MANFRED LACHS SPACE LAW MOOT COURT COMPETITION 1993

Case Concerning the Commercial Exploitation of the Moon
XAVAGE vs. ADASTRA

1. INTRODUCTION

The finals of the 2nd Manfred Lachs Space Law Moot Court Competition were held in Graz during the IISL Colloquium. Preliminary competitions had been organized in Europe by the European Centre of Space Law (ECSL) of ESA, and in the US by the Association of US Members of the IISL. The winners of these preliminaries were the University of Leiden, The Netherlands (Ernst Boucher and Geoffrey van Leeuwen) for Europe, and the George Washington University (Guy Christiansen, Eric Edmondson, Charles Hildebrandt) for the USA. They met in Graz before a bench composed of Dr. N. Jasentuliyana, Prof. Dr. N.M. Matte and Prof. F. Lyall. The University of Leiden won the competition. Financial and organizational support for the competition was granted by the University and City of Graz, the Austrian Foreign Ministry, and Joanneum Research. ECSL and AUS-MIISL sponsored the teams' travel to Graz. Hereunder follow the case and the briefs of the winning teams.

2. THE PROBLEM

The State ADASTRA and three other States, all party to the 1967 Outer Space Treaty and the 1972 Liability Convention, have jointly undertaken a 5 year intensive mapping programme of the Moon surface, making use for this purpose of Moon observation satellites. These activities were conducted pursuant to the Memorandum of Understanding (MoU) on the Mapping of the Moon Programme (MOM) concluded by the above-mentioned States. Although being the result of a mission intended primarily for scientific purposes, the data collected throughout the implementation of this mapping programme were communicated only to the partner States, in accordance with Article 2 of the MoU.

State XAVAGE, not party to the MoU, has requested access to the mapping data collected by the partner States claiming that such data would generally enhance its understanding of the Moon, while at the same time providing much needed information on potential risks, including possible harmful modifications of the Moon environment that may result from the exploitation of the Moon's resources. The four partner States have continuously denied other States access to the data on the basis that such data constitute confidential information of a commercial nature and of strategic national interest.

Upon conclusion of the MOM Programme, the same partner States immediately concluded a multilateral treaty entitled «The Provisional Understanding Regarding Mining on the Moon» in which they recognised each others' exclusive rights for the exploration and mining of areas of the Moon.

The provisions of this Provisional Understanding were incorporated into the national legislation of the four partner States in the months following the date of signature. Relevant Articles are annexed.

State ADASTRA, which has signed the 1979 Moon Agreement, has a Moon station established by its Military Space Command near the Sea of Tranquillity and its personnel has been exploring a particular area where it recently discovered a new Mineral, Zirconium. This substance is extremely valuable because it can be used to make wire that will conduct an electrical current without any resistance. Scientists have determined that the mineral may have been deposited on this area of the Moon as a result of the fall of an asteroid millions of years ago.

The area containing Zirconium is 10 by 30 kilometres (hereinafter referred to as "the Area"). State ADASTRA, which has announced its intent to commercially exploit this area on an exclusive basis, has filed its claim with the other Parties to the Agreement pursuant to the Provisional Understanding. State ADASTRA has erected a laser beam "fence" around the Area. The moon station of State ADASTRA is situated in the south east corner of "the Area".

Following the filing of the claim, State ADASTRA issued a licence to the multinational company SOLLARS, which has its corporate headquarters in the capital of State ELUSIVE, for the exploitation of the Area.
Company SOLLARS' shareholders come from five countries with a majority share owned by Nationals of State ADASTRA. Company SOLLARS posted signs designating a "Keep Out Zone" covering a radius of 20 kilometres surrounding "the Area" marked "KEEP OUT - THIS MEANS YOU!" The extremely powerful laser beam is powered by a nuclear reactor.

State XAVAGE, which is a party to the Outer Space Treaty, the Liability Convention, and to the 1979 Moon Agreement, announces its intention to undertake a scientific

mission in "the Area" for the purpose of obtaining a better understanding of the characteristics of the newly-discovered mineral. This mission would entail limited mining activities and State XAVAGE therefore installed a mining station funded by a Department of Defense programme just outside the North east corner of "the Area".

State XAVAGE is in the process of awarding Company TROFIT a contract to mine and research "the Area" for five years. Company TROFIT announced its intention to mine the fenced-in area. But state ADASTRA's security equipment prevents State XAVAGE from having access to "the Area".

State XAVAGE has therefore destroyed the NPS powering the fence, in order to obtain access to the area. This action of State XAVAGE temporarily prevented further mining of "the Area" by the company SOLLARS.

The Governments of State ADASTRA and State XAVAGE have submitted the matter by special Agreement to the International Court of Justice pursuant to Article 36, paragraph 1, of the Statute of the Court.

CLAIMS

The Government of State XAVAGE respectfully asks the Court to declare that:

1) The Government of State ADASTRA violated International Law by the conclusion of the Provisional Understanding and the consequent granting of a license to company SOLLARS to mine a part of the Moon; and

2) The Government of ADASTRA violated its obligations under International Law by installing a nuclear power source on the Moon and by allowing the creation of a "Keep-Out" zone relevant thereto.

The Government of State ADASTRA respectfully asks the Court to declare that:

1) The infringement of the "Keep-Out Zone" and "the Area" by State XAVAGE is an illegal act under International Law; and

2) The destruction of the power source of the Nuclear Power station by State XAVAGE constitutes a violation of International Law and State XAVAGE is liable for the damage resulting from that act, including the economic damages caused to Company SOLLARS because of a three month delay in its mining activities.

ANNEX I

Relevant Articles of the Provisional Understanding Regarding Mining on the Moon

(concluded between the State of ADASTRA and three other States)

ARTICLE I

The purpose of this Understanding is to define the terms and conditions of:

a) Acceptance of each others' exclusive claims on areas of the Moon filed pursuant to this Understanding.

b) Licensing by the States Party to this Provisional Understanding with a view to the commercial exploration of the Moon

c) Mutual acceptance of National Licenses awarded by the States Party to the Provisional Understanding

d) Cooperation between the States Party to the Provisional Understanding in the field of the commercial exploitation of the Moon

e) Settlement of Disputes as to the interpretation or implementation of the terms of this Provisional Understanding

ARTICLE II

The States party to this Understanding may issue licenses for the commercial exploitation of the Moon in accordance with the provisions set forward in this Understanding. The licenses duly awarded under this Understanding will automatically be recognized and respected by the other States Party to the Understanding.

ARTICLE III

The activities carried out by virtue of the licenses as provided under Article II shall be in accordance with the Outer Space Treaty and other General Principles of International Law and the Charter of the United Nations.

ARTICLE X

This Provisional Understanding shall enter into force after the four instruments of ratification have been deposited in QUALA, the capital of State ADASTRA.

ARTICLE XI

This Provisional Understanding may be revised at any time by mutual written agreement of the Parties.

3. WINNING BRIEFS

MEMORIAL FOR STATE ADASTRA

AGENTS
Ernst Boucher & Geoffrey van Leeuwen

ARGUMENT

1.1 Adastra is not a Party to the Moon Agreement.
The State of Xavage, which is a party to the 1979 Moon Agreement, has submitted its claims to the Court partly on the basis of the Moon Agreement. It is a well-known and universally accepted, important principle of international law that in almost all cases, except when all partner States are satisfied with a signature and do not demand ratification, only those countries who have signed and ratified a treaty are bound by is contents.[1] Art. 14 of the Vienna Convention of the Law of Treaties[2] states that: "The consent of a State to be bound by a treaty is expressed by ratification when: (a) the treaty provides for such consent to be expressed by means of ratification". In art. 19 the Moon Treaty provides such means of ratification. Adastra has signed the Moon Agreement. Adastra however never ratified the Moon Agreement; consequently Adastra is not a party to the 1979 Moon Agreement and therefore is not bound by its provisions.

1.2. Adastra is not bound by the object and purpose of the Moon Agreement.
Xavage may argue furthermore that, although Adastra did not ratify the Moon Agreement, Adastra is obliged, to refrain from any action that can defeat the object and purpose of the agreement. Art. 18 of the Vienna Convention of the Law of Treaties states: "A State is obliged to refrain from acts which would defeat the object and purpose of a treaty when: (a) it has signed the treaty.....". Subsection (a) art. 14 of the Vienna Convention, however, continues: "..until it shall have made its intention clear not to become a party to the treaty;". It is clear that since Adastra signed the Agreement in 1979, and fourteen years since have passed, Adastra has no intention to ratify the Moon Agreement. Therefore Adastra is not obliged to refrain from any action that can defeat the object and purpose of the Moon Agreement.

1.3 Adastra is not bound by specific articles of the Moon Agreement.
In case the rule laid down in art. 18 Vienna Convention of the Law of Treaties is applicable Adastra only has to refrain from any actions that can defeat the object and purpose of the treaty. Sinclair in his book "The Vienna Convention" explains how to apprehend the rule laid down in art. 18 of the Vienna Convention of the Law of Treaties. On page 43 it is stated that: "States should observe certain restraints on their activities during the period preceding entry into force, particularly if those activities would render the performance by any party of the obligations stipulated in the treaty impossible or more difficult".[3] Aside from the fact that Adastra did not show any intention to ratify the Moon Agreement and questions the applicability of the above quotation ("preceding entry into force"), this means that Adastra only has to respect the goals of the treaty in a very general sense.
So even if the court decides that Adastra should not defeat the object and purpose of the Moon Agreement, this does not mean that Adastra is bound by every article of the Moon Agreement.

1.4 Adastra did not defeat the object and purpose of the Moon Agreement.
Defeat would imply the: "frustration" or "annulment"[4] of the Moon treaty. In 1966 the final draft of the Vienna Treaty stated the nature of the obligation as an obligation to refrain from acts *tending to frustrate* the object of a proposed treaty. The phrase "tending to frustrate" was criticized by a number of countries and was replaced by the much stronger phrase "to defeat".[5] We can find object and purpose in the Preamble of the Moon Agreement. This is also stated by Wassenbergh: "The Preamble of The Moon Agreement specifies its motives".[6] The Preamble states two main goals; 1. the further development of co-operation among States in the exploration and the use of the moon and other celestial bodies; 2. to prevent the moon from becoming an area of international conflict. It is clear that the peaceful use of the Moon by all nations is the main object and purpose of the Moon Agreement. There is no evidence that Adastra defeated or even tried to frustrate the Moon Treaty. Furthermore Adastra has put into practice the two above mentioned principles of the Moon Agreement.[7] Adastra has enhanced the scientific exploration and use of the Moon and Adastra has also worked together with three other States in the scientific and peaceful exploration and use of the Moon, and thus enhanced international co-operation, which is in the interest of all nations. Consequently, Adastra has acted in accordance the object and purpose of the Moon Agreement.

2.1 Adastra is not bound to share the data with Xavage.
Articles IX and XI of the Outer Space Treaty provide for an obligation under certain conditions to share data on activities in outer space. Xavage, not party to the Memorandum of Understanding, requested access to mapping data, on the basis that it would generally enhance its understanding of the moon, while at the same time providing information on potential harmful modification of the moon environment.
With regard to the potential harmful modification of the moon environment, Xavage did not show

any evidence or conclusive argument that it had reason to fear such harmful modifications will occur. Moreover Adastra had reason to believe that Xavage had other motives to obtain the data, because the fact that they did not obtain it did not prevent Xavage to start mining activities of their own.
The goal of article XI of the Outer Space Treaty is to promote international cooperation in the peaceful exploration and use of outer space. Adastra has facilitated an encouraged international co-operation in the peaceful exploration of the moon, by undertaking a scientific mapping of the moon programme with several other States. Xavage made no attempt of its own to gather information about the Moon surface. Xavage is also in the process of awarding a contract to Company Troffit to mine the same area of the moon. Therefore Adastra has reason to believe that Xavage is only interested in the commercial nature of the data. Sharing the data with Xavage would only result in unequal competition, with Xavage picking the fruits of Adastra's huge investments. Article XI was written to promote international co-operation, not to enhance unfair competition. Consequently Adastra is not compelled to share the collected data with Xavage.

2.2. The UN Principles on Remote Sensing are applicable.

But if the Court should hold the opinion that Adastra had to share the data with Xavage as a result of the general obligation laid down in article XI, the UN Remote Sensing Principles[8] are a Lex Specialis[9] and therefore applicable. As the Remote Sensing Principles are about the sensing of the earth's surface, one should in this case apply these existing rules analogously to the moon's surface. The Principles concerning Remote Sensing only concern: "remote sensing for the purpose of improving natural resources management", which is found in Principle Ia. As Wassenbergh states: "This definition does not cover the controversial use of remote sensing concerning security nor *data with respect to natural resources.*"[10] In other words commercial data need not be disseminated, nor shared with more directly concerned parties, unless an international interest or an interest of humanity is at risk. This is not the case. The data constitute confidential information of a commercial nature and of strategic national interest. As a consequence of the applicability of the UN Remote Sensing Principles Adastra is not compelled to share the data with Xavage.

3.1 Adastra had the right to conclude the provisional understanding.

Xavage furthermore has claimed that the conclusion of the Provisional Understanding is a violation of International Law. The State of Adastra cannot understand why a multilateral understanding between four states constitutes a violation of International Law. Under the universal principle of international law, the freedom of contract, Adastra is free to conclude any agreement or treaty with any State.[11] Not only is Adastra free to conclude any agreement or any treaty with any state, but Adastra is also free to conclude any agreement or treaty with any contents. The Provisional Understanding only binds Adastra and the three other States.

3.2 The Provisional Understanding is in accordance with International Law.

Even if Adastra is not free to conclude any agreement or treaty with any contents, Adastra still can not understand why the Provisional Understanding Regarding Mining on the Moon in itself is in violation with international law.
One of the most important principles of the Outer Space Treaty is article I. Laid down in this article is the freedom of use of outer space, including the moon. This freedom of use is not only applicable because of the Outer Space Treaty, but also by analogy because it is a general principle of international law used for the use of the high seas. This principle of international law, known as the "res communis omnium" means that every state is free to exploit the sea on its own exclusive interest, also to be understood as the "first-come first-served" principle.[12] Adastra submits that this principle should be applied to the exploitation of the moon's natural resources. Furthermore Adastra wants the avoid the standstill and uncertainty with regard to the mining of the sea-beds, which the United Nations Convention on the Law of the sea have led to.[13] Three of the major industrialized countries, the United States, The United Kingdom and Germany, have opted to stay out, because the international regime called for in the convention is too far-reaching, against free-enterprise and too bureaucratic. As a consequence the mining of the sea-beds has been put on a standstill. By declaring that the Provisional Understanding is in accordance with the freedom of use principle and the "first-come first" served principle the Court can avoid a standstill in the international co-operation and use of the moon and other celestial bodies.

3.3 The Provisional Understanding does not violate the non-appropriation principle.

Xavage may claim that the Provisional Understanding is in conflict with the non-appropriation principle. Art. 2 Outer Space Treaty states: "Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means". The "use" in art. 2 is the use of the moon in such a way that it makes use by other countries impossible. The "occupation" requires, as Wassenbergh rightly points out: "Animus Occupandi, terra nullius and the possibility of exercising authority".[14] "By other means" is applicable for everything that what

would amount to appropriation. Adastra does not claim sovereignty. Adastra is just using a part of the moon and does not want to and will not appropriate any part of the moon. Furthermore the mere installation of a fence on its own can not be seen as appropriation. Adastra only wants to protect the area, while using it, not appropriate it. The non-appropriation principle does not mean that it is forbidden to exploit the natural resources. Outer space, including the moon is free for *use* by all states[15] (art. I Outer Space Treaty). The Provisional Understanding only deals with "the acceptance of *each others' exclusive claims* on areas of the Moon". This does not mean Adastra claims or intends to claim sovereignty over the moon or any part of the moon. The claims only concern the possible commercial exploration and exploitation of the moon and also only concern the four States party to the Provisional understanding. Smith is completely right, and Wassenbergh agrees with Smith, to point out that nothing in the Outer Space Treaty prevents space powers concluding an agreement or understanding between them, recognising the validity of exclusive claims to the exploitation of mineral resources of outer space, filed by any other *party* to the agreement.[16] The claim Adastra made concerning the exclusive rights to mine the area does not amount to claiming a title or claiming sovereignty and thus does not amount to appropriation. As Smith rightly states[17]: "such claim (exclusive claims to reasonable areas) are a valid exercise of the freedom of use and without such claims there can not be such use". Necessarily the freedom of access is limited during the exercise of the freedom of use in the exclusively used area. It is submitted to the Court that the commercial exploration and use of the moon does not amount to national appropriation.

3.4 The Provisional Understanding is not in conflict with the Province of Mankind principle.

Xavage may claim that the Provisional understanding is in conflict with the Province of Mankind principle. Art. 1 Outer Space Treaty states that the exploration and use shall be carried out for the "*benefit and in the interest of all countries...and shall be the province of all mankind*". As Smith writes this "*common interest*" clause must not be confused with the "*common heritage of mankind*" concept which was introduced in the Moon Agreement. The common interest clause imposes no requirement for direct sharing of benefits in any specific manner, but requires only that space activities be beneficial in a very general sense.[18] As Adastra is bound by the Outer Space Treaty, Adastra will only act in accordance with the common interest clause. Commercial mining does not mean that all countries would not benefit from the exploitation. Adastra wants to share this new and very important mineral with all countries. All industrialised and third world countries will benefit from this new mineral. Superconduction will become feasible, an incredible feat, that will have tremendous impact on energy savings worldwide. The conclusion of the Provisional Understanding has resulted in use of the moon in the common interest of mankind, and therefore in accordance with the Outer Space Treaty.

3.5 Adastra has the right to grant a licence to the Sollars Company.

Xavage claims furthermore that Adastra violated International Law by granting a licence to the Sollars Company.

Article VI of the Outer Space Treaty provides for the possibility of non-governmental entities being active on the moon, providing that these activities are authorized and continuously supervised by the appropriate State. Adastra has taken the obligations of article VI seriously and developed a licensing system, in which it arranged the authorisation and the supervision. As Adastra stated above State party has the right to commercially mine the moon as a legitimate exercise of the freedom of use. Under article VI Non-governmental entities are allowed to conduct the actual mining activities, as long as they are supervised by the appropriate State. The Sollars Company is a non-governmental entity and Adastra is a State which has the right to commercially mine the moon. Consequently Adastra has the right to grant a licence to Sollars.

4.1. Adastra has the right to use military personnel.

Art. 4 of the Outer Space Treaty forbids the establishment of any military bases, installations and fortifications on the moon. However, the use of military personnel for scientific purposes or for any other peaceful purpose, and the use of any equipment or facility necessary for peaceful exploration of the moon is not prohibited, as art. 4 also states. The establishment by the Military Space Command of Adastra of the Moon station and the presence of personnel for scientific purposes is therefore legitimate.

4.2 Adastra has the right to install a laser beam fence.

Xavage may claim that Adastra violated International Law by installing a laser beam fence on the moon. Article IV of the Outer Space Treaty forbids the installation of weapons of mass destruction on the moon. The article also forbids the testing of any type of weapons; the use of any equipment or facility necessary for peaceful exploration of the moon shall not be prohibited.

4.2.a The laser beam fence is not a weapon of mass destruction or any other type of weapon.

It is of great importance to recognize the character, and potential of the laser beam in order to understand the installation. The laser beam fence has been erected *around* the area, it is common knowledge that laser beams go dead straight: to make a laser beam follow a rectangular course such

as the borders of the area one shall have to use mirrors. There are limits to what any material can endure, especially when a powerful laser beam is concentrating all its energy on a very small surface; mirrors are no exception to this rule. These facts in combination with what is been said in the chapter on nuclear power sources about laser efficiency, and NPS electricity supply show what `extremely powerful' means in this context. The laser has to be considered strong for a continuous beam, and it does have destructive capability, this is a necessity to ensure its effectiveness as a fence, but it can only harm small objects on the border of the area. It cannot be seen as a military installation, as a weapon, let alone a weapon of mass destruction. It is what the case says it is, *security equipment* and security equipment is not forbidden by the Outer Space Treaty.

4.2.b The laser beam fence is an installation with a peaceful purpose.

Should the Court look upon the laser beam fence as a military installation, Adastra would like to point out to the Court that it is equipment necessary for the peaceful exploration of the moon, as mentioned in article IV of the Outer Space Treaty.

Adastra has installed a laser beam fence, because it wanted to make clear to the partner States to the Provisional Understanding and to other states, that the area is in use. Furthermore Adastra had the SOLLARS company put up "Keep Out" signs in a radius of 20 kilometres surrounding the area, as a precaution and a warning. Adastra had to protect the mining area and the mining station from espionage and infringements which were not unlikely to occur. It is generally known that a mining area is a hazardous place, especially on an unknown environment such as on the moon. Therefore Adastra had to take measures for safety reasons to prevent accidents from happening, which is in the interest of everybody active on the moon. It is clear that all these functions have a peaceful purpose. Consequently the laser beam fence can be seen as an installation with a peaceful purpose.

5. The installation of a nuclear power source on the moon is not a violation of Adastrian obligations under International Law.

Xavage claims that Adastra violated its obligations under International law by installing a nuclear power source on the moon. Specific information on the legal implications of this instalment can be obtained by studying the 1967 Outer Space Treaty and UN Resolution 47/68 of 14 December 1992 containing principles relevant to the use of nuclear power sources in outer space.

To begin with it is important to determine the scope of the U.N principles. Do lunar activities also fall within the scope of the principles ? The UNCOPUOS has adopted principles relevant to the use of nuclear power sources in outer space, in these principles no mention is being made of any exception with regard to the use of nuclear power sources on the moon and other celestial bodies. On the contrary in article 1 of the principles it is explicitly stated that activities involving the use of nuclear power sources in outer space shall be carried out in accordance with International Law, including in particular the charter of the United Nations and the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, *including the Moon and other Celestial Bodies*. This view is also supported by Benkö, Gruber and Schrogl in a recent article on the newly adopted U.N principles:`..they (the principles) apply everywhere in space', `these principles will in due course apply to any lunar activity'[19]. Principle 3 gives provisions to protect individuals, populations and the biosphere against radiological hazards, Principle 4 provides for a thorough safety assessment both principles flow from the same source, namely the Preamble of the U.N Principles. The text of the preamble is important, article 31(2) of the 1969 Vienna Convention on the Law of Treaties[20] places, within the `context for the purpose of the interpretation of a treaty', not only the text but also its preamble. Forkosh[21] writes: `Together, Preamble goals and ends, and the article purposes and principles, provide a base for interpreting and applying the provisions set forth, even though such items may be hortatory and not self-enforcing'.

Annex I of the Resolution, containing the adopted principles relevant to the use of nuclear power sources in outer space, shows in its Preamble that the General Assembly of the United Nations recognizes that for some missions in outer space, nuclear power sources are particularly suited or even essential due to their compactness, long life, and other attributes and that the use of nuclear power sources in outer space should focus on those applications which take advantage of the particular properties of nuclear power sources.

The U.N principles clearly support Adastra's choice for nuclear energy. Especially by principle 3 containing guidelines and criteria for safe use, which states that in order to minimize the quantity of radioactive material in space and the risks involved, the use of nuclear power sources in outer space shall be restricted to those space missions which cannot be operated by non-nuclear energy in a reasonable way.

The laser beam fence that Adastra operates has to be powered by a very strong electrical power source. In order to generate electrical power in outer space, in principle, three different techniques exist: solar energy, chemically stored electrical energy, and energy derived from a nuclear power source[22]. Adastra has installed a nuclear reactor in order to solve its problems regarding the energy supply to the laser beam fence.

Considering the two alternative electrical power sources Adastra has come to the following conclusions;

1. the use of solar energy, as generated by solar cells is highly impractical if not impossible, solar cells are still very expensive and inefficient, the costs of building a solar cell field large enough to supply the required amount of electrical energy would be astronomical, such a large field of solar cells would occupy a substantial area, with no possibilities for exploration or alternative use, moreover solar cells are inoperative during the moon night which would make the operation of the laser beam fence impossible during a period of approximately fourteen days per moon cycle i.e about half of the total operating time.
2. chemically stored electrical energy would entail the use of chemical batteries, chemical batteries are relatively short-lived, expensive, and so heavy that transportation to the moon in adequate numbers is not feasible, technically nor financially. To avoid possible harmful chemical pollution old batteries would also have to be removed resulting in a further rise of costs and logistical problems. The case is not specific about the actual amount of electrical power that is being generated but it does say that the laser beam is extremely powerful, very modern lasers have an efficiency of 2-3% of the power that is being used, so it is not unlikely to assume that in order to be able to generate enough energy to feed an extremely powerful laser beam, one should need a reactor similar to the American SP 100, or the Russian Topaz, both reactors capable of generating up to 100 kilowatts. It is clear to Adastra that such an amount of electrical power, delivered constantly, cannot be generated by a non-nuclear power source in a reasonable way. Both these reactors are still very much in an experimental phase, so it is unlikely that Adastra should already posses a reactor of such force, still, this does not alter the need for nuclear power since there is even no reasonable alternative for the generating of the 10 kilowatt that currently operational reactors deliver.
Thus a choice for nuclear energy has been made, but this choice was not an easy one, a careful study of legal and technical merits has been made first. The Preamble expresses one main goal; the protection of mankind and the environment by means of safe use. Situated on the moon in a fixed position in an area of minimal seismic activity [23], put into operation only after instalment with no risk of re-entry into the Earth Biosphere and a very low risk of collision with other space objects or space debris, and protected by a broad `keep out zone', this reactor was being used very safely.
Adastra wonders why the very Nation that asks this court to declare that Adastra violated its obligations under International Law by installing a nuclear reactor, should, by destroying the nuclear power source, deliberately enhance the possibility of occurring of precisely the situation that International Law, especially article IX of the Outer Space Treaty, and the U.N resolution on principles relevant to the use of nuclear power sources in outer space seek to prevent: a nuclear accident. The main reason to forbid or prevent the use of nuclear reactors in outer space, is the possible destruction of the reactor and the possible contamination of man and environment with radioactive materials or radiation as a result thereof. Adastra had no alternative for the use of a nuclear reactor, Adastra has gone to great lengths to ensure the safe operation of the reactor so as to avoid harmful nuclear contamination of the moon environment, an obligation under article IX of the outer space treaty, and it has abided by the Principles relevant to the use of nuclear power sources in outer space. Adastra did not violate its obligations under International Law by installing a nuclear power source on the moon, an action to which it was fully entitled and it cannot be blamed for its destruction and its possibly harmful consequences.

6. Xavage violated International Law by the infringement of the Keep Out Zone and the Area.

Article IV of the Outer Space Treaty states that the moon shall be used only for peaceful purposes. Article III of the same Treaty states that State Parties shall carry on activities in the exploration and use of outer space, in accordance with International Law, including the Charter of the United Nations. The Charter of the United Nations contains, in article 2 (3) and (4), two parallel obligations requiring all members: " to settle their international disputes by peaceful means in such a manner that international peace and security, and justice are not endangered"; and to "refrain in their international relations from the threat or use of force..... .....or in any other manner inconsistent with the purposes of the United Nations". Disputes between states shall furthermore first be solved by ***negotiations, arbitration or by judicial settlement,*** as art. 33 of the Charter of the United Nations states. Also article IX of the Outer Space Treaty provides for and demands consultations.
Xavage, by entering the Keep out zone and the area, has been frustrating Adastra's freedom of use. Without the exclusive use of a reasonable area the freedom of use principle is void. Adastra regards these infringements as hostile acts, which are in violation with article III and IV of the Outer Space Treaty and article 2 of the Charter of the United Nations. Any dispute between nations should be settled by peaceful means. Xavage, clearly having a dispute with Adastra, did not undertake any consultations or any other peaceful measures to solve the dispute in a peaceful way. Xavage could have submitted its claims to the International Court of Justice right away instead of turning to aggressive and violent actions if it held the opinion that Adastra violated international Law.

7. Xavage violated International Law by destroying the Nuclear Power Source.

The same principles mentioned above concerning the peaceful settlement of disputes are applicable in this case. Xavage should have turned to peaceful measures to solve the dispute with Adastra. There

was no direct threat by Adastra to justify the destruction of the nuclear power source. The destruction of the nuclear power source was an act of aggression directed against Adastra. Again, Xavage had to resolve this dispute with Adastra in a peaceful way, as the Charter of the United Nations dictates, and by not doing so violated International Law. Moreover IX of the Outer Space Treaty compels States parties to the treaty to conduct the exploration of the moon so as to avoid its harmful contamination. Xavage also violated this principle by destroying the nuclear power source.

8.1 Xavage is Liable for the damage caused by the destruction of the nuclear power source.

Both Xavage and Adastra are party to the 1967 Outer Space Treaty, and the 1972 liability convention[24], so there can be no doubt as to the applicability of the provisions of these treaties. The Outer Space Treaty gives a general provision concerning Liability in article VII. The specifications concerning liability in the air and space of VII of the Outer Space Treaty ware given in Article III of the Liability Convention[25], stating that a launching State is liable in the event of damage being caused and if the damage is due to the fault of this State, or the fault of persons for whom it is responsible. It is very clear that Xavage is responsible, for it has destroyed the nuclear power source, an act of aggression which in itself is a violation of International Law, i.e article 2 paragraph 3 of the Charter of the United Nations, and articles III, IV, and IX of the Outer Space Treaty. Article VI (2) of the Liability Convention states that no exoneration of absolute liability whatever shall be granted in cases where the damage has resulted from activities conducted by a launching State which are not in conformity with International Law including, in particular, the Charter of the United Nations and the treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

Adastra suffered direct damages as a result of the destruction of the nuclear power source by Xavage; Firstly the replacement of the nuclear reactor and secondly the costs for the possible cleanup operation by Adastra. The Sollars company, however also suffered damages. Sollars had to delay its mining activities for three months, as a result of the destruction of the nuclear power source by Xavage. So Xavage is absolutely liable for the Damage it has inflicted upon Adastra and the Sollars company.

8.2 Adastra claims "Restitutio in integrum".

The Chorzow Factory Case[26] promulgated the rule that was later codified in article XII of the Liability Convention, and recently in Principle 9 of the set of principles relevant to the use of nuclear power sources in Outer Space.[27] This rule holds that the function of international tort law is to restore an injured person, natural or juridical, State or international organization on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred, also known as the "Restitutio in Integrum" principle. It is not surprising that this rule should conduce to damages in relation to nuclear power sources. This has most recently been reaffirmed by the adoption of the rule in principle 9 of the UN Resolution on the principles relevant to the use of nuclear power sources in outer space as adopted by the General Assembly of the United Nations on December 14 1992. Adastra suffered direct damages as a result of the destruction of the nuclear power source. If the "Restitutio in Integrum" is not possible, Adastra refers the quantification of the damages to the International Court of Justice.

8.3 Adastra has the right to claim damages for the Sollars Company.

Although Sollars is an Elusivian company Adastra can still file a claim on its behalf. This as result of article 8 (2) of the Liability Convention, which states that if the State of nationality has not presented a claim another State may, in respect of damage sustained in its territory by any natural or juridical person, present a claim to a launching State. The damage as a result of the three months delay in the mining activities is economic damage. The economic damages were sustained the territory of Adastra. The damage is mainly sustained by Adastrian nationals, because they own the majority share of the Sollars Company. The shareholders will suffer substantial losses. Moreover as a consequence of the damage inflicted by Xavage Adastra can not meet its contractual obligations to Sollars and therefore the damage as a result of the production loss is also directly suffered by Adastra.

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1 Sir Ian Sinclair, The Vienna Convention on the Law of Treaties, Manchester 1984, p. 39-42 and P.H. Kooijmans, Internationaal Publiekrecht in Vogelvlucht, Leiden 1988, p. 84-100.

[2]The Vienna Convention of the Law of Treaties, Vienna May 23 1969.
[3] Sinclair, The Vienna Convention on the Law of Treaties, Manchester 1984, p. 42-44
[4] The Concise Oxford Dictionary of Current English, Oxford University Press.
[5] Important Space Powers such as the United Kingdom and the United States opposed the phrase "tending to frustrate". Sinclair, The Vienna Convention on the Law of Treaties, Manchester 1984, p. 43.
[6] H.A. Wassenbergh, Principles of Outer Space Law in Hindsight, Dordrecht 1991, p.41. Concerning the object and purpose of the Moon Agreement, C.Q. Christol, Space Law, Past, Present, and Future, Deventer 1991, p.403-404
[7] Preamble Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, done December 18 1979
[8] UN Resolution 41/65, Principles Relating to Remote sensing of the Earth from Outer Space, adopted December 3, 1986.
[9] The UN Remote Sensing principles are governed by International Law and the Outer Space Treaty, as is stated in article III. Therefore the Principles are applicable to remote sensing of the moon.
[10] H.A. Wassenbergh, Principles of Outer Space Law in Hindsight, Dordrecht 1991, p. 88.
[11] Universal principles of international Law. P.H. Kooijmans, Internationaal Publiekrecht in Vogelvlucht, Leiden 1988, p. 25.
[12] M.G. Schmidt, Common Heritage or Common burden?, Oxford 1989, p. 31-35.
[13] Id., p. 306.
[14] H.A. Wassenbergh, Syllabus Lucht- en Ruimterecht Instituut voor Lucht-en Ruimterecht, faculteit der Rechtsgeleerdheid, Leiden 1989, p. 7.
[15] Id., p. 9.
[16] Space Law: Views of the Future, ed. Tanja Zwaan, The commercial exploitation of mineral resources in outer space, Milton Smith, Deventer 1988, p. 46-52. and H.A. Wassenbergh, Space Law in Hindsight, Dordrecht 1991, p. 82.
[17] Space Law: Views of the Future, ed. Tanja Zwaan, The commercial exploitation of mineral resources in outer space, Milton Smith, Deventer 1988, p. 48.
[18] Id, p. 42-43.
[19] See: Benkö, Gruber, and Schrogl, Zeitschrift für Luft und Weltraumtrecht, June 1993, p. 36,37.
[20] The Vienna Convention of the Law of Treaties, Vienna May 23 1969.
[21] Morris D. Forkosch, Outer Space and Legal Liability, The Hague 1982, p. 73.
[22] M. Benkö and W. de Graaff, the use of nuclear power sources in outer space, Space Law in the United Nations, Dordrecht 1985, p. 60,61.
[23] This was proven when after the first moon landing sensitive equipment measuring seismic activity was installed, test crashes of old lunar orbiters on the moon surface were the source of the biggest seismic activity by far.
[24] 1972 Convention on international liability for damage caused by space objects.
[25] see Carl Q. Christol, The Modern International Law of Outer Space, New York 1982, p. 89.
[26] (1928), PCIJ, Judgement No.13 (Merits), Ser.A. No.17, at 47.
[27] UN Resolution 47/68, Annex 1, of 14 December 1992, concerning the principles relevant to the use of nuclear power sources in outer space.

MEMORIAL FOR STATE XAVAGE

AGENTS

Guy Christiansen, Eric Edmondson, Charles Hildebrandt

ARGUMENT

I. The Government of ADASTRA Violated International Law by Concluding the Provisional Understanding and Consequently Granting a License to Company SOLLARS to Mine a Part of the Moon.

A. The Provisional Understanding and Grant of a License Violate the Outer Space Treaty.

Both ADASTRA and XAVAGE are parties to, and bound by, the 1967 Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, more commonly known as the "Outer Space Treaty" (hereinafter "OST").[1] The Provisional Understanding to which ADASTRA is a party is irreconcilably inconsistent with the OST. Although Article III of the Provisional Understanding states that all activities carried out under licenses shall be "in accordance with the Outer Space Treaty and General Principles of International Law," the real intent and effect of the Provisional Understanding is to appropriate areas of the Moon. Article I of the Provisional Understanding states that the "purpose" of the Agreement is to define the terms by which the parties will recognize each other's "exclusive claims on areas of the Moon." An "exclusive claim" on an "area" is a claim over resources "in place" and is therefore an appropriation and not a permissible "use" under the OST.

1. The Outer Space Treaty prohibits appropriation of lunar resources.

Article I of the OST states that the exploration and "use" of outer space shall be the "province of all mankind" and all states shall have the freedom to use space.[2] The meaning of the term "use" has been subject to debate, but most jurists interpret almost any activity in space to be "use", and it is certain that mineral exploitation would constitute "use" within the meaning of the OST.[3]

Article II of the OST sets out the treaty's most important provision relating to the exploitation of lunar resources. The Article states: "Outer space, including the Moon and other celestial bodies, is not subject to national appropriation, by means of use or occupation, or by any other means."[4] This "non-appropriation clause" is a rejection of the historical concept of *terra nullis*, by which any state could lay legal claim to any unclaimed area by occupying the territory. Historically, this legal concept served as a justification for colonialism and is now rejected in favor of a legal regime which emphasized international cooperation as opposed to competition.[5] The non-appropriation clause and its accompanying rejection of claims of sovereignty in space are accepted as a fundamental assumption in all state activities in space.[6] A naked claim of sovereignty over an area of the Moon is therefore be illegal under current international law.

While opinions vary regarding the types of uses of lunar resources that are permissible under the non-appropriation clause of the OST,[7] the majority of jurists believe that the OST's non-appropriation clause prohibits exclusive claims over resources "in place," that is, minerals in their natural state *before* they are mined and processed.[8] This interpretation assumes that all resources that are removed from the lunar surface and processed legally become the exclusive property of the party performing the mining and processing.[9] Therefore, an exclusive claim of title to whole areas of unexploited lunar surface for the purpose of mining, such as the claim made by ADASTRA in this case, constitutes an "appropriation" and is illegal.[10] Most authorities hold that finding such activity to be an appropriation is consistent with the negotiating history of the OST and the intent of its drafters.[11]

2. ADASTRA's grant of an exclusive license to SOLLARS is an illegal exercise of sovereignty.

ADASTRA's grant of a license to company SOLLARS also violates the OST. By granting a license, ADASTRA is purporting to give SOLLARS exclusive rights to exploit the lunar resources in the Area. ADASTRA can only grant such an exclusive license if it is, or claims to be, in exclusive control of the Area, which is an appropriation under the OST.

It is not the action of SOLLARS that XAVAGE challenges; SOLLARS is merely an agent of ADASTRA. Thus the nationality of SOLLARS is irrelevant to the analysis of the regime's legality. Rather, XAVAGE believes the action of ADASTRA, holding itself out as the owner and administrator of the Area, is a manifestation of its illegal appropriation of the Area.

Although the OST does not explicitly prohibit non-governmental actors from appropriating areas of the Moon, most authorities agree that the OST's non-appropriations clause also applies to private individuals and corporations.[12] Article VI of the OST provides that signatory states shall bear "international responsibility" for all activities in outer space, whether carried on by government agencies or private actors.[13] As evidence of the acceptance of the idea of responsibility contained in the treaties, at least three states - the United States, the United Kingdom, and Sweden - have enacted registration requirements for private space activities which imply an assumption of state responsibility for these activities.[14] The OST also mandates that all activities of non-government actors be authorized by the appropriate state.[15] This Article clearly indicates that non-governmental actors in space are subject to the same restrictions as governments. Since

ADASTRA is prohibited from appropriating areas of the lunar surface, so is SOLLARS.

3. ADASTRA's actions violate its obligation to use space for the benefit of all nations.

Even if ADASTRA's grant of a license is permissible, ADASTRA has still violated Article I of the OST. Article I of the treaty states that the exploration and use of space shall be "carried out for the benefit and interest of all countries, irrespective of their degree of economic or scientific development."[16] This Article places an obligation on ADASTRA to share the fruits of its efforts with all other nations.[17] Clearly, the Provisional Understanding makes no mention of this and has no provision for sharing the benefits of the mining operation with XAVAGE or any other country. Rather, the Understanding's exclusive language evidences an intent to hoard the Area's resources and deny the benefits of those resources to other states. ADASTRA's defiant and arrogant construction of a nuclear powered fence around the Area to exclude others provides further proof of ADASTRA's intent. Under Article 31 of the Vienna Convention on the Law of Treaties, a treaty is to be interpreted in part by the subsequent action of the parties applying the treaty.[18] Even though ADASTRA may claim the Provisional Understanding is not an appropriation, its subsequent conduct testifies to the contrary. ADASTRA has selfishly appropriated the resources of the Area, and has denied other states the benefit of those resources. ADASTRA's actions speak louder than its words.

B. The Provisional Understanding and Grant of a License Violate the Moon Treaty.

1. ADASTRA's actions violate the substance of Moon Treaty.

ADASTRA's activities violate the Treaty Governing the Activities of States on the Moon and Other Celestial Bodies (hereinafter the "Moon Treaty").[19] By concluding the Provisional Understanding ADASTRA is engaged in the exploitation of lunar mineral resources. The Moon Treaty requires that all states party to the Agreement establish an international regime to govern resource exploitation on the Moon. Article 11, Paragraph 1 of the treaty states: "The Moon and its natural resources are the common heritage of mankind, which finds its expression in the provisions of the Agreement and in particular in paragraph 5 of this Article."[20] Paragraph 5 of the article establishes that the states party to the Moon Treaty "undertake to establish an international regime ... to govern the exploitation of the natural resources of the Moon as such exploitation is about to become feasible."[21] Finally, paragraph 7 of the article states that the main purpose of the proposed international regime shall be "an equitable sharing by all States Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries . . . shall be given special consideration."[22]

The Common Heritage of Mankind (hereinafter "CHM") is a concept that had been gaining prominence in international law and was included in the Moon Treaty. The CHM concept is rooted in historical concepts of equity and social justice, and is the morally correct path to follow.[23] The essence of the concept is that certain resources, in this case lunar resources, belong to everyone on Earth. These resources cannot be owned by any individual or nation. All nations have a duty to safeguard and care for these resources. Also, all resources that are the Common Heritage of Mankind are to be shared equitably with all so that all will derive the benefits of those resources, with the poor and disadvantaged receiving special consideration.[24]

No international regime has been established as envisioned by the Moon Treaty, yet ADASTRA has begun to exploit lunar minerals. The Provisional Understanding is, by itself, clearly insufficient as an "international regime." It does not fulfill the central purpose for such a regime as defined by the Moon Treaty. The Provisional Understanding is merely an exploitation agreement between a small group of states, and does not provide for an "equitable sharing" of resources and benefits of mining. In the absence of a proper international regime to govern mining on the Moon, ADASTRA's actions violate the Moon Treaty.

2. ADASTRA is bound to observe the purpose and intent of the Moon Treaty

While the Agreement Governing the Activities of States on the Moon and other Celestial Bodies (Moon Treaty) is not widely recognized and does not have the force of law except among those states who have consented to be bound by the treaty's provisions, ADASTRA is obliged to comply with the "object and purpose of the treaty."

According to Article 19, Section 2, the Moon Treaty is "subject to ratification by signatory states." XAVAGE is a party to the treaty, having both signed and ratified the treaty. ADASTRA has signed the Moon Treaty, but has neither ratified nor rejected it. A state that has signed a treaty but not yet ratified it has an obligation to "refrain from acts which would defeat the object and purpose of a treaty" unless it has made clear its intention not to become a party to the treaty.[25] Accordingly, ADASTRA has a legal obligation to honor the "object and purpose" of the Moon Treaty.

The fact that ADASTRA has merely signed and not ratified the Moon Treaty does not change the unlawfulness of its actions. The object of the Moon Treaty is to govern and control the exploitation of lunar mineral resources. ADASTRA, by undertaking mining operations in violation of the provisions of the treaty, has committed acts contrary to the central object of the Moon Treaty. At the same time, its actions have deprived XAVAGE of its right to free access to the Area.

II. The Government of ADASTRA violated its Obligations Under International Law by Installing a Nuclear Power Source on the Moon.

A. ADASTRA Violated the Outer Space Treaty by Placing a Nuclear Reactor on the Moon.

The Outer Space Treaty limits the use of nuclear power sources on the Moon. Article IX of the OST requires spacefaring states to "avoid harmful contamination" to the Moon and other celestial bodies. There is little question but that ADASTRA's nuclear reactor poses a significant risk of harmful contamination.[26] The mere presence of the reactor poses the risk of radioactive contamination by malfunction or accident. In addition, disposal of the spent fuel creates an additional risk. ADASTRA must either dispose of the spent fuel on the Moon or transport it back to the earth. Both options pose substantial risks of contamination.

Furthermore, Article IX requires states engaged in activities that could harmfully interfere with the "activities of other States Parties in the peaceful exploration and use of . . . the Moon" to undertake "appropriate international consultations before proceeding with any such activity." ADASTRA's nuclear reactor interfered with XAVAGE's and other states' peaceful use of the Area. As a party to the OST, ADASTRA should therefore have consulted with XAVAGE and other states parties prior to installing the reactor on the Moon. In failing to do so, ADASTRA violated international law.

While Article IV of the OST, which reads "the use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited," might appear to support a claim by ADASTRA that it has a right to use a nuclear reactor on the Moon, the term "necessary" effectively nullifies any such claim in this case. ADASTRA's nuclear reactor was not used for purposes of exploration, but to power a dangerous laser fence. As discussed below, the nuclear reactor was installed by ADASTRA on the Lunar surface to exclude other states from *res communis* territory. As such, the nuclear reactor is clearly not "necessary" as set forth by the terms of the OST. Its use to further an unlawful activity that does violence to the rights of other nations makes the NPS even more repugnant to the international legal order. Furthermore, because the NPS is part of an illegal space weapon,[27] its presence is not only unnecessary, it is illegal.

B. ADASTRA Violated the Moon Treaty by Placing a Nuclear Reactor on the Moon.

The Moon Treaty clearly governs nuclear power sources on the Moon. As a signatory of the Moon Treaty, ADASTRA may not violate the object and purpose of the treaty.[28] Article 7(2) of the Moon Treaty requires advance notification of placement of radioactive materials on the Moon. There is no evidence to suggest ADASTRA gave advance notification of its intent to put a nuclear reactor on the Moon. The Moon Treaty also requires that stations be "installed in such a manner that they do not impede free access . . ."[29] ADASTRA's nuclear reactor violates this provision in two ways. First, any contamination of the area surrounding the reactor could effectively render it inaccessible for all but the most limited use. Moreover, the very purpose for the nuclear reactor is to power equipment intended to impede free access by other states to a portion of the Moon. This violates the intent of the treaty to preserve the Moon as the "common heritage of all mankind."

C. ADASTRA's nuclear reactor violates the U.N. Principles on the Use of Nuclear Power Sources.

ADASTRA violated the Principles Relevant to the Use of Nuclear Power Sources in Space (hereinafter "NPS Principles") by transporting to and installing on the Moon a Nuclear Reactor without properly notifying other concerned states.[30] While the U.N. General Assembly's power is limited to making recommendations, not legislating, resolutions are good evidence of the opinio juris of member states. When combined with preexisting and subsequent state practice, U.N. resolutions can assume the force of law.[31]

The NPS Principles were adopted unanimously by a vote that included all the major spacefaring states. The space powers were all intimately involved in drafting the broad language and the document reflects their concerns as well as past practice.[32] Given this history of widespread and active participation by the space powers in their development, the NPS Principles should be regarded as international law or, at the very least, *lex ferenda:* the evolving international law on the use of NPS in outer space.

The purpose of the NPS Principles is not to eliminate or unduly restrict the use of nuclear power sources in space. Rather the Principles were meant to institutionalize doctrine on the roles and responsibilities of states using nuclear power sources in space in order to minimize the risk to human health and the environment.[33] To this end, the NPS Principles set forth technical guidelines and procedures for safely using nuclear power sources.[34] The NPS Principles also require the launching state to give notice of its use of a nuclear power source and the risk of the NPS powered satellite reentering earth's atmosphere.[35] There is no evidence that either state ADASTRA or its agent SOLLARS attempted to notify XAVAGE or any other state of its intent to transport the nuclear reactor from the Earth to the Moon prior to launch.

III. ADASTRA's Keep Out Zone Was Unreasonable Under International Law.

A. ADASTRA's Keep Out Zone was Not Reasonable in Scope

In order for a Keep Out Zone to be valid under international law, the area to which access is denied, the extent of the denial, and the means with which the zone is enforced must be reasonable in relation to the activity being protected. ADASTRA's Keep Out Zone fails the test of reasonableness. ADASTRA's zone goes well beyond the needs of its mining activities and is, in effect, an illegal appropriation of the Area. When the importance of the Area (attributable to the unique deposit of Zirconium found there) is taken into account, the *unreasonableness* of denying access to the Area is even more pronounced.[36]

1. The Moon is res communis and is not subject to national appropriation.

International law has established that certain areas may not be claimed by any nation, e.g., the deep sea bed, Antarctica, the Moon and outer space.[37] These areas are *res communis*. Article II of the Outer Space Treaty declares that the Moon "is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." Article 11(2) of the Moon Treaty echoes this view: "The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means."

While some writers and states have interpreted these provisions as restricting exploitation of the Moon's natural resources, the prevailing view today is that these provisions are intended to "preclude application of the historical concept of sovereignty attaching to exploration and establishment of dominion over newly discovered portions of the earth."[38]

2. ADASTRA's exercise of exclusive sovereignty over the Area renders the Keep Out Zone illegal.

The creation of special zones in res communis territory is not *per se* illegal; precedent for such zones exists under international law generally and thoughtful arguments have been advanced supporting the legality of such zones under existing space law.[39] On earth, a variety of zones including safety zones, warning zones and security zones are recognized in international law.[40] For example, the 1958 Convention on the Continental Shelf allows safety zones up to 500 meters around man-made installations.[41] Article 60 of the United Nations convention on the Law of the Sea extends the same concept of safety zones to artificial islands, research facilities, and mining activities. Temporary zones have been created to "warn ships and aircraft that portions of the high seas were to be used for testing nuclear weapons, ballistic missiles, or naval gunnery exercises."[42] Air Defense Identification Zones (ADIZ's) also enjoy widespread acceptance. In fact, special zones are generally recognized as legal so long as the state establishing the zone makes no claim of sovereignty. As one commentator notes, "there is a clear distinction between sovereignty and the right to exercise a preventive, protective, or regulatory jurisdiction."[43]

The issue, then, is whether ADASTRA's installation of a Keep Out Zone, enforced by a powerful laser designed to deny access to other states, is a prohibited exercise of sovereignty. Sovereignty is the "right to exercise, to the exclusion of any other state, the functions of a state."[44] ADASTRA's laser fence clearly excludes other states from the Keep Out Zone and ADASTRA's activities within the zone - exercising dominion over the Moon's natural resources - are clearly state functions. Remove the laser fence and ADASTRA is no longer exercising exclusive jurisdiction within the Keep Out Zone because other states are free to exercise their right of exploration and use.[45]

3. ADASTRA's Keep Out Zone violates the test of reasonableness under the circumstances.

Some commentators have suggested that special zones of exclusive competence could be legal in outer space.[46] This view is founded in the assertion that the "power [of a state] to secure itself from injury may certainly be exercised beyond the limits of its territory."[47] Under this view, the legality of a state's exercise of exclusive competence in a res communis territory is determined by the reasonableness under the circumstances, both with regard to the size of the zone created and the restrictions on the use of the zone by other nations. ADASTRA's laser fenced Keep Out Zone fails the test of reasonableness. The fence is not necessary for mining as ADASTRA would have this Court believe. Mining operations are not aided at all by the existence of the fence. Neither does the fence serve the valid purpose of protecting the safety of other Moon personnel. ADASTRA's mining operation is taking place on the Moon, not a busy city intersection. There is no danger that some unsuspecting astronaut will wander ignorantly into its mining operations. Even if this were a concern, a less destructive barrier could have been used by ADASTRA. Instead, the fence was designed to be a fortification to enforce ADASTRA's unlawful appropriation of the Area.

B. ADASTRA's Keep Out Zone was Unreasonable in Purpose Since It Was Intended to Restrict Free Access to the Moon

ADASTRA's nuclear powered laser fence and accompanying Keep Out Zone sent a clear message to anyone wishing to enter the Area: "Don't even try, and if you do, your attempt will be resisted with violence." ADASTRA illegally and violently denied all other states access to the Area by constructing the fence.

Article I of the Outer Space Treaty and Article 8(2) of the Moon Treaty establish that states have a right to free access to all areas of the Moon. Indeed, freedom of access is a fundamental principle of the Outer Space Treaty.[48] The Outer Space Treaty which requires states to "take appropriate

international consultations" before conducting activities that might cause harmful interference with the peaceful activities of other states.[49] Article 9 of the Moon Treaty directly addresses the effect Moon stations have on freedom of access to the Moon. These stations "shall use only that area which is required for the needs of the station"[50] and "shall be installed in such a manner that they do not impede the free access to all areas of the Moon by personnel, vehicles and equipment of other States Parties...."[51] A deprivation of the right to access an area, such as that attempted by ADASTRA, would certainly constitute "harmful interference" and trigger the OST's consultation provision. ADASTRA has failed to undertake such consultations, however.

A state wishing to visit the station of another state has a right to do so after giving that state "reasonable advance notice of a projected visit."[52] Similarly, the Moon Treaty declares that all "facilities, stations and installations on the Moon shall be open to other States Parties."[53] The notice provisions are intended to afford the host state sufficient time to assure safety and to "avoid interference with normal operations" of the visited facility.[54]

Erecting a laser fence around the Area was a violation of both the Moon and the Outer Space treaties because it denied XAVAGE access to an area of the Moon that was not only beyond that required for ADASTRA's base, but was also of great scientific interest to XAVAGE. The unique deposit of Zirconium found in the Area made it of great scientific value to all nations. ADASTRA had no right to "hoard" the deposit and deny access to it by surrounding it with a dangerous and threatening obstacle. ADASTRA executed this denial unilaterally and without the consultation required by the Outer Space and Moon Treaties.

The destructive nature of the fence, the forceful language used in the warnings around the fence and ADASTRA's previous denial of access to scientific information gathered in its Moon mapping activities made it clear that ADASTRA had no intent of complying with the consultation procedures provided in the Moon and Outer Space treaties.[55] Its defiant annexation of the Area showed a clear disregard for the spirit and the letter of the treaties, making any resort to consultation futile. The right of access is not a right which may be conditioned on the whims of ADASTRA.

C. The Keep Out Zone Was Enforced in an Unreasonably Dangerous Manner.

As described above, Keep Out Zones are legal only so long as they are reasonable in scope and purpose. In addition, if the manner in which a Keep Out Zone is enforced is inconsistent with the avowed purpose, then the Zone may be unreasonable in its execution. This is the case with ADASTRA's Keep Out Zone.

ADASTRA's claim that the Keep Out Zone is intended to enhance safety around the Area is contradicted by the dangerous nature of the laser fortification used to "protect" the Area. The laser fence surrounding the Area threatens the safety of any person coming into contact with it. The force used is beyond that required for safety. Indeed, the use of such a dangerous instrumentality as a nuclear powered laser shows a complete disregard for the safety of personnel on the Moon. It is unreasonable for a state concerned with protecting life and property to do so with a device designed to destroy the same.

The laser fence was the functional equivalent of a minefield. Like a minefield, it posed a great risk to life and property on the Moon. In The Corfu Channel Case[56], this Court considered the legality of Albania's placement of mines in a strait used in international navigation which was within Albanian territorial waters. The Court held Albania liable for damage the mines caused to two British warships citing *inter alia* "elementary considerations of humanity . . . the principle of the freedom of maritime communication; and every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States."[57] In erecting the laser fence, ADASTRA knowingly violated XAVAGE's right to access the Area and did this in a way, similar to the use of a minefield, which was contrary to considerations of humanity and freedom of access to an international area just as surely as if it had used mines. In fact, ADASTRA's violation is even more egregious than that in the Corfu Channel Case since ADASTRA, unlike Albania, has no possible sovereign claim to the Area.

IV. ADASTRA's Keep Out Zone Violated the Mandate that the Moon Be Used Exclusively for Peaceful Purposes.

A. The Nuclear Powered Fence Was Part of an Illegal Space Weapon or Fortification.

The Outer Space Treaty and the Moon Treaty contain nearly identical bans on testing weapons and establishing military bases or fortifications on the Moon.[58] Although space weapons are not banned from the Moon *per se*,[59] it is clear from the provisions covering militarization that stationing weapons in a way that is inconsistent with the "peaceful uses" mandate would be a violation of international law.[60] The United Nations Institute for Disarmament Research has defined a "space weapon" as an object in outer space or on the Moon "designed to destroy, damage or otherwise interfere with the normal functioning of an object or being in outer space."[61] While many objects may fit into this category, the legality of a space weapon is determined by its use.[62]

The lethal power and arbitrary nature of ADASTRA's laser fortification betray its purpose to "destroy, damage or otherwise interfere" with

any object coming into contact with it. This fence was not a simple barrier; it was a dangerous and highly destructive weapon. It posed a deadly threat to any human or vehicle coming into contact with it. Had ADASTRA constructed a benign physical barrier, the resulting "fence" may not have qualified as an illegal weapon. But ADASTRA chose to secure the area using means that threatened anyone or anything that contacted it with a deadly stream of energy. This inherent threat of force makes the laser fortification a space weapon; its mere presence on the Moon constitutes a violation of international law.

B. The Keep Out Zone As Constructed by ADASTRA was an Unlawful Weaponization of the Moon.

The Outer Space Treaty seeks to ensure that outer space is used for peaceful purposes only. A key objective of the Treaty is to limit the militarization of outer space.[63] Similarly, the Moon Treaty seeks to ensure that the Moon is used "exclusively for peaceful purposes."[64] The Preamble to the Moon Treaty declares that it is the desire of the contracting parties "to prevent the Moon from becoming an area of international conflict." Although the Treaty allows the use of military personnel for scientific research or other peaceful purposes, there is an absolute ban on the establishment of military bases, installations and fortifications.[65]

ADASTRA's Keep Out Zone violated these principles of peaceful use by utilizing a violent, arbitrary weapon (the laser fortification) to execute an unlawful appropriation. This appropriation encompassed an area of tremendous international value: the area contains the only known deposits of Zirconium, the only superconductive mineral of its kind. Although there remains no authoritative definition of a "peaceful" use of outer space,[66] no such ambiguity exists when defining hostile acts: an act using or threatening the use of force is "non-peaceful".[67] The Keep Out Zone ADASTRA constructed was an aggressive appropriation of an extremely valuable portion of the Moon's surface that violated the requirement that the Moon be used for peaceful purposes only. The fence forcefully excludes all other states from the area with a device that is meant to harm anyone or anything which attempts to challenge the appropriation. It is a space weapon made even more repugnant to international law by its indiscriminate potential for destruction.

V. Destruction of the Nuclear Powered Weapon Was a Valid Act and XAVAGE is Not Liable for Any Damages Stemming from the Destruction of the NPS.

A. XAVAGE is Not Liable for Damage Caused by Neutralizing the NPS.

International law distinguishes between "liability" and "responsibility" for a transboundary harm. "Liability" refers to a state's duty to address the legal consequences of actions in the form of damages; "responsibility" refers to obligations imposed on actors which may not encompass damage but may have moral or criminal implications.[68] XAVAGE does not deny that it is responsible for neutralizing the NPS and can be called to account for its action. There is a difference however between being required to justify one's actions and being required to compensate a party damaged by those actions. XAVAGE asserts that its neutralization of the NPS was justified as a measure taken to remedy a present danger to it and others and to prevent further damage to XAVAGE's right to access the Area.

Article VI of the Outer Space Treaty and Article 14(1) of the Moon Treaty establish that states are internationally responsible for national activities in outer space and on the Moon.[69] States are also responsible for any breach of their obligations to other states.[70]

Article VII of the Outer Space Treaty makes any state that launches or procures the launch of a space object internationally liable for any damage caused by that object.[71] Liability attaches for intentional as well as inadvertent harm; whether an act is wrongful or not does not affect liability.[72] More important to the analysis is the motive of the act: a state is liable for harm caused by acts which are either wrongful or simply not in conformity with a state's international obligations.[73]

1. The Liability Convention does not cover damage to Terra Communis.

Both ADASTRA and XAVAGE are parties to the Convention on International Liability for Damage Caused by Space Objects ("Liability Convention").[74] The Convention was drafted to address the eventuality that, despite the precautions taken by states, damage might be caused by a state's space activities.[75] Under Article II of the treaty, a launching state is absolutely liable for damage caused by a space object on the earth or to aircraft in flight; liability for damage caused elsewhere is based on fault. In both cases however, the claimant must allege that the damage was caused by a "space object" for the treaty provisions to be triggered.[76] In addition, the harm must occur to property within a state's territory or lawfully under its jurisdiction. Damage caused to *terra communis* is not covered by the treaty.[77] ADASTRA's claim of damage for infringement of the zone is essentially a claim for harm to territory over which it has no sovereignty. The Convention is inapplicable to such claims.[78]

Even if the Convention were applied, ADASTRA's claim would still be barred. The damage ADASTRA is claiming was precipitated by ADASTRA's unlawful construction of the fence and installation of the nuclear power source. Under

Article VI(1), ADASTRA's violation of international law exonerates XAVAGE for liability to ADASTRA for damage caused as a result of this illegal act.

2. Neutralization of the Nuclear Reactor is analogous to removing mines in International Waters.

By constructing an arbitrary, dangerous and destructive laser fence around an un-annexable area that is of great interest to the international community, ADASTRA violated international law. Its action was analogous to a state laying mines in international waters. Like a mine, the laser fence threatened both personnel and equipment with arbitrary and destructive force. XAVAGE took the limited action of neutralizing the NPS to remove this danger from the Area. ADASTRA placed a dangerous object in an area in which would attract interest and exploration and over which it had no colorable claim of sovereignty. XAVAGE acted only in response to the danger created by ADASTRA and removed the danger from the Area, just as a state would remove a mine found in international waters.[79] Neutralizing the NPS was a limited action taken to address a real danger. This was not an act of aggression. In fact, the record does not indicate that force of any kind was used by XAVAGE. "Destruction" of the reactor was possible without the use of force.

B. ADASTRA's Claim in This Court Is Premature Since It Has Not Complied With the Procedures Set Out In the Liability Convention.

In order to make a claim under the Liability Convention, a claimant state must first present the claim through diplomatic channels.[80] If diplomatic measures fail to achieve a resolution of the claim within a year, the claim is then submitted to a claims commission, established under the rules of the Convention, for final resolution.[81] The Convention makes clear that litigation in courts or other tribunals is not permitted and that the Claims Commission is the exclusive remedy.[82]

ADASTRA did not follow the paths set forth in the Liability Convention. Instead, it is seeking to circumvent the procedures of the Convention while simultaneously taking advantage of the Convention's substantive law. ADASTRA's failure to follow the procedure established by the Liability Convention makes its present application premature. It's claim should be denied for failure to exhaust its remedies under the Liability Convention.

C. ADASTRA Is Not Entitled to Any Damages Because It Has Not Suffered A Compensable Harm.

Under the Liability Convention, Article I(a), damage is defined as "loss of life, personal injury or other impairment of health; or loss of or damage to property..." The amount of compensation is to be determined in accordance with international law and equity, with the idea being to restore the claimant "to the condition which would have existed if the damage had not occurred."[83]

1. The Liability Convention does not contemplate consequential damages.

Authorities are split as to whether liability is imposed only for physical injury or whether lost profits are also covered. While some sources cite the practice of international tribunals of allowing lost profits in damage awards as evidence that such would be allowed under the Liability Convention,[84] others state that it is still unclear whether the Treaty covers lost profits.[85] The United States has adopted the position that liability in the Outer Space Treaty applies only to physical damage[86] even though lost profits are covered under U.S. domestic practice.[87]

The failure of the Liability Convention to mention consequential economic damages and the assertions of states such as the United States that the Convention applies only to physical damage supports the conclusion that lost profits should not be included as damages. This conclusion is even more supportable when the action of ADASTRA is taken into account. ADASTRA suffered harm as the result of unlawful and provocative actions intended to infringe the rights of not only XAVAGE, but also all other nations. Since ADASTRA's claimed damages were the result of an act intended to cause damage to the rights of other states, its claim for damages should be denied. By compensating ADASTRA for any damages flowing from its illegal construction of the laser fence, this Court would be rewarding ADASTRA for its unlawful actions.

2. ADASTRA's unclean hands should bar it from recovering damages

The conduct of the claimant may be a factor in determining the extent of liability. International tribunals typically reduce damages when the claimant's conduct has contributed to his damages.[88] The Liability Convention also takes this factor into account. Under Article VI, a state held to a strict liability standard may be exonerated if it establishes that the claimant's damage was caused "either wholly or partially from gross negligence or from an act or omission done with intent to cause damage."[89]

3. SOLLARS lacks the citizenship necessary for ADASTRA to espouse its claim.

Even if SOLLARS did suffer consequential economic damages, ADASTRA is not the proper country to present its claim. It is a generally accepted principle of international law that a company must have the nationality or citizenship, through a genuine link, of the country espousing its claim. At a minnimum, for a state to espouse the claim of a corporation, the company must be incorporated in that state.[90] Ownership of a corporation is not an internationally accepted basis for citizenship.[91] SOLLARS is incorporated in ELUSIVE with a majority of its shareholders residing in ADASTRA. This is not a sufficient

basis for ADASTRA to assert citizenship. If SOLLARS was indeed harmed by XAVAGE's actions, ADASTRA is not the proper party to bring a claim for those damages.

D. ADASTRA Cannot Claim it was Damaged by XAVAGE Entering an Area XAVAGE Had a Right to Enter.

XAVAGE does not contest ADASTRA's right to establish a base on the Moon or to mine Zirconium. XAVAGE does however believe that the way in which ADASTRA conducted its mining violated the principles of free access and inspection provided for in the treaties to which ADASTRA is a party. As established above, XAVAGE had rights to enter and use the Area. The fence erected by ADASTRA unlawfully denied XAVAGE its rights of access and use. Because the Keep Out Zone was unlawful, ADASTRA cannot claim entry of this zone was illegal. It also cannot claim that it was damaged by XAVAGE's entry of the Keep Out Zone. ADASTRA had no right to deny XAVAGE access to the Area and could not be harmed since no right was infringed by this access.

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1 Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205 (1967) [hereinafter "Outer Space Treaty"].

2 Id. art. I.

3 See Gorove, Interpreting Article II of the Outer Space Treaty, 37 Fordham L. Rev. 349, 353 (1969).

4 Outer Space Treaty, supra note 1, art. II.

5 Menter, Commercial Space Activities Under the Moon Treaty, 23 Colloq. L. Outer Sp. 35 (1980).

6 Webber, Extraterrestrial Law on the Final Frontier: A Regime to Govern the Development of Celestial Body Resources, 71 Geo. L.J. 1427, 1431 (1983).

7 See Christol, Article II of the 1967 Principles Revisited, 9 Annals of Air & Space L. 217, 261-264 (1984)(unilateral removal of mineral resources from the lunar surface would not be allowed because it permanently consumes lunar resources). See also Wassenbergh, Speculations on the Law Governing Space Resources, 5 Annals of Air & Space L. 611, 612-617 (1980)(Setting up a telescope on the lunar surface, for instance, would not violate the non-appropriation clause because, although it does "use" a limited resource - surface space - it does not permanently consume that resource).

8 Nash, Contemporary Practice of the Untied States Relating to International Law, 74 Am. J. Int'l L. 419, 421-22 (1980).

9 Webber, supra note 6, at 1431.

10 Nash, supra note 10 at 422.

11 See Reynolds & Merges, Outer Space: Problems of Law and Policy 115 (1989).

12 Outer Space Treaty, supra note 1, art. II.

13 Id., art. IV.

14 Bittlinger, Private Space Activities: Questions of International Responsibility, 30 Colloq. L. Outer Sp. 191, 193 (1987).

15 Id.

16 Outer Space Treaty, supra note 1, art. 1.

17 Gorove, supra note 3 at 353.

18 Vienna Convention on the Law of Treaties, art. 31(2)(b), May 23, 1969, U.N. Doc. A/CONF. 39/27.

19 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, U.N. Doc. A/RES/34/68, 18 ILM 1434 (1979) [hereinafter "Moon Treaty"].

20 Id., art. 11, para. 1.

21 Id., art. 11, para. 5.

22 Id., art. 11, para. 7.

23 Galloway, Political Philosophy and the Common Heritage of Mankind Concept in International Law, 23 Colloq. L. Outer Sp. 25 (1980).

24 Id. at 27.

25 Vienna Convention on the Law of Treaties, supra note 19, art. 18.

26 See Smith, Legal Aspects of Using Nuclear Reactors on the Moon in Proceedings of the Thirty-fifth Colloquia of the International Institute of Space Law 9 (1992).

27 See discussion supra p. 7..

28 See id. at art. 18, and argument supra at 7.

29 Moon Treaty, supra note 20 at art. 9, para. 2.

30 G.A. Res. 68, U.N. GAOR, 47th Sess., U.N. Doc. A/Res./6847.

31 Examples often cited include the Universal Declaration on Human Rights and Resolution 95 of the first General Assembly (endorsing the Nuremberg Charter). See Riggs, The U.N. and the Development of International Law, 2 B.Y.U. L. Rev. 410, 431, note 54 (1985); Lissitzyn, International Law Today and Tomorrow 35 (1965).

32 The fact that some states have gone on record as supporting the NPS Principles only to the extent they are non-binding has no bearing on the case at bar. There is no evidence that either XAVAGE or ADASTRA conditioned their support for the Principles on their non-binding nature.

33 Some commentators have argued that the language of the NPS Principles leaves some doubt as to whether it covers nuclear power sources on the Moon. See Smith, supra note 27 at 8 (arguing that the inclusion of a reference to "celestial bodies" in the OST and the corresponding absence of this reference in the NPS Principles makes it unclear whether the Principles were meant to cover the moon). These concerns are, however, based on an inaccurate reading of the NPS Principles; the drafters of the NPS Principles clearly intended that

the NPS Principles cover all use of nuclear power sources off Earth or they would not have extended coverage to all nuclear power sources "in outer space." This interpretation is consistent with a good faith interpretation of the ordinary meaning of the treaty's wording required by the Vienna Convention on the Law of Treaties, supra note 19, art. 31.

[34] G.A. Res., supra note 31 at Principles 3 & 4.

[35] Id. at Principle 5.

[36] Scientists believe that the Zirconium deposit resulted from the collision of an asteroid with the Moon millions of years ago. If this is the case, the mineral is not indigenous to the Moon and may be the only deposit of its kind on the Moon and perhaps in the solar system.

[37] Heim, Note: Exploring the Last Frontiers for Mineral Resources: A Comparison of International Law Regarding the Deep Seabed, Outer Space, and Antarctica, 23 Vand. J. Transnat'l L. 819 (1990).

[38] Menter, Commercial Space Activities Under the Moon Treaty, 7 Syr. J. Int'l L. & Com. 213, 215 (1979). See Christol, Current Development: the Moon Treaty Enters Into Force, 79 A.J.I.L. 163 (1985) (Noting the American Bar Association's International Law Section conclusion in 1981 that the Moon Treaty recognized that no state has an exclusive right over the Moon's surface or resources, but that this applied only to "natural resources which have not been, or are not actually in the process of being, extracted or used by actual development activities on the Moon).

[39] Schwetje, Protecting Space Assets: A Legal Analysis of "Keep Out Zones", 15 J. Space L. 131, 135 (1987).

[40] Id.

[41] Convention on the Continental Shelf, Apr. 29, 1958, art. 5, Sec. 2, 3, 499 U.N.T.S. 311.

[42] Schwetje, supra note 41 at 135.

[43] The Convention on Civil Aviation (Chicago Convention), Dec. 7, 1944, 61 Stat. 1180, T.I.A.S. 1591, 15 U.N.T.S. 295, art. IX (a), allows states "quote for reasons of military necessity or public safety [to] restrict or prohibit uniformly the aircraft of other states from flying over certain areas of its territory. . . ."

[44] The Island of Palmas (U.S. v. Neth.) Permanent Court of Arbitration, 2 U.N. Rep. Int'l Arb. Awards 838 (1928).

[45] ADASTRA has a clear motive for trying to exercise such sovereignty. By excluding others from the Area, ADASTRA has created a monopoly over Zirconium. It controls the only known source of Zirconium and can either hoard the entire supply, extort an exorbitant fee for it, or use the threat of cutting off supply as a powerful coercive weapon.

[46] See McDougal, et al., Law and Public Order in Space at 294-311.

[47] Id. at 304, (quoting U.S. Chief Justice Marshall in Church v. Hubbart, 6 U.S. (2 Cranch) 187 (1804).

[48] Gorove, Freedom of Exploration and Use in the Outer Space Treaty: A Textual Analysis and Interpretation, 1 Denver J. Int'l L. 93 (1971).

[49] Outer Space Treaty, supra note 1, art. XII.

[50] Moon Treaty, supra note 20, art. 9(1).

[51] Id. art. 9(2).

[52] Outer Space Treaty, supra note 1, art. XII.

[53] Moon Treaty, supra note 20, art. 15(1).

[54] Outer Space Treaty, supra note 1, art. XII, Moon Treaty, supra note 20, art. 15 para. 2.

[55] This denial of access to information was a violation of the spirit of the Principles Relating to Remote Sensing of the Earth from Space, Principles IX & X U.N. Doc. A/RES/41/65 (March 24, 1987) (calling on states to make remote sensing information available "to the greatest extent feasible" and requiring states to disclose information concerning adverse effects to the earth's environment). The Principles were passed by consensus vote in the General Assembly and was supported by all major spacefaring nations. At the time the Principles were promulgated no extensive sensing of the Moon had occurred. While these Principles specifically addressed remote sensing of the Earth, the consistent theme of the Principles to promote the free exchange of information and cooperation in remote sensing activities allows the assumption that these themes were to be extended to all civilian remote sensing activities, including the Moon Mapping project carried out by ADASTRA.

[56] Corfu Channel (U.K. v. Albania), (merits) 1949 I.C.J. 4.

[57] Id. at 22.

[58] Outer Space Treaty, supra note 1 art. IV, Moon Treaty, supra note 20 art. 2 para. 4.

[59] Article IV of the OST does contain an absolute prohibition on stationing nuclear weapons on the Moon and in outer space and on the Moon. Although the drafters of the OST may have been more concerned with limiting fission type weapons, the prohibition should be read to include weapons such as ADASTRA's nuclear powered laser fence. The danger of contamination and destabilizing effect of such weapons are still present and should be addressed the same way.

[60] Vlasic, The Legal Aspects of Peaceful and Non-Peaceful Uses of Outer Space, in Jasani, Ed., Peaceful and Non-Peaceful Uses of Space, United Nations Institute for Disarmament Research 37, 45 (1991).

[61] Jasani, Ed., Peaceful and Non-Peaceful Uses of Space, United Nations Institute for Disarmament Research 13 (1991).

[62] Vlasic, supra note 59 at 45.

63 Firestone, Problems in the Resolution of Disputes Concerning Damage Caused in Outer Space, 59 Tul. L. Rev. 747, 749 (1985).

64 Moon Treaty, supra note 20, art. 2, para. 1.

65 Id., art. 2, para. 4.

66 Vlasic, , supra note 62 at 37. The United States has adopted the position that "peaceful" in the context of outer space means "non-aggressive." Id. at 40.

67 Chandrashekar, Problems of Definition: A View of an Emerging Space Power, in Jasani, supra note 63 at 86.

68 Gorove, Liability in Space Law: An Overview, 8 Annals of Air and Space Law 373-74 (1983).

69 See discussion, supra p. 3.

70 Id.

71 In recognition of this principle, the United States Senate Committee on Aeronautical and Space Sciences noted in 1972 that "there is a customary rule of international law which provides that States . . . are liable for damages caused to other States through acts committed within their jurisdiction . . . ." Christol, International Liability for Damage Caused by Space Objects, 74 A.J.I.L. 346, 352 (1980).

72 Magraw, Transboundary Harm: The International Law Commission's Study of "International Liability", 80 A.J.I.L. 305, 317-19 (1986).

73 Dragiev, Legal Regulation of State Responsibility in Law Of Outer Space,32 Colloq. L. Outer Sp. 313, 314 (1989).

74 24 U.S.T. 2389, T.I.A.S. No. 7762.

75 Liability Convention, Preamble, supra note 76.

76 Firestone, supra note 65.

77 Magraw, supra note 74 at 311.

78 Id.

79 According to official United States Navy procedure, "[a]rmed mines may not be placed in international waters prior to the outbreak of armed conflict, except under the most demanding requirements of individual or collective self-defense." Annotated Supplement to the Commander's Handbook on the Law of Naval Operations, Naval Warfare Publication 9 (Rev. A)/FMFM 1-10, (Wash., D.C. 1989). Official British Navy policy is to destroy mines found in international waters "on sight." Interview with Commander R. Ewing, British Naval Staff, British Embassy, Washington, D.C. on Aug. 26, 1993.

80 Convention On International Liability for Damage Caused by Space Objects, Mar. 29, 1972, art. IX, 24 U.S.T. 2389, T.I.A.S. No. 7762 [hereinafter, "Liability Convention"].

81 Id., art. XIV.

82 Dombroff, "Space Law Opens a New Frontier for Justice Department Attorneys," The National Law Journal, May 23, 1983 at 24.

83 Liability Convention, art. IX, supra note 82.

84 See Id. at 364.

85 See Firestone, supra note 65. The "caused by" language in the damages provisions also raises the question of how directly causation must be established. While the strongest case for liability is for direct harm with no intervening forces, "caused by" may also mean consequential damages such as lost profits. Christol, supra note 70 at 354. Since no conclusion was reached in the Convention, Professor Christol argues that damages must refer to direct damages. (Id.)

86 Christol, supra note 73 at 354.

87 Id. at 359.

88 Id. at 364.

89 Hurwitz, Liability for Private Commercial Activities in Outer Space, 33 Colloq. L. Outer Sp. 37 (1990).

90 Barcelona Traction, Light, and Power Company, Ltd. (Belg. v. Spain) 1970 I.C.J. 6 (Judgment of 24 July) (stating that determination of corporate citizenship is long determined by the place of incorporation and place of the registered office). See Carter, European Communities: Comments on the U.S. Regulations Concerning Trade with the U.S.S.R., 21 I.L.M. 891, 892 (1982).

91 Compagnie Européenne des Pétroles S.A. v. Sensor Nederland B.V., 22 I.L.M. 66, 69 at para. 7.3.2 (Neth. 1983).