outer Space* [publication forthcoming]. See also (1972), 15 *Colloquium Law of Outer Space*, where a round-table discussion was entitled Space Activities which may have Harmful Effects on the Environment.

(116) K-H Böckstiegel, "Space Law Problems at the Turn of the Century" (1983), 26 *Colloquium Law of Outer Space* 339 at 341.

(117) See Böckstiegel, *id.*; Gorove, note 75 at 64; Vlasic, *supra*, note 64 at 518; I.H.Ph. Diederiks-Verschoor, "Harm Producing Events Caused by Fragments of Space Objects (Debris)" (1982), 25 *Colloquium Law of Outer Space* 1 at 2; van Traa-Engelman, *supra*, note 109 at 57; H.H. Almond Jr., "A Draft Convention for Protecting the Environment of Outer Space" (1980), 23 *Colloquium Law of Outer Space* 97, and K-H Böckstiegel, "Convention on the Settlement of Space Law Disputes" (1983), 26 *Colloquium Law of Outer Space* 179.

(118) *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, A/RES/34/68 (5 December 1979); opened for signature 18 December 1979, entered into force 11 July 1984.

existing balance of [the Moon's] environment, whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra-environmental matter or otherwise". However, even this provision does not go far enough, since the Moon Agreement applies only to the Moon and other celestial bodies in our solar system, to the exclusion of the outer space environment *per se* and celestial bodies outside our solar system.(119) If, in developing a convention to protect the outer space environment, including the Moon and other celestial bodies, its drafters see themselves as stewards of a unique possession and aim to preserve this fundamental heritage for future generations, much of the criticism mounted in this paper will fall by the way.

(119) Moon Agreement, *ibid.*, Article I par 1 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 in so far as specific legal norms enter into force with respect to any of these celestial bodies.

PROTECTION DE L'ENVIRONNEMENT SPATIAL HISTORIQUE ET ANALYSE DE L'ARTICLE IX DU TRAITÉ SUR L'ESPACE EXTRA-ATMOSPHÉRIQUE

Un examen de l'historique de l'Article IX du Traité sur l'espace et des instruments qui l'ont précédé permettra de cerner l'essence et la portée de cet article, en ce qui a trait à l'environnement spatial comprenant l'espace extra-atmosphérique, la lune et les autres corps célestes.

Le paragraphe 6 de la Résolution 1962 de l'AGNU met de l'avant trois des principes de base de l'Article IX: la coopération et l'entente mutuelle dans la poursuite des activités spatiales; la consultation au préalable lorsqu'une activité spatiale risque de nuire aux autres activités spatiales, et le respect des intérêts des autres États qui entreprennent des activités dans l'espace. Les projets de traités américain et soviétique sur les principes directeurs en matière d'activités spatiales ont tous les deux avancé un quatrième principe fondamental: la nécessité d'éviter la contamination néfaste de l'environnement spatial.

L'Article IX du Traité sur l'espace visait, dans son esprit, à protéger la communauté internationale contre les conséquences fâcheuses pouvant éventuellement découler des activités spatiales. En fait, l'Article IX fait très peu pour la protection de l'environnement spatial, à cause principalement de l'influence exercée par le concept de l'"espace: laboratoire scientifique". Dans cette optique, l'espace, y compris la lune et les autres corps célestes, ne présentent de valeur qu'en tant qu'ils sont utilisés à des fins scientifiques. Par conséquent, toute activité projetée sera jugée comme possiblement néfaste pour l'environnement spatial si, et uniquement si, elle menace l'utilisation de l'espace à des fins scientifiques, commerciales ou étatiques.

Seule une nouvelle convention permettra d'assurer la protection de l'environnement spatial. Les rédacteurs devront élaborer ce texte en gardant à l'esprit que la protection de l'environnement spatial constitue en soi un objectif. La première phrase de l'Article IX vise seulement les activités susceptibles de nuire aux autres activités spatiales, d'entraîner une contamination néfaste de l'environnement spatial ou des modifications dommageables de l'environnement terrestre, suite à des retombées d'organismes ou d'objets lancés dans l'espace depuis la terre. Le concept de l'"espace: laboratoire scientifique" restreint encore davantage la portée de ces mots.

Même si la deuxième phrase stipule qu'il faut éviter toute contamination néfaste de l'environnement spatial, elle n'assure aucunement la protection directe de cet environnement à cause de l'interprétation de "laboratoire scientifique", et, de plus, elle n'interdit aucune activité dans l'espace. La responsabilité de l'État de restreindre les activités spatiales pouvant causer une contamination dommageable de l'environnement est ambiguë et limitée. La nécessité d'imposer des restrictions est évaluée à la lumière du concept de "laboratoire scientifique".

Les troisième et quatrième phrases prévoient des mécanismes de consultation lorsque toute activité spatiale d'un État est susceptible de nuire aux activités d'un autre État. Cependant ces deux phrases affaiblissent passablement l'efficacité de cette consultation suite à, dans le premier cas: la subjectivité du "doute raisonnable"; au concept de "laboratoire scientifique"; l'absence de disposition visant la création d'un organisme spécifique de con-

sultation; la nature non obligatoire des recommandations découlant de la consultation; le manque de mécanismes pour la fourniture de renseignements nécessaires à la consultation et au règlement des différends en découlant, et, dans le deuxième cas: au concept de "laboratoire scientifique", au statut ambigu de l'organisme consultatif, l'absence d'un délai-limite de consultation, et l'absence d'un mécanisme permettant de fournir à l'État qui en fait la demande les renseignements nécessaires.

Il devient donc nécessaire de recourir à une nouvelle convention pour assurer la protection de l'environnement spatial. Les rédacteurs devront la rédiger en gardant à l'esprit que la protection de l'environnement spatial constitue un objectif en soi. L'Article VII, par. 1, de l'Accord sur la Lune représente un pas dans la bonne direction.