

2006

Application of the Precautionary Principle to the Moon

Paul B. Larsen

Follow this and additional works at: <https://scholar.smu.edu/jalc>

Recommended Citation

Paul B. Larsen, *Application of the Precautionary Principle to the Moon*, 71 J. AIR L. & COM. 295 (2006)
<https://scholar.smu.edu/jalc/vol71/iss2/4>

This Article is brought to you for free and open access by the Law Journals at SMU Scholar. It has been accepted for inclusion in Journal of Air Law and Commerce by an authorized administrator of SMU Scholar. For more information, please visit <http://digitalrepository.smu.edu>.

APPLICATION OF THE PRECAUTIONARY PRINCIPLE TO THE MOON

PAUL B. LARSEN*

I. INTRODUCTION

A RECENT ARTICLE in the American Journal of International Law ("AJIL") on application of the Precautionary Principle to Antarctica¹ engenders the idea that the Precautionary Principle could be applied usefully to activities on the Moon. The Precautionary Principle has been codified in several international agreements on the protection of natural resources. As expressed in Principle 15 of the 1992 Rio de Janeiro Declaration:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.²

* The author teaches air law and space law at Georgetown University Law Center, 600 New Jersey Ave. NW, Washington D.C., 20001. E-mail: PBLSpace@aol.com. This comment was presented at the World Space Congress in Fukuoka, Japan, Oct. 17-21, 2005. The author acknowledges, with gratitude, helpful guidance received from Professor Robert V. Percival, Director, Environmental Programs, and Robert Stanton, Scholar, University of Maryland School of Law, from Professor Francis Lyall, University of Aberdeen Faculty of Law, University of Aberdeen, Scotland, and from Visiting Professor Bernhard Schloh, University of Pittsburgh Law School. Only the author is responsible for the views expressed herein.

¹ Kees Bastmeijer & Ricardo Roura, *Regulating Antarctic Tourism and the Precautionary Principle*, 98 AM. J. INT'L L. 763 (2004) [hereinafter Bastmeijer & Roura].

² United Nations Conference on Environment and Development, June 3-14, 1992, *Rio Declaration on Environment and Development*, princ. 15, U.N. Doc. A/CONF. 151/26 (Vol. I) (Aug. 12, 1992). See, e.g., Convention for the Conservation of Antarctic Seals, June 1, 1972, 29 U.S.T. 441; Convention on the Regulation of Antarctic Mineral Res. Activities, June 2, 1988, 27 I.L.M. 859 (this Convention is not in force). See also Treaty Establishing the European Commu-

According to the Precautionary Principle,³ States and their nationals conducting activities relating to natural resources must use extra caution when the result or outcome of the activity is uncertain. The Principle is particularly relevant to fragile environments.⁴ The two authors of the AJIL article, Bastmeijer and Roura, observe that the Principle deals more with managing uncertain risks than with preventing known risks. They conclude that the Precautionary Principle applies to Antarctica.⁵

nity, art. 174(2), Mar. 25, 1957, 2002 O.J. (C. 325), available at <http://www.europa.eu.int/eur-lex> [hereinafter European Community Treaty]:

Community policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on *the precautionary principle*, and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

(emphasis added). *The Commission of the European Communities, Communication from the Commission on the Precautionary Principle*, at 4, COM (2000) 1 final (Feb. 2, 2000) [hereinafter Commission of the European Communities Communication], explains: [M]easures based on the precautionary principle should be, *inter alia*:

- *proportional* to the chosen level of protection,
- *non-discriminatory* in their application,
- *consistent* with similar measures already taken,
- *based on an examination of the potential benefits and costs* of action or lack of action (including, where appropriate and feasible, an economic cost/benefit analysis),
- *subject to review*, in the light of new scientific data, and
- *capable of assigning responsibility for producing the scientific evidence necessary* for a more comprehensive risk assessment.

³ Professor Robert V. Percival, Director of Environmental Programs at the University of Maryland, has researched the Precautionary Principle from a United States point of view; see Robert V. Percival, *Who's Afraid of the Precautionary Principle*, 23 PACE ENVTL. L. REV. 801 (2006). Professor Percival finds four main elements of the Precautionary Principle: a serious threat of irreversible damage; uncertainty about the impact of planned activities on the environment; the scope of the authority of the regulator; and the regulator's use of that authority. Wybe Th. Douma, *The Precautionary Principle in the European Union*, 9 REV. EUR. CMTY. & ENVTL. L., 132, 132 (2000), states that the Precautionary Principle applies when it is "unclear whether damage will occur at all or what causes existing damage." It applies when "risks are not quantifiable and can be referred to as potential risks." *Id.*

⁴ Bastmeijer & Roura, *supra* note 1, at 772.

⁵ *Id.*

Antarctica is subject to the Antarctic Treaty of 1959, which has been universally accepted.⁶ The Antarctic Treaty demilitarized Antarctica and made it into *terra communis*.⁷

The objective of this article is to examine whether the Precautionary Principle can also be applied to the Moon because the Antarctic Treaty⁸ is closely linked to and served as the model for the 1967 Outer Space Treaty ("OST").⁹ The Antarctica analogy was most forcefully made by United States President Eisenhower in his famous 1960 address to the United Nations General Assembly. He said:

The nations of the world have recently united in declaring the continent of Antarctica "off limits" to military preparations. We could extend this principle to an even more important sphere. National vested interests have not yet developed in space or in celestial bodies. Barriers to agreement are now lower than they will ever be again.¹⁰

President Eisenhower then proposed that, like Antarctica, outer space should not be subject to a claim of sovereignty, and that nations should not engage in warlike activities in outer space and on celestial bodies.¹¹ Like the Antarctic Treaty, the OST demilitarized the Moon and made the Moon *terra communis*.¹² The Moon is "the province of all mankind" and "not subject to national appropriation by claim of sovereignty."¹³ *Ab initio*, it is notably the lack of right of national appropriation that weakens the absolute right of individual States to engage in lunar activities. In particular, lack of this right undermines the right to do anything in fragile areas because it may preclude other States from ever using those areas.

⁶ Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71 [hereinafter Antarctic Treaty]. Forty-seven States are parties to the Treaty. The Antarctic Treaty system includes the Protocol on Environmental Protection to the Antarctic Treaty which entered into force in 1998. Protocol on Environmental Protection to the Antarctic Treaty, Oct. 4, 1991, 30 I.L.M. 1455.

⁷ Common territory to which sovereignty cannot be acquired. See PHILLIP C. JESSUP & HOWARD J. TAUBENFELD, CONTROLS FOR OUTER SPACE AND THE ANTARCTIC ANALOGY 181 (1959).

⁸ Antarctic Treaty, *supra* note 6.

⁹ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter OST].

¹⁰ Dwight D. Eisenhower, Address to the General Assembly, S. DOC. NO. 26, at 1009 (1st Sess. 1961) [hereinafter Eisenhower Address].

¹¹ *Id.*

¹² OST, *supra* note 9, at art. IV.

¹³ *Id.* arts. I, II.

II. REASONS FOR INVOKING THE PRECAUTIONARY PRINCIPLE TO THE MOON

The reasoning behind application of the Precautionary Principle to Antarctica is that Antarctica is a fragile environment.¹⁴ The Moon is possibly more fragile than Antarctica. All astronauts agree that outer space, including the Moon, is a very dangerous and unforgiving place that does not permit any mistakes to be made. Its fragile environment makes the outcome of lunar activities uncertain. It is particularly important to focus on uncertainties in making decisions about the Moon's environment because erroneous decisions about the Moon cannot be reversed. The Moon's fragility becomes an urgent question because several States plan exploration. For example, NASA's plans for moon exploration include the objective of permanent habitation; China and possibly India have new interest in Moon exploration; the European Space Agency ("ESA") plans lunar activities; private companies plan use of the Moon's minerals; and other private uses, such as manufacture and tourism on the Moon, are planned.¹⁵ But the Moon is fragile: nothing grows on the Moon; it has no air; it is unable to "heal" itself after impact; craters from ancient asteroid strikes remain; and the footprints of the visiting United States astronauts will remain on the surface of the moon, unless disturbed by later lunar activity.

III. LEGAL BASIS FOR APPLYING THE PRECAUTIONARY PRINCIPLE TO OUTER SPACE

When and where did States agree on application of the Precautionary Principle to the environment of the Moon? Nowhere in the space law treaties is application of the Precautionary Principle to the Moon expressly mentioned. However, the Antarctic Treaty System does not expressly adopt the Precautionary Principle either.¹⁶ Legal authority for application of the Precaution-

¹⁴ See Bastmeijer & Roura, *supra* note 1, at 772.

¹⁵ Paul B. Larsen, *Current Legal Issues Pertaining to Space Solar Power Systems*, 16 SPACE POL'Y 139, 139-144 (2000). The United States' "vision" for economic development of the Moon was restated in a keynote address by White House Science Advisor, Dr. John Marburger, at the 44th Robert H. Goddard Symposium on March 15, 2006. Russia also plans economic development of the Moon. See Craig Cowalt, *Russia's Lunar Return*, AVIATION WK. & SPACE TECH., June 5, 2006, at 20.

¹⁶ See Antarctic Treaty, *supra* note 6. Lluís Paradell-Trius, *Principles of International Environmental Law: an Overview*, 9 REV. EUR. CMTY. & ENV'T L. 93, 94 (2000) states that principles of international environmental law, such as the Precautionary Principle, are often drawn from many sources, in particular from soft law.

ary Principle to Antarctica is scholarly legal opinion that the Precautionary Principle can be read into the Antarctic Treaty System because the treaty system implicitly describes and incorporates the Principle. The two authors of the AJIL article, Bastmeijer and Roura, first ascertain that the Antarctic Treaty is accepted by all interested parties.¹⁷ The treaty parties meet regularly in the Antarctic Treaty Consultative Meetings to implement the treaty system. Furthermore, “[a]pplication of the [precautionary] principle would be consistent with the proactive approach of the Antarctic Treaty System.”¹⁸

A. PROTECTION OF FRAGILE LUNAR RESOURCES

If application of the Precautionary Principle to the Moon is linked to the fragility of the lunar environment, then we search for OST treaty provisions requiring caution in the use of the Moon’s resources. General acceptance of the need to use caution is generally expressed in OST article V, which requires States to inform the United Nations of “any phenomena they discover in outer space, including the Moon and celestial bodies, which could constitute a danger to the life or health of astronauts.” General acceptance of the need to use caution is also expressed in OST article IX, in which contracting States agree to “avoid harmful contamination” of the Moon.¹⁹ Prospective harmful activities give States Parties the right to appropriate international consultations before beginning such activities as follows:

[A] State Party to the Treaty [that] has reason to believe that an activity or experiment planned by [another 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].²⁰

¹⁷ Bastmeijer & Roura, *supra* note 1, at 768.

¹⁸ *Id.* at 772.

¹⁹ Manfred Hintz, *Environmental Aspects of Settlement on the Moon and Mars—Planetary Protection*, 34 INT’L INST. SPACE L. 59, 61 (1991). Hintz questions the scope of harmful contamination, asking: “Does any change in the Moon’s environment constitute harmful contamination or must it offend other states?” He assumes that the Treaty permits contamination below the level of harming the interests of other States. *Id.*

²⁰ OST, *supra* note 9, at art. IX.

Strict control by the States Parties to the OST of national activities on the Moon in OST article VI is another indication that the OST recognizes the fragility of the Moon.²¹ States "bear international responsibility for national activities in outer space, including the Moon and other celestial bodies."²² Other indications include OST article VII on liability for damages, article IX on state jurisdiction and control over their spacecraft, the Liability Convention,²³ and the Registration Convention.²⁴ The Aid to Astronauts Convention²⁵ is also relevant to this discussion. It was negotiated a year before the United States landed on the Moon in 1969. The United States and the Soviet Union were in a race to land on the Moon. Both were concerned about the uncertain dangers facing astronauts and cosmonauts on the Moon. In this treaty, they agreed on a procedure for assistance in the event that, through some unfortunate event, astronauts and cosmonauts are stranded on the Moon. The Aid to Astronauts Convention recognized the uncertainty of lunar activities in 1968.²⁶

While no human beings had been to the Moon when the OST was drafted, the drafting of the 1979 Moon Treaty²⁷ has the benefit of the knowledge and experience of astronauts having faced the uncertainties of existence on and return from the Moon. The 1979 Moon Treaty specifically provides in Art 7(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.²⁸

²¹ See *id.* art. IV.

²² *Id.*

²³ Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 197 [hereinafter Liability Convention]. Damage to a space object on the Moon is subject to proof of fault.

²⁴ Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15 [hereinafter Registration Convention]. Space objects sent to the Moon must be registered.

²⁵ Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119.

²⁶ Paul G. Dembling & Daniel Arons, *The Treaty on Rescue and Return of Astronauts and Space Objects*, 9 WM. & MARY L. REV. 630 (1968).

²⁷ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 18, 1979, U.N. GAOR, 34th Sess., Supp. No. 46, 6.N. Doc. A/34/46 (1980), 14 I.L.M. 1434 [hereinafter 1979 Moon Treaty].

²⁸ *Id.* art. 7(1).

The 1979 Moon Treaty is particularly clear about the fragility of the lunar environment. The treaty was negotiated in the United Nations Committee for Peaceful Uses of Outer Space ("COPUOS") just prior to 1979 at a time when COPUOS delegates had greater knowledge and greater understanding of the impact of actual human activities on the Moon. However, the 1979 Moon Treaty is weaker international law than the OST because the 1979 Moon Treaty, while in force, is not universally accepted.²⁹ Therefore, its greater significance is as evidence of the COPUOS delegates' (and thus the world's) awareness of the fragility of the Moon. The delegates found it necessary to establish a neutral information bank in the United Nations.³⁰ They decided to require States to limit their lunar activities as much as possible³¹ and to keep the United Nations Secretary General informed.³² They agreed on the need to revisit the issue of an international regime to govern use of the natural resources of the Moon. Finally, the delegates felt the need to strengthen the obligation to demilitarize the Moon.³³

The general admonition against disrupting the existing environmental balance of the Moon is underscored by the 1979 Moon Treaty's article 7(3) provision that permits designating areas of scientific interest worthy of special protective arrangements.³⁴ Also on point is article 8(1), which states: "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."³⁵ The treaty requires the States Parties to be cautious of disturbing the balance of the environment. It is possible to construe the application of the Precautionary Principle to the Moon based on the combination of the four space law treaties. Such construction is more difficult if we remove the 1979 Moon Treaty from consideration. However, it is not a huge leap from OST article IX's obligation to avoid harmful contamination of the Moon to the 1979 Moon Treaty's more

²⁹ *See id.* Neither the United States nor Russia has ratified this treaty.

³⁰ *Id.* arts. 5, 7. The information office is operated by the United Nations Secretary General through the Office of Outer Space Affairs. Visit <http://www.oosa.unvienna.org> for information about that office.

³¹ *See id.* art. 9.

³² *Id.* arts. 5, 7.

³³ *Id.* art. 3.

³⁴ *Id.* art. 7(3).

³⁵ *Id.* art. 8(1).

specific obligation to prevent disruption of the existing balance of the Moon's environment.

B. PROTECTION FOR SCIENTIFIC INVESTIGATION ON THE MOON.

Preservation and facilitation of scientific investigation is an element of the Precautionary Principle and is also a major purpose of the Antarctic Treaty. That element is clearly indicated in the Antarctic Treaty's articles II and III.³⁶ This leads Bastmeijer and Roura to conclude that application of the Precautionary Principle to Antarctica would harmonize with Antarctica's dedication to scientific investigation.³⁷ A similar conclusion may be made about application of the Precautionary Principle to the Moon and would harmonize with the Moon's dedication to scientific investigation. The 1967, OST, article I specifies that "[t]here shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation."³⁸ In fact, scientific investigation of outer space is one of the main purposes underlying all the treaty and United Nations General Assembly declarations concerning the use of the Moon.³⁹

C. DUE REGARD FOR INTERESTS OF OTHER STATES.

States Parties agreed in the OST that the Moon and other celestial bodies "shall be the province of all mankind."⁴⁰ This principle emphasizes that use of the Moon by one individual State or by a group of States must take into consideration the interests of other States Parties. This principle is amplified by the 1979 Moon Treaty, article 11, stating: "[t]he Moon and its natural resources are the common heritage of mankind."⁴¹ The 1979 Moon Treaty, article 11(5), continues that the States Parties shall "establish an international regime, including appropriate

³⁶ Antarctic Treaty, *supra* note 6, at arts. II, III.

³⁷ Bastmeijer & Roura, *supra* note 1, at 772.

³⁸ OST, *supra* note 9, at art. I.

³⁹ See Eisenhower Address, *supra* note 10. Note that the Commission of the European Communities Communication states: "[t]he implementation of an approach based on the precautionary principle should start with a scientific evaluation, as complete as possible, and where possible, identifying at each stage the degree of scientific uncertainty." Commission of the European Communities Communication, *supra* note 2, at 17.

⁴⁰ OST, *supra* note 9, at art. I.

⁴¹ 1979 Moon Treaty, *supra* note 27, at art. 11.

procedures" governing use of the Moon's resources.⁴² This means that the Moon continues to be common property, as stated in the 1967 treaty, but that a detailed regime will be created in the future.

In lunar exploration and use, States Parties "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."⁴³ The obligation to pay due regard permeates both the OST and the 1979 Moon Treaty.⁴⁴ The due regard requirement is consistent with application of the Precautionary Principle to the Moon because the effect of this principle to require individual States to think twice before using the Moon's resources.⁴⁵ Thus, States using lunar resources must consider the interests of other States.

IV. EFFECT OF APPLYING THE PRECAUTIONARY PRINCIPLE

What would be the practical effect of applying the Precautionary Principle to the Moon? First of all, it must be emphasized that the Precautionary Principle differs fundamentally from an Environmental Impact Assessment.⁴⁶ The Precautionary Principle is an acceptance of the uncertainty facing lunar activities and the need to take this uncertainty into consideration in decision-making. While the Precautionary Principle is not absolute and does not prohibit activities on the Moon, it may find certain risks unacceptable. Application of the Precautionary Principle may lead to more thorough planning that includes the short and long-term effects of lunar activities. In the words of Bastmeijer and Roura:

⁴² *Id.* art. 11(5).

⁴³ OST, *supra* note 9, at art. IX; see Hintz, *supra* note 19, at 60.

⁴⁴ See OST, *supra* note 9, at art. IX; 1979 Moon Treaty, *supra* note 27, at arts. 1, 2.

⁴⁵ See *United Kingdom v. Ice*, 1974 I.C.J. 3 (July 25), in which the International Court of Justice held that, on the high seas, States have "the obligation to pay due regard to the interests of other States in the conservation and equitable exploitation of these resources." This principle was adopted in UNCLOS, Dec. 10, 1982, 1833 U.N.T.S. 3, arts. 56-59.

⁴⁶ National Environmental Policy Act, 42 U.S.C. § 4321 (2006) [hereinafter NEPA]. For a discussion of whether NEPA applies to Antarctica, see *Envtl. Def. Fund v. Massey*, 986 F.2d 528 (D.C. Cir. 1993). See Jennifer A. Purvis, *The Long Arm of the Law? Extraterritorial Application of U.S. Environmental Legislation to Human Activity in Outer Space*, 6 GEO. INT'L ENVTL. L. REV. 455 (providing an excellent discussion of extraterritorial application of United States environmental laws).

Generally speaking, a reasonable chance that serious adverse impacts will take place combined with questionable socioeconomic importance or available alternatives will push the "pointer" to requirements for additional precautionary measures or even to a "no go" or "not yet" decision.⁴⁷

In Antarctica, the Precautionary Principle leads to improved evaluation of impact prior to the event rather than after the event, to prohibitions on activities where characteristics of the area are unknown, or to establishment of limits on certain kinds of activities. On the Moon, the Precautionary Principle might lead to similar consequences. It is clear that in Antarctica, the Precautionary Principle may be used to regulate tourism in sensitive areas. On the Moon, the Principle could be used for careful planning of manufacturing activities as well as tourism.⁴⁸ Entrepreneurs Sir Richard Branson and Burt Rutan are now soliciting reservations and plan to be in business by 2008 - Branson plans to build hotels on the Moon.⁴⁹ The Precautionary Principle may also lead to minimum levels of decontamination and other precautions before sending missions to the Moon.⁵⁰

V. ENFORCEMENT OF THE PRECAUTIONARY PRINCIPLE

How would application of the Precautionary Principle to the Moon be enforced? Enforcement of the States Parties' concerns with the fragility of the Moon's environment through application of the Precautionary Principle would be mainly accomplished unilaterally by the States who are responsible for assuring that national activities are carried out in conformity with international law.⁵¹ States Parties retain jurisdiction and control over their spacecraft, including persons onboard while on a celestial body,⁵² and States Parties are internationally liable for damages caused by their spacecraft on the Moon.⁵³ Enforcement may also involve the Liability Convention⁵⁴ and the Regis-

⁴⁷ Bastmeijer & Roura, *supra* note 1, at 773.

⁴⁸ Fiorini, *The Sky's No Limit*, AVIATION WK. & SPACE TECH., Aug. 1, 2005, at 34 (predicting that 100,000 people will visit outer space during the first twelve years of operation of his spacecraft and that tourism will be the "foundation for human colonization of space").

⁴⁹ *Id.*

⁵⁰ Hintz, *supra* note 19, at 61.

⁵¹ OST, *supra* note 9, arts. III, VI.

⁵² *Id.* art. VIII.

⁵³ *Id.* art. VII.

⁵⁴ Liability Convention, *supra* note 23, at art. III.

tration Convention,⁵⁵ both of which are meant to identify and locate spacecraft that may cause damage in outer space.

States receive information about the lunar activities of other States through an information bank in the United Nations maintained by the Office of Outer Space Affairs (“OOSA”). States may raise issues of lunar activities during discussions in COPUOS. They may also request bilateral consultations under OST article IX. Under the 1979 Moon Treaty article 15, parties may “seek the assistance of the Secretary General, without seeking the consent of any other State Party concerned, in order to resolve the controversy.”⁵⁶ States may also ask the International Court of Justice for enforcement of treaty obligations.⁵⁷

VI. CONCLUSION

In today’s early stage of exploration and use, we know very little about the Moon. States Parties have agreed to proceed cautiously and jointly, stating that “[t]he 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.”⁵⁸

Human activities in Antarctica raise more than environmental issues. They also raise such issues as search and rescue, economy of the tourist industry, and the politics of differing or irreconcilable claims of sovereignty. The Moon’s future is also multifaceted, involving many kinds of human activities, ranging from tourism to colonization, mining, and appropriation of land by means of use or occupation. The space law treaties

⁵⁵ Registration Convention, *supra* note 24, at art. IV.

⁵⁶ 1979 Moon Treaty, *supra* note 27, at art. 15.

⁵⁷ Statute of the International Court of Justice, June 26, 1945, art. 36, 59 Stat. 1031, available at <http://www.icj-cij.org/icjwww/basicdocuments/ibasicstext/ibasicstatute.htm>; IRVING SARNOFF, INTERNATIONAL INSTRUMENTS OF THE UNITED NATIONS 419 (United Nations 1997). Note that the European Court of Justice (“ECJ”) enforced the European Community Treaty, *supra* note 3, at art. 174(2) (the Precautionary Principle). Case C-157/96, Nat’l Farmers’ Union, 1998 E.C.R. I-2211; Case C-180/96, United Kingdom v. Comm’n, 1998 E.C.R. I - 2265. The Commission had banned export of beef from the U.K. to prevent the risk of bovine spongiform encephalopathy, and the ECJ sustained, holding that “[w]here there is uncertainty as to the existence or extent of risks to human health, the institutions may take protective measures without having to wait until the reality and seriousness of those risks become fully apparent.” *Nat’l Farmers’ Union*, 1998 E.C.R. I - 2211 at ¶ 63; *United Kingdom*, E.C.R. I - 2265 at ¶ 99.

⁵⁸ OST, *supra* note 9, at art. I.

clearly did not envision the volume of human activities planned for the Moon. These increased lunar activities are reason to consider applying the Precautionary Principle to the Moon prior to environmental degradation. If the Precautionary Principle can be applied to Antarctica, then it can also apply to the Moon.⁵⁹

⁵⁹ This discussion of Application of the Precautionary Principle to the Moon does not consider domestic laws.