Space law and the protection of cultural heritage:
The uncertain fate of humanity's heritage in space

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Abstract

As numerous governments and commercial entities plan ambitious expeditions into outer space and to celestial bodies, humanity's heritage in space is threatened. This Thesis examines the protections currently available to those objects and sites that represent the great achievements of humankind in using and exploring space, with a focus on Tranquility Base, the Apollo 11 landing site. Existing protections are analyzed under both cultural heritage law and space law, focusing primarily on the language of relevant treaties in these fields. There have been several endeavors undertaken in the United States to protect the Apollo landing sites in general and Tranquility Base in particular. These actions are reviewed herein for appropriateness and efficacy. Recommendations to optimize the protection of space heritage in the future are then presented. This Thesis concludes that the most effective approach, which is also likely to succeed, consists of a multi-step process including unilateral actions, bilateral treaties, and a multilateral soft law solution, ideally culminating in a multilateral treaty, and possibly leading to the formation of customary international law. Fundamentally, cooperation and good faith are the cornerstones of any solution to this issue of international law. It is important that the legal rules governing interaction with and preservation of these objects and sites be clearly determined to avoid irreversible damage to a unique and irreplaceable resource.

Resume

Alors que de nombreux gouvernements et entités commerciales prévoient d'ambitieuses expéditions dans l'espace extra-atmosphérique et dans les corps célestes, le patrimoine de l'humanité dans l'espace est menacé. Cette thèse examine les protections actuellement disponibles pour les objets et sites qui représentent les grandes réalisations de l'humanité concernant l'utilisation et l'exploration de l'espace, avec une attention particulière portée sur la Base de la Tranquillité, le site d'atterrissage d'Apollo 11. Les protections existantes sont analysées en vertu du droit du patrimoine culturel et du droit de l'espace, et se concentrent principalement sur le langage des traités en ces domaines. Il y a eu plusieurs tentatives menées aux États-Unis pour protéger les sites d'atterrissage d'Apollo, en particulier concernant la Base de la Tranquillité. Ces mesures sont examinées dans les développements de la thèse afin d'évaluer leur pertinence et leur efficacité. Les recommandations pour optimiser la protection du patrimoine de l'espace dans le futur sont ensuite présentées. Cette thèse conclut que l'approche la plus efficace, qui est également la plus susceptible de réussir, consiste en un processus en plusieurs étapes, comprenant des mesures unilatérales, des traités bilatéraux et une solution multilatérale de soft law, aboutissant idéalement à un traité multilatéral, et pouvant éventuellement conduire à la formation de droit international coutumier. Fondamentalement, la coopération et la bonne foi sont les pierres angulaires de toute solution à ce problème de droit international. Il est important que les règles juridiques régissant l'interaction et la préservation de ces objets et de ces sites soient clairement déterminées, afin d'éviter que des dommages irréversibles ne soient causés à une ressource unique et irremplaçable.

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Space Law and The Protection of Cultural Heritage: The Uncertain Fate of Humanity's Heritage in Space

Chapter I. Introduction

A. The Cultural Importance of Space Exploration

"One small step for man, one giant leap for mankind." These iconic words, spoken by Neil Armstrong upon alighting on the lunar surface, reflect the significant impact of space exploration on human civilization. Escaping the Earth's atmosphere, landing on the Moon, studying the surface of Mars using highly complex robots, sending satellites into orbit and probes into deep space; these constitute significant accomplishments in our shared history. How, then, are we to protect the evidence of these achievements for future generations?

The National Air and Space Museum in Washington receives more visitors annually than all but one international art museum (the Musée du Louvre).[1] It seems unquestionable then that such items as those displayed in the National Air and Space Museum are prized for their historic value. The artifacts in outer space, on Mars, and particularly on the Moon, however, do not benefit from placement in such a museum. Even if the registering States of these objects, which retain jurisdiction and control in space law,[2] were able to retrieve them, it is arguable that the value of some objects is greater if they remain in place (*in situ*), allowing future generations to view and study

[1] Justin St. P. Walsh, "Protection of Humanity's Cultural and Historic Heritage in Space" (2012) 28 Space Pol'y 234 at 235.

[2] *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, 27 January 1967, 610 U.N.T.S. 205, art VIII [*Outer Space Treaty*].

early space exploration as accurately as possible. "The question of whether and how space exploration serves society and culture deserves deeper thought." [3] The preservation of these artifacts leaves room for such thought in the future.

This Thesis analyzes the status of these space heritage objects, with a two-fold goal of articulating possibilities for their protection in accordance with the existing international law regime and also proposing the development of alternatives that could more effectively protect these objects. The unique nature of space law creates a series of difficulties in determining how to deal with cultural heritage in space.

The key example of cultural heritage in space, which has become a hot topic of discussion, is the set of artifacts left behind at Tranquility Base by the Apollo 11 mission. Tranquility Base is a particularly interesting example, because "[n]o heritage site on Earth, of whatever level of cultural significance, can boast that the entire interaction on the site has been preserved – both because of subsequent interaction by other people and also because of the presence of an atmosphere on Earth with the concomitant erosive forces of wind and water."[4] Thus, this Thesis uses Tranquility Base and its artifacts as the model for analysis of space heritage.

The question of humanity's cultural heritage in space has arisen as one of many unanswered questions in space law, with no international agreements specifically addressing this question. With the beginning of the space age fifty-six years ago and a series of remarkable achievements in space exploration behind us, it is

[3] Linda Billings, "To the Moon, Mars and Beyond: Culture, Law and Ethics in Space-Faring Societies" (2006) 26 Bulletin of Science, Technology & Society 430 at 435.
[4] Dirk H.R. Spennemann, "Out of this World: Issues of Managing Tourism and Humanity's Heritage on the Moon" (2006) 12 Int'l J Heritage Stud 356 at 362.

necessary to determine what should be done regarding the "artifacts" of this exploration.

NASA has promulgated their recommendations for space-faring entities with the goal of protecting the lunar artifacts left behind by the Apollo missions.[5] These recommendations establish "keep out zones" of up to a four kilometer diameter with the aim of protecting the artifacts; particularly from dangerous, fast-moving particles which arise as a result of craft landings.[6] Experience has shown that even artifacts that are sheltered by craters can be significantly sandblasted and pitted as a result of the moving particles.[7] These recommendations, supposedly drafted in conformity with the Outer Space Treaty, however, are completely non-binding.[8]

Accidental damage from unrelated missions, however, is only one of many threats to space artifacts. With the impending return to the Moon, it is likely that individuals and corporations will be looking to turn a profit from space heritage, without concern for the protection of such heritage. Tourists may disrupt sites with careless expeditions and landing sites may be desecrated so that items left behind can be sold. A Russian Lunakhod lunar rover has already been sold at auction to a private party, though it has not yet been moved from its original position on the Moon.[9]

While national heritage legislation can protect space artifacts from citizens of their own countries, there is currently no effective means in the present space law

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[5] NASA, NASA's Recommendations to Space Faring Entities: How to Protect and Preserve the Historic and Scientific Value of U.S. Government Lunar Artifacts by Robert Kelso (July 20, 2011) online: <http://www.nasa.gov/pdf/617743main_NASA-USG_LUNAR_HISTORIC_SITES_RevA-508.pdf> [NASA Recommendations].
[6] *Ibid* at 7.
[7] *Ibid* at 13.
[8] *Ibid* at 6.
[9] John Catchpole, "In Commemoration of the 25th Anniversary of the Last Apollo Lunar Mission: Future History" (1997) 39 Spaceflight 416 at 416.

regime by which a State can protect its heritage from other States.[10] Both California and New Mexico have added Tranquility Base to their list of protected heritage sites, but this solution and those proposed in the bill put forth in the U.S. House of Representatives only serve to restrict the activities of a small subset of the potential visitors to the Moon. A solution is needed to prevent the damage, destruction, loss or private appropriation of our cultural heritage in space.

B. The Concept of Cultural Heritage

The UNESCO website defines heritage as "our legacy from the past, what we live with today, and what we pass on the future generations" and states that cultural heritage is an "irreplaceable source" of inspiration.[11] The Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (hereinafter, Illicit Transfer Convention) defines 'cultural property' as "property which, on religious or secular grounds, is specifically designated by each State as being of importance for archaeology, prehistory, history, literature, art or science and which belongs to the following categories…" included in these categories is "property relating to history, including the history of science and technology and military and social history, to the life of national leaders, thinkers, scientists and artists and to events of national importance[.]"[12] The Convention Concerning the Protection of the World Cultural and Natural Heritage (hereinafter, World Heritage Convention)

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[10] Dirk H.R. Spennemann, "Extreme Cultural Tourism: From Antarctica to the Moon" (2007) 34 Ann Tourism Research 898.

[11] *World Heritage*, online: United Nations Educational, Scientific and Cultural Organization <http://whc.unesco.org/en/about/>.

[12] *Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property*, 14 November 1970 823 UNTS 231, art 1 [*Illicit Transfer Convention*].

designates both monuments "which are of outstanding universal value from the point of view of history, art or science;" and "works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view" as cultural heritage.[13] Artifacts of space exploration could fit cleanly into these definitions, notwithstanding the fact that they are at rest outside the territory of any State, and, indeed, within the "province of mankind."[14] Unfortunately, some or all provisions of the key multilateral treaties are tied specifically to the territory of a Contracting State, thus eliminating the possibility of direct application to an outer space context.[15]

C. The Problem: Structural Overview of this Thesis

1. Definitions

Some of the key difficulties with regard to the problem at hand arise as a result of the vague, seemingly all-encompassing definition of "space object." Though the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereinafter, Outer Space Treaty) solidifies ongoing ownership, jurisdiction, and control of space objects in

[13] *Convention Concerning the Protection of the World Cultural and Natural Heritage* Article 1, 16 November 1972, 1037 UNTS 151. [*World Heritage Convention*]
[14] *Outer Space Treaty, supra* note 2, art I.
[15] World Heritage Convention, *supra* note 13; UNESCO Cultural Property Convention, *supra* note 12; *Convention for the Protection of Cultural Property in the Event of Armed Conflict with Regulations for the Execution of the Convention*, 14 May 1954, 249 UNTS 240 [Hague Convention 1954]; *UNIDROIT Convention On Stolen or Illegally Exported Cultural Objects*, 24 June 1995, 34 ILM 1322 [*UNIDROIT Convention*].

Article VIII, it does not define the term. The definitions provided by the Convention on Registration of Objects Launched into Outer Space (hereinafter, Registration Convention) and Convention on International Liability for Damage Caused by Space Objects (hereinafter, Liability Convention) are not much more helpful; they merely state that the term "includes component parts of a space object as well as its launch vehicle and parts thereof."[16]

With such a vague and all-encompassing definition, it is difficult to separate space debris and space artifacts from space objects generally. To make matters even more complicated, some items which are considered to be lunar artifacts (such as the urine collection pouches left by the Apollo astronauts at Tranquility Base)[17] could otherwise be just as easily classified as space debris, and may not even qualify as "space objects" (consider whether a pouch which was carried as cargo on a space object would qualify as a "component part").

Chapter II of this Thesis discusses the interpretation of this term in detail, analyzing the uses of the term in the relevant treaties and other international instruments, using the existing discussions from prominent authors to aid in this analysis. Fundamentally, while all space artifacts are space objects, not all space objects are space artifacts; while all articles of space debris are space objects, at least in some capacity, space heritage must be distinct from space debris.

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[16] *Convention on Registration of Objects Launched into Outer Space*, 14 January 1975, 1023 UNTS 15, art I(b) [*Registration Convention*]; *Convention on International Liability for Damage Caused by Space Objects,* 29 March 1972, 961 UNTS 187, art I(d) [*Liability Convention*].

[17] Kenneth Chang, "To Preserve History on the Moon, Visitors are Asked to Tread Lightly" (9 January 2012) New York Times.

2. Interpreting and Applying the Current Space Law Regime

In accordance with the issues discussed above, Chapter III is dedicated to analyzing space law as a subset of international law, as defined in Article 38 of the International Court of Justice statute.[18] This analysis focuses on the multilateral space law treaties[19] and the customary international law of space that has developed, with a focus on the issues of non-appropriation, freedom of access and use, visits, jurisdiction and control, return of space objects, liability, the environmental protection of outer space, and the provisions of Article IX of the Outer Space Treaty.

Fundamental principles of space law, such as those embodied in Articles I and II of the Outer Space Treaty,[20] require that there be "free access to all areas of celestial bodies" [21] and that outer space "is not subject to national appropriation by any…means."[22] Classifying a heritage site, though, would have the effect of denying free access to the area required for protection of the site. The principle of non-appropriation as expressed in Article II has become part of customary international law,[23] and is therefore binding even upon those States that are not party to the Outer Space Treaty.[24] In fact, some authors have argued that the principle of non-

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[18] *Statute of the International Court of Justice*, 18 April 1946, 59 Stat. 1031. [*ICJ Statute*]
[19] *Outer Space Treaty, supra* note 2; *Agreement on the Rescue of Astronauts and the Return of Objects Launched in Outer Space*, 22 April 1968, 672 UNTS 119 [*Return and Rescue Agreement*]; Liability Convention, *supra* note 16; *Registration Convention*, *supra* note 16; *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, 18 December 1979, 1363 UNTS 3 [*Moon Agreement*].
[20] I.H. Ph. Dierdericks-Verschoor, "Space Law as it Effects Domestic Law" (1979) 7 J Space L 39.
[21] *Outer Space Treaty, supra* note 2, art I.
[22] *Ibid*, art II.
[23] Bin Cheng, *Studies in International Space Law* (Oxford: Clarendon Press, 1997) [*Studies]* at 465; Steven Freeland & Ram Jakhu, "Article II of the Outer Space Treaty" in Hobe, Schmidt-Tedd, Schrogl eds, *Cologne Commentary on Space Law. Volume I: Outer Space Treaty* (Carl Heymanns Verlag, Köln, 2010) at 45-46.
[24] *North Sea Continental Shelf (Federal Republic of Germany v Denmark; Federal Republic of*

appropriation with respect to outer space has become a *jus cogens* norm of international law, from which no derogation is permitted.[25]

As mentioned above, however, the State of registration retains jurisdiction and control of its space objects in perpetuity.[26] This fact creates difficulties, particularly with regard to immovable objects, as perpetual jurisdiction and control would seem to create a situation that would otherwise amount to an appropriation. It has also been argued, however, that "no amount of 'occupation' of (a part of) outer space can constitute an appropriation[,]"[27] and "no amount of the use of outer space will ever suffice to justify, from a legal viewpoint, a claim of ownership rights."[28] This issue must be confronted in order to successfully protect any space cultural heritage that is intended to remain in place for eternity. The issue of whether visits under Article XII of the Outer Space Treaty can be used to mitigate these issues is also discussed.

The return of space objects is an important provision for cultural heritage, as it provides a mechanism for the return of space heritage in the event that it is pilfered or otherwise removed from its resting place without the consent of the launching State. While a body of terrestrial cultural heritage law has been developed to cope with this issue, there are already built in protections for such eventuality in the Outer Space

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Germany v Netherlands), [1969] ICJ Rep 3.

[25] Imre Anthony Csabafi, *The Concept of State Jurisdiction in International Space Law* (Leiden: Martinus Nijhoff Publishers, 1971) at 47; Marjorie M. Whiteman, "Jus Cogens in International Law, with a Projected List," (1977) 7 Ga J Int'l & Comp L 609, 625-626; Freeland & Jakhu, *supra* note 23 at 55; *see also,* C. Jenks, *Space Law* (London: Stevens & Sons Ltd., 1965) at 200; C. Jenks, *The Prospects of International Adjudication* (London: Stevens & Sons Ltd., 1964) at 458 [Jenks, *Prospects*]; Cestmir Cepelka & Jamie Gilmour, "The Application of General International Law in Outer Space" (1970) 36 J Air L & Com 32 at 47.

[26] See text accompanying note 2.

[27] Freeland & Jakhu, *supra* note 23 at 54.

[28] Freeland & Jakhu, *supra* note 23 at 53; *see also* Gbenga Oduntan, *Sovereignty and Jurisdiction in the Airspace and Outer Space* (New York: Routledge, 2012).

Treaty and the Agreement on the Rescue of Astronauts and the Return of Objects Launched in Outer Space (hereinafter, Return and Rescue Agreement). Unfortunately, this protection is only available after such space heritage has already been disturbed.

It is also necessary to perform an analysis of liability with a view to cultural heritage in space. The regime of responsibility and liability established in the Liability Convention and in Articles VI and VII of the Outer Space Treaty establish the ongoing liability of a launching State for damage caused by their space objects.[29] Accordingly, there is also liability for damage done to a space object by the space object of another State if fault can be proven.[30] This regime could be used as a deterrent to help protect the integrity of heritage objects. As the objects are inherently irreplaceable, however, such rules alone are insufficient to provide comprehensive protection for such objects.

The question of environmental protection of celestial bodies is another component of the discussion of cultural heritage in space. While Article IX of the Outer Space Treaty provides for limited protection of outer space and celestial bodies (the avoidance of "harmful contamination"),[31] the meagerly ratified Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (hereinafter, Moon Agreement) applies stronger provisions in Article 7, stating that States "shall take measures to prevent the disruption of the existing balance of its environment, whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra-environmental matter, or otherwise."[32]

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[29] *Liability Convention*, *supra* note 16; *Outer Space Treaty, supra* note 2, art VI-VIII.
[30] *Liability Convention*, *supra* note 16, art III.
[31] *Outer Space Treaty, supra* note 2, art IX.
[32] *Moon Agreement*, *supra* note 19, art 7.

Sites of prior activity in outer space and on celestial bodies, if studied as they remain, could shed light on what environmental changes are caused by such activities. The Moon, for example, lacks a mechanism for environmental renewal. Unlike Earth, the Moon lacks tides, atmospheric movements, and tectonic activities, meaning that any damage caused by humans will remain indefinitely.[33] Likewise, the effects of undisturbed Earth bacteria in space could be scientifically analyzed.

Given that heritage provisions exist for natural sites on Earth, it is worth exploring whether there would be any relevance for such doctrines in space. The protection of cultural heritage and the protection of natural heritage are more linked than may be apparent on a surface level. For example, planetary protection policies can be used not only for environmental protection purposes, but also for "preservation of areas for their unique historic value, such as the Lunakhod, Apollo 11, Viking and other landing or impact sites on the Moon, Mars, and other bodies[.]"[34] The International Academy of Astronautics Cosmic Study on Protecting the Environment of Celestial Bodies includes discussion of "preservation of regions of historic value" which constitute unique examples of early lunar exploration,[35] further solidifying the link between cultural heritage and environmental protection.

Article IX of the Outer Space Treaty is arguably one of the most important provisions of the Outer Space Treaty with regard to the protection of space heritage

[33] Mark Williamson, "Space Ethics and the Protection of the Space Environment" (2003) 19 Space Pol'y 47 at 47.
[34] Patricia M. Sterns & Leslie I. Tennen, "Should There Be An Environmental 'Code of Conduct' for Activities in Outer Space?" in Proceedings of the International Institute of Space Law (Corrine M. Jorgenson ed., 2010) 268 at 269.
[35] Gerda Horneck & Charles S. Cockell, "Suggestion for a Targeted Planetary Protection Approach" in Hofmann, Rettberg, & Williamson, eds, *Protecting the Environment of Celestial Bodies* (2010, IAA Cosmic Study) 45 at 47.

("one" of the most important as jurisdiction and control seems undeniably to be "the" most important). This provision provides a mechanism for cooperation through a system of consultations designed to prevent harmful interference with space activities. When properly utilized through unambiguous expectation setting and reciprocity, this provision can provide additional protection for cultural heritage in space.

3. Existing Provisions for the Protection of Cultural Heritage

A key component of this research is the analysis of existing protections for Earth-bound cultural heritage objects and sites. These instruments are useful not only because international law is incorporated into space law through Article III of the Outer Space Treaty,[36] but also as existing frameworks that can provide evidence of which provisions are and are not effective in terms of protecting cultural heritage. Thus, Chapter IV addresses the content and functioning of existing heritage regimes on Earth. In the course of this analysis, Chapter IV evaluates and determines which Earth-based cultural heritage protections may be deemed to apply to cultural heritage in outer space.[37] Some such provisions may be useful as interim measures until the *corpus juris spatialis* can be sufficiently developed to deal with issues of cultural heritage.

This Chapter thus begins with a discussion of the relevant general cultural heritage treaties, namely the Convention for the Protection of Cultural Property in the Event of Armed Conflict (hereinafter, the Hague Convention 1954), the Illicit Transfer Convention, the Convention Concerning the Protection of the World Heritage

[36] *Outer Space Treaty, supra* note 2, art III.
[37] *Ibid*.

Convention, and the UNIDROIT Convention On Stolen or Illegally Exported Cultural Objects (hereinafter, the UNIDROIT Convention).[38] Chapter V then moves on to a comparison of the United Nations Convention on the Law of the Sea (hereinafter, UNCLOS)[39] and the Convention on the Protection of Underwater Cultural Heritage (hereinafter, Underwater Heritage Convention),[40] as well as the regime established by the Antarctic Treaty and its annexes.[41]

4. National Endeavors for the Protection of Space Heritage

This Chapter includes a discussion of the NASA Recommendations to Space-Faring Entities[42] and the Apollo Lunar Landing Act (hereinafter, "Apollo Act"),[43] as well as California and New Mexico's attempts to classify the Moon's Tranquility Base as a cultural heritage site. The NASA Recommendations are a particularly useful model, as they operate within the international space law regime in a fashion that encourages cooperation and reciprocity. These Recommendations serve as a model for States to utilize the consultation provisions of Article IX in the protection of cultural heritage. The Apollo Act is an interesting attempt at complying with international space law and utilizing international cultural heritage law. Unfortunately, this proposed bill falls short of achieving its goals. Finally, the inclusion of these sites on

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[38] *Illicit Transfer Convention*, *supra* note 12; *World Heritage Convention*, *supra* note 13; *Hague Convention 1954*, *supra* note 15; *UNIDROIT Convention, supra* note 15; *Convention for Safeguarding of the Intangible Cultural Heritage*, 17 October 2003, 2368 UNTS 1.
[39] *United Nations Convention on the Law of the Sea*, 10 December 1982, 1933 UNTS 397, art 149 [*UNCLOS*].
[40] *Convention on the Protection of the Underwater Cultural Heritage*, 2 November 2001, 41 ILM 40 [*Underwater Heritage Convention*].
[41] *Antarctic Treaty*, 1 December 1959, 19 ILM 860.
[42] NASA Recommendations, *supra* note 5.
[43] US, HR Res 2617, *Apollo Lunar Landing Legacy Act*, 113th Cong, 2013. [*Apollo Act*]

individual U.S. State heritage lists only serves to protect such heritage from the nationals of those States, but does fill an important gap in the protection of space heritage.

5. Recommending Solutions for the Future

Following the comprehensive analysis in Chapters III, IV, V, and VI, Chapter VII provides options for the preservation of cultural heritage in space moving forward, taking into account any protections that may be considered to exist in the interim. These recommendations include alternative suggestions for both unilateral and multilateral solutions, and discuss the relative likelihood of success of each such measure.

The ideal solution would be a binding multilateral treaty on cultural heritage in outer space. Given the relative lack of success of the Underwater Heritage Convention and the recent lack of success in developing binding treaties for outer space, however, this solution is, unfortunately, unlikely to come to fruition. In the absence of a new multilateral agreement, it would also be possible to revise or replace the UNESCO World Culture and Natural Heritage Convention, in accordance with the procedure laid out in Article 37 of that Treaty, in order to replace references to the States' "territory" with areas under the States' jurisdiction.[44] Though this solution would require some additional language amendments for clarity, it would be a somewhat less burdensome process than that involved in a brand new multilateral agreement. A Protocol to the Outer Space Treaty is another viable multilateral option.

[44] *World Heritage Convention*, *supra* note 13.

Even less likely to succeed is an alternative multilateral solution, in which States would voluntarily cede their space objects to the United Nations under Chapter XII of the UN Charter.[45] Though the Trusteeship Council suspended operation in 1994[46] and the primary intent of this body had been to manage territories with national populations, rather than uninhabited heritage sites, this mechanism could be utilized. Though Article II of the Outer Space Treaty prohibits national appropriation,[47] thus limiting States' jurisdiction, control and ownership to objects rather than territories (or sites), administration by the United Nations would not constitute "national" appropriation.[48] Thus, the United Nations could designate cultural heritage sites without running afoul of this provision.

A more likely multilateral approach would involve "soft law" – United Nations resolutions put forth in the Committee on the Peaceful Uses of Outer Space, rather than treaties or conventions. The development of the space law regime for the last several decades has progressed largely through such soft law instruments, such as the resolutions on Direct Television Broadcasting, Remote Sensing, and the Use of Nuclear Power Sources in Outer Space.[49] While this solution is not ideal due to its inherently non-binding nature, a non-binding resolution would at least indicate that the

[45] *Charter of the United Nations*, 26 June 1945, Can TS 1945 No 7 at XII [*UN Charter*].
[46] Bruno Simma, The Charter of the United Nations: A Commentary (Oxford: Oxford University Press, 2002) at 1129.
[47] *Outer Space Treaty, supra* note 2, art II.
[48] *Ibid*.
[49] *The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting*, UN Doc A/RES/37/92 (1982) [*Broadcasting Principles*]; *The Principles Relating to Remote Sensing of the Earth from Outer Space*, UN Doc A/RES/41/65 (1986) [*Remote Sensing Principles*]; *The Principles Relevant to the Use of Nuclear Power Sources in Outer Space* UN Doc A/RES/47/68 (1992) [*NPS Principles*].

issue is receiving international attention and could contribute to the development of customary international law, which would then be binding.[50]

The NASA approach, providing recommended parameters for those entities engaging in space activities near their lunar artifacts,[51] could arguably create a duty to consult under Article IX of the Outer Space Treaty, which states

> "[i]f a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment."[52]

As NASA provides clear guidelines for what activities they believe will harmfully interfere with their activities, a State acting contrarily to those Recommendations "shall conduct consultations" if they wish to avoid a breach of their international obligations under the Outer Space Treaty. As an interim solution, States should clearly specify, in such unilateral instruments, what activities they believe will harm their activities in outer space in order to create a strong link to Article IX of the Outer Space Treaty.

As there are relatively few space-faring nations, bilateral agreements are another potential solution to the heritage problem. The major space-faring States could enter into such agreements directly in order to protect their space assets. This is a solution that has been utilized in the field of space law in the past.[53]

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[50] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. U.S.)*, [1986] ICJ Rep 14 at 44.
[51] NASA Recommendations, *supra* note 5.
[52] *Outer Space Treaty, supra* note 2, art IX.
[53] Neil S. Hosenball, "Bilateral Agreements" in Nandasiri Jasentuliyana & Roy S.K. Lee,

Finally, from a unilateral perspective, as technology progresses, it would be possible for a State to build a facility around their cultural heritage site, such as the United States' Tranquility Base. This would enable the State to claim jurisdiction, control and ownership of the contents of the facility, without a need for discussion of "keep out zones" or the extent of functional jurisdiction. Unfortunately, this solution is both financially burdensome and regressive from an international law perspective. While it could be an effective solution if used sparingly and cooperatively, widespread use of this tactic could be considered a violation of Article I of the Outer Space Treaty, in that it would arguably not function for the benefit and in the interests of all States.[54]

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eds, *Manual on Space Law Volume I* (Dobbs Ferry: Oceana Publications, 1979) at 356.
[54] *Outer Space Treaty, supra* note 2, art I.

Chapter II. Space Objects and Space Heritage

"The notion of 'heritage' is inchoate, has been abused, and causes some to break out in a rash."[55]

A. What is a Space Object?

The definition of the term "space object" is critical to understanding the issues discussed in this Thesis, particular given that rules regarding State jurisdiction, registration and liability function primarily by reference to this term.[56] Likewise, it is critical to understand which objects comprise space objects in determining which space objects may be classified as space heritage.

The term "object launched into outer space" or "space object" is used by the Outer Space Treaty to refer to articles that may be launched into space.[57] Article XII uses the terms "stations, installations, equipment and space vehicles[,]" though this use is narrower in scope than other references to space objects as it is intended to limit the range of objects on celestial bodies to which other parties will have a right to visit. The Outer Space Treaty uses the term "objects" most frequently, but the diversity of terminology "seems to indicate that no consideration was given to the uniformity of

[55] Francis Lyall, "OST Art. IX, Improvements: Cultural and Natural Heritage Elements" in *Proceedings of the International Institute of Space Law* (Reston: American Institute of Aeronautics and Astronautics, 2011) 657 at 661. [Lyall, "OST Art. IX"]
[56] Cheng, *Studies, supra* note 23 at 463.
[57] *Outer Space Treaty, supra* note 2, arts IV, VII, VIII & X.

terminology by the UN-COPUOS."[58] The Return and Rescue Agreement uses the terms "space object" and "spacecraft" (for a space object carrying personnel).[59]

The Liability Convention is, from a temporal perspective, the first of the space conventions to provide a definition of the term "space object," though the definition is self-referential. Here, the term is defined to include "component parts of a space object as well as its launch vehicle and parts thereof."[60] The Registration Convention utilizes an identical definition.[61] These two conventions both consistently use the term "space object."

The Moon Agreement, however, uses the terms personnel, vehicles, equipment, facilities, stations and installations[62] rather than "space object" except with regard to landing on and launching from the Moon, and aggression conducted from the Moon to other objects.[63] The question remains as to "whether the various items enumerated there are 'space objects' and, if so, whether they are separate and independent space objects distinct in legal identity from the space object that brought these items to the moon."[64] It seems most likely that these terms were used to provide additional granularity for certain types of space objects -- creating rules with respect to particular categories of objects -- rather than excluding them from the meaning of 'space object' entirely. This resolution of the question with regard to the definition of space object as

[58] Csabafi, *supra* note 25 at 11.
[59] *Return and Rescue Agreement, supra* note 19, arts 1-5.
[60] *Liability Convention, supra* note 16, art I(d).
[61] *Registration Convention, supra* note 16, art I(b).
[62] *Moon Agreement, supra* note 19, arts 3.4, 8.2(b), 9, 12, & 15.
[63] *Ibid,* arts 3.2., 8.2(a), & 13.
[64] Cheng, *Studies*, *supra* note 23 at 503.

contained in the Moon Agreement is largely moot, given the small number of ratifications, which do not include any of the major space powers.[65]

In light of the shifting of terminology in the Outer Space Treaty, "[o]ne wonders…whether there are objects launched into outer space that are not 'space objects', and whether the two expressions 'space objects' and 'objects launched into outer space' are in fact coterminous."[66] Given the consistency with which the term "space object" is applied in both the Liability Convention and Registration Convention, which are more recent agreements than the Outer Space Treaty, and the fact that none of the space treaties provide any insight into the differences between "objects launched into space," "space objects," or any other variant of the term, any distinction appears to be one without intent.[67]

The term space object can be abstruse and lead to misinformed interpretations.[68] Despite the attempt at providing a definition of the term, the Liability and Registration Conventions merely provide some insight as to what can be included in the definition, but not what should be excluded. "The expression 'space object' is…not specifically defined in any of the conventions relating to outer space established under the auspices of the United Nations, notwithstanding efforts to do so in the negotiations leading to the Liability Convention and the Registration Convention."[69]

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[65] *Status of International Agreements Relating to Activities in Outer Space as at 1 January 2013*, COPUOS, UN Doc A/AC.105/C.2/2013/CRP.5 (2013) [*Agreement Status*].
[66] Cheng, *Studies*, *supra* note 23 at 493.
[67] *Ibid* at 495.
[68] E.R.C. van Bogaert, *Aspects of Space Law* (London: Kluwer Law and Taxation Publishers, 1986) at 118.
[69] Cheng, *Studies*, *supra* note 23 at 464

Following the rule *definition fiat per genus proximum et differentiam specificam*, 'object' is the general term which is modified by 'space;'[70] and in the context of the space treaties, must also be modified by and include 'its component parts.'[71] "[I]nsofar as stray objects are concerned, the various treaties consistently include component parts."[72] Therefore, the term "space object" automatically includes component parts unless contextually indicated otherwise.[73] Likewise, payload is "property on board" a space object "forming part of that space object and would not be an independent space object. This would in fact apply to all items of property on board."[74] This explanation resolves the issue with regard to waste left behind by the Apollo missions; such items are included within the meaning of 'space object.'

"From the legal standpoint, 'space object' is, in current practice, the generic term used to cover spacecraft, satellites, and in fact anything that human beings launch or attempt to launch into space, including their components and launch vehicles, as well as parts thereof."[75] With regard to the space treaties, Stephen Gorove considers that the most likely acceptable definition of "space object" would be "an object launched or attempted to be launched in orbit around the earth or beyond[;]" he adds that inserting "or a part of it" after "object" would be in accordance with the definitions provided in the Liability Convention and Registration Convention.[76]

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[70] Gyula Gal, "Space Objects – 'While in Outer Space'" in *Proceedings of the International Institute of Space Law* (Reston: American Institute of Aeronautics and Astronautics, 1995) 84 at 84.
[71] Csabafi, *supra* note 25 at 11.
[72] Cheng, *Studies*, *supra* note 23 at 500
[73] *Ibid*.
[74] *Ibid* at 501-502.
[75] *Ibid* at 463.
[76] Stephen Gorove, "Evaluating Policy Alternatives Pertaining to the Legal Definition of 'Space Object.'" in *Proceedings of the International Institute of Space Law* (Reston: American Institute of Aeronautics and Astronautics, 1996) 266 at 267.

According to Manfred Lachs, however, the definition of space object should "include any object designed: 1. to be placed: (a) in orbit as a satellite of the earth, the moon, or any other celestial body; (b) on the moon or any other celestial body; 2. to traverse some other course to, in or through outer space."[77] Perhaps the most suitable definition of the term would combine both Gorove's and Lach's definitions: 'any object or a part of it designed to be placed: in orbit as a satellite of the earth or any celestial body, on any celestial body, or to traverse some other course to, in or through outer space.' Of course, the difficulty arising from any of these definitions is the lack of line of demarcation as to where air space ends and outer space begins, which is an issue beyond the scope of this Thesis.[78]

When does a space object become a space object? Under the definitions discussed above, the fact that an object is either designed to be launched or attempted to be launched into outer space is sufficient. While certain authors have stated the view that "merely because a certain man-made object is or has been at an altitude which is indisputably considered to be in outer space is not, by itself, a sufficient justification for it to be legally qualified as a space object,"[79] it seems that unless there is an obvious distinction, any attempt to create such a division would only result in unnecessary ambiguity and confusion, particularly given the inherent inclusion of component parts. It is more logically sound to include all objects that have, in fact, traversed outer space within the definition. "[T]he term space object designates any object which humans launch, attempt to launch or have launched into outer space. It

[77] Manfred Lachs, *The Law of Outer Space* (Leiden: Sijthoff, 1972) at 69.
[78] For discussion of this issue, see Oduntan, *supra* note 28.
[79] Gal, *supra* note 70 at 85 citing A.D. Terekhov, "Passage of Space Objects through Foreign Airspace" in *Proceedings of the International Institute of Space Law* (Reston: American Institute of Aeronautics and Astronautics, 1996) at 52.

embraces satellites, spacecraft, space vehicles, equipment, facilities, stations, installations and other constructions, including their components, as well as their launch vehicles and parts thereof."[80]

"Does a space object ever cease to be a space object, and if so, when?...One can probably say that they do not cease to be such until perhaps they have been dismantled or otherwise disposed of[;]"[81] in other words, "[t]here is no apparent time limit."[82] The status of an object as a space object is not affected by its presence in outer space, on a celestial body, or upon return to earth, as stated in the Outer Space Treaty;[83] at this point "these provisions may be regarded as merely declaratory of the position under general international law."[84]

B. What is Space Debris?

The definition of the term space object "does not make the distinction between functional objects and non-functional objects (debris)."[85] Given the emphasis that is placed on space debris in the current dialogue on the state of the space environment, it is important to understand the meaning of "space debris" so that such debris can be differentiated from space heritage.

> In endeavoring to arrive at a working description of 'debris' one can look at the place or places where it is found, the circumstances under which it came to be situated there, the intent of the launching authority which placed the unitary space object initially into orbit, the physical characteristics of the debris, the adversity resulting to functioning space

[80] Cheng, *Studies*, *supra* note 23 at 464
[81] *Ibid* at 504.
[82] *Ibid* at 505.
[83] *Outer Space Treaty, supra* note 2, art VIII.
[84] Cheng, *Studies*, *supra* note 23 at 466.
[85] Aldo Armando Cocca, "Convention on Registration of Objects Launched into Space" in Nandasiri Jasentuliyana & Roy S.K. Lee, eds, *Manual on Space Law Volume I* (Dobbs Ferry: Oceana Publications, 1979) 173 at 180.

> objects and to the community at large from the presence of the debris, and the range of responses available to the launching authority and to other concerned international legal persons, including other States and international intergovernmental organizations, both universal and regional, as well as consortia of States which anticipate detriment as a result of the existence of the debris.[86]

"[T]here is no reason to think that non-functional space objects are no longer space objects. The definition of space object is not related to the object's use or usefulness[,]"[87] however, a "space object can become debris in the event that it becomes non-functional, or is abandoned by the launching authority, or both."[88] Therefore, an object can be both a space object and a piece of space debris simultaneously; these definitions are not mutually exclusive. In fact, for liability to be maintained by the launching State, an article of space debris must also be a space object.[89]

Francis Lyall and Paul Larsen maintain that the inclusion of "component parts" and the "launch vehicle and parts thereof" in the provided definitions of space object mean that debris is included within the meaning of the term "space object."[90] There is nothing to suggest that objects such as paint flakes or pieces of fuel tanks would be treated any differently under the space law regime than fully in tact space objects.[91]

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[86] Carl Q. Christol, *Space Law: Past, Present, and Future* (Deventer: Kluwer Law and Taxation Publishers, 1991) at 250 [Christol, *Space Law*].
[87] Cheng, *Studies*, *supra* note 23 at 506.
[88] Christol, *Space Law*, *supra* note 86 at 51.
[89] *Liability Convention, supra* note 16 at 3.
[90] Francis Lyall, & Paul B. Larsen, *Space Law: A Treatise* (Burlington: Ashgate Publishing Company, 2009) at 86.
[91] Cheng, *Studies*, *supra* note 23 at 506.

From a liability perspective, it would be desirable to include all manners of debris in an expansive interpretation of space object and its component parts.[92]

Many definitions suggest that control is a significant factor in determining whether or not an object can be categorized as space debris;[93] some other key terms used in the discussion of space debris are: hazardous, dangerous, destructive and unsafe.[94] The functionality (or lack thereof) of a space object, as we have seen, is another important factor used by authors in determining whether an item can be qualified as space debris. One example is as follows: "any man-made Earth-orbiting object which is non-functional with no reasonable expectation of assuming or resuming its intended function or any other function for which it is or can be expected to be authorized, including fragments and parts thereof."[95]

Though one author defines space debris as "natural or human made particles that circle the Earth[,]" using 'orbital debris' as an interchangeable term,[96] this does not appear to be a sensible approach from the perspective of this Thesis. For the liability regime to function properly, articles of space debris, like space objects, should not be affected by their presence on a celestial body, nor should they be impacted by their return to earth. The UN COPUOS Space Debris Mitigation Guidelines likewise define space debris as "all man-made objects, including fragments and elements thereof, in

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[92] Lawrence D. Roberts, "Addressing the Problem of Orbital Space Debris: Combining International Regulatory and Liability Regimes" (1992) 15 BC Int'l & Comp L Rev 51 at 64.
[93] Christopher D. Williams, "Space: The Cluttered Frontier" (1995) 60 J Air L & Com 1139, 1151.
[94] James D. Rendleman, "Non-cooperative Space Debris Mitigation" in Proceedings of the International Institute of Space Law (Corrine M. Jorgenson ed., 2010) 299.
[95] Vladimir Kopal, "Some Remarks on Issues Relating to Legal Definitions of 'Space Object', 'Space Debris' and 'Astronaut'" in *Proceedings of the International Institute of Space Law* (Reston: American Institute of Aeronautics and Astronautics, 1995) 99 at 103.
[96] Robert C. Bird, "Procedural Challenges to Environmental Regulation of Space Debris" (2003) 40 Am Bus LJ 635, at 637.

Earth orbit or re-entering the atmosphere that are non-functional."[97] While the limitation of the definition of debris to Earth orbit and re-entry is sensible for the purposes of these mitigation guidelines, a definition that is viable in the long-term, as exploration and use of celestial bodies is likely to continue, and should have the scope to include objects on celestial bodies or in space beyond Earth orbit. This scope is necessary to properly distinguish space debris from cultural heritage.

For the purpose of this Thesis, the following definition shall apply: any space object, including parts of a space object, which is non-functional and over which an appropriate State is not actively exerting its control, either legally in terms of jurisdiction, or actually in terms of technical control, that is likely to pose a threat to the continued safe navigation and use of outer space or a celestial body. It is useful to note that as technology improves, it may be possible for a once non-functional object to be repaired or refueled, causing it to cease being space debris. Importantly, from a heritage perspective, objects that are "rubbish" lose value over time until they are valueless;[98] this distinction proves useful for the purposes of this discussion.

C. What is Space Heritage?

The lack of agreed upon definitions in international law for the terms "cultural heritage," "cultural property," or "cultural heritage of mankind" creates a difficulty in terms of defining exactly which space objects could comprise heritage.[99] Even in

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[97] *Official Records of the General Assembly, Sixty-second Session, Supplement No. 20* (A/62/20), Annex.
[98] John Carman, *Valuing Ancient Things: Archaeology and the Law* (London: Leicester University Press, 1996) at 29.
[99] Janet Blake, "On Defining the Cultural Heritage" (2000) 49 ICLQ 61 at 63Blake, "Defining"].

terms of the UNESCO conventions, there is no common definition of cultural heritage or cultural property; each convention uses the definition most applicable to the specific concepts enshrined within the scope of that convention.[100] The individual definitions in each relevant convention are discussed in more detail in Chapter IV, in determining whether those conventions can be applied as-is to space heritage. As the concept of heritage is not mentioned anywhere in the Outer Space Treaty, providing no additional insight,[101] it is necessary to define the concept for the purposes of this Thesis. Merely defining the terms "culture" and "heritage" and using them to modify one another creates a definition that is far too broad to be useful.[102]

Over time, cultural heritage has shifted from a concept applied primarily only to high culture - such as great works of art and architecture – to a broader term that includes more mundane artifacts that express the identity of a society generally.[103] There is no doubt at this stage that scientifically or historically important materials can be included within the concept of cultural heritage.[104] These are the categories of heritage into which space heritage would fit.

Cultural heritage is a "form of inheritance to be kept in safekeeping and handed down to future generations."[105] The protection of cultural heritage is an attempt to prevent "the eternal silence created by the destruction of culture."[106] Thus, cultural

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[100] Manlio Frigo, "Cultural Property v. Cultural Heritage: A 'Battle of Concepts' in International Law?" (2004) 86 IRRC 367 at 375.
[101] *Outer Space Treaty, supra* note 2; Walsh, *supra* note 1 at 236.
[102] Blake, "Defining," *supra* note 99 at 67-68.
[103] *Ibid* at 72.
[104] See *Hague Convention 1954, supra* note 15 at 1; *Illicit Transfer Convention, supra* note 12 at 1; *World Heritage Convention, supra* note 13 at 1; *Convention for the Protection of the Architectural Heritage of Europe*, 3 October 1985, CETS No 121 at 1; *UNIDROIT Convention*, *supra* note 15 at 2.
[105] Blake, "Defining," *supra* note 99 at 83.
[106] Manfred Lachs, "The Defenses of Culture" (1985) 37 Museum Int'l 167 at 168.

heritage is a means of attaining immortality for those who create it, and a means of understanding one's past for those who consume it; it is a form of survival.[107] "Heritage creates a perception of … something to be cared for and cherished. These cultural manifestations have come down to us from the past they are our legacy from our ancestors. There is today a broad acceptance of a duty to pass them on to our successors, augmented by the creations of the present."[108] This concept of inheritance that is kept safe for future generations is the first element of any definition of the concept of cultural heritage.[109]

Cultural heritage provides a deliberate continuity, representing the desired connection that a political society wishes to maintain and hand down.[110] In this way, it is part of a group's shared identity. This symbolic linkage with the shared identity of a people is a second essential element of cultural heritage, establishing the emotional value of the object or site.[111] The law serves a gate-keeping function with regard to heritage objects; by selecting, categorizing, and valuing objects, the law defines heritage and attempts to guarantee appropriate treatment.[112] "Not everything can, or should, be preserved. The choice depends on numerous factors: the nature of the material in question, its rarity; its significance as illustrating development of the human condition."[113]

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[107] John Henry Merryman, "The Public Interest in Cultural Property" (1989) 77 Cal L Rev 339 at 347-349 [Merryman, "Public Interest"].
[108] Lyndel V. Prott & Patrick J. O'Keefe. "'Cultural Heritage' or 'Cultural Property'?" (1992) 1 Int'l J of Cultural Prop 307 at 311.
[109] Blake, "Defining," *supra* note 99 at 69 & 83-84.
[110] R. Williams, *Culture* (Glasgow: Fontana, 1982) at 187.
[111] Blake, "Defining", *supra* note 99 at 84.
[112] Carman, *supra* note 98 at 40.
[113] Prott & O'Keefe, *supra* note 108 at 309.

Cultural heritage is also "a base from which progress in cultural achievement becomes possible."[114] Given the significant lag in manned space exploration since the Apollo missions, the protection of this solid base (literally and figuratively) is critical to ensuring a renewed commitment to outer space activities.

1. Space Heritage Objects

Much like space debris, articles of space heritage are still space objects; "an artificial satellite in a museum that has been to outer space and back probably still ranks as a space object."[115] Contrary to space debris, however, heritage objects are said to be durable, in that they "are deemed to have a permanent existence and constantly increasing value" – this characteristic distinguishes heritage from objects which instead decrease in value and thus are reduced to "rubbish."[116]

Given the large volume of man-made orbiting items and equipment fragments, it can be difficult to consider such utilitarian space objects as heritage deserving of preservation.[117] It is clear, however, that certain space objects should qualify as heritage within the context described above. Many of these objects are already in museums (such as the Space Shuttle Discovery which is on display at the Smithsonian Institute), but this Thesis is concerned with the objects which remain in outer space or on celestial bodies. Objects such as the lunar laser ranging retroflector array from the Apollo 11 mission, along with other instruments placed on the Moon's surface during the initial stages of lunar exploration, should be preserved for their historic

[114] Merryman, Public Interest, *supra* note 107 at 354.
[115] Cheng, *Studies*, *supra* note 23 at 505
[116] Carman, *supra* note 98 at 29.
[117] Walsh, *supra* note 1 at 235.

importance.[118] Likewise, the rovers that have been placed on the surface of Mars should be preserved for their historic value. Generally speaking, those objects that represent major space "firsts" or leaps forward in space technology should be preserved as heritage objects.

In practical terms, however, the term 'space heritage' would apply primarily to those objects landed on celestial bodies for the purposes of *in situ* preservation. *In situ* preservation of space heritage objects actually in the vacuum of space should only be undertaken in circumstances where the placement and natural movement of such an object will not interfere with other space activities. Given that objects in space (not on a celestial body) are not motionless, such objects are likely to present a much higher danger to other space objects than those on celestial bodies. Thus, for the safety of both the heritage object and any other objects operating in the same vicinity, such heritage should be relocated for preservation. The preservation of the heritage's context is also not as important in the vacuum of outer space; as the object is in motion, and therefore has likely moved from its original position. Thus, there is not much in the way of context to be preserved. This situation starkly contrasts with heritage objects on celestial bodies, which are stationary and can be easily disturbed by changes to the landscape from the impact of landings, rover tracks, and footsteps.

Fundamentally, however, it is the responsibility of the launching State or the launching authority to determine a space object's status as heritage. Such State retains jurisdiction, ownership, and control of the object, as well as liability for any damage caused by the object, and thus is responsible for its fate.[119]

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[118] Horneck, *supra* note 35.
[119] For further discussion of this topic, see Chapter III.G. and III.I. above.

There is extensive evidence that, generally speaking, people care about cultural objects: the popularity of museums; the existence of laws regarding preservation, conservation, and export; and the dialogue about cultural heritage in both national and international law.[120] The popularity of museums displaying space heritage objects reflects that people feel a concern about this form of heritage in particular.[121]

2. Space Heritages Sites

In selecting what constitutes heritage, the law provides delineation between heritage objects and heritage sites. While whole objects or their parts are classified as heritage objects, the context in which these individual components exist can create sites.[122] "The site comprising a vehicle or vessel (so long as it is of 'public interest')" can be classified as just such a site.[123]

There are several sites on the surface of the Moon that are of unique value due to their connection to early lunar exploration.[124] The Apollo 11 landing site provides "a complete record of the first human activity on any celestial object outside of earth…This is the ultimate heritage site, both in terms of significance of humanity as a whole, but also in terms of heritage preservation of a single site."[125] There are also five additional Apollo manned landing sites that should be considered heritage sites.[126] A lunar map pinpointing these sites is located in the Annex to this Thesis.

> Each Apollo lunar landing site retains the landing stage (base) of the lunar modules (LM), instruments packages (EASEP or ALSEP), the

[120] Merryman, "Public Interest," *supra* note 107 at 343.
[121] Walsh, *supra* note 1 at 235.
[122] Carman, *supra* note 98 at 120.
[123] *Ibid* at 187.
[124] Horneck, *supra* note 35.
[125] Spennemann, "Cultural Tourism," *supra* note 10 at 909.
[126] *Ibid* at 912.

> lunar rovers (Apollo 15-17 only), TV and film camera equipment, scientific sampling equipment jettisoned after samples had been collected, as well as sundry parts of equipment, such as components of the space suits used by the astronauts during their Moon walks as well as expended food packaging and containers of human body waste.[127]

From this description, it should be clear that the context of such a site, providing a clear map of movements and activities, is arguably as important if not more important the objects located at the site. A map of Tranquility Base, demonstrating this context, can be found in the Annex to this Thesis. In the words of Francis Lyall, "it makes no sense to protect artifacts without protecting the site of their location."[128] The determination of space heritage sites will have to be performed on a case-by-case basis, balancing the value of the site with the freedom of access to outer space.

[127] Dirk H.R. Spennemann, "The Ethics of Treading on Neil Armstrong's Footprints" (2004) 20 Space Pol'y 279 at 282.
[128] Lyall, "OST Art. IX," *supra* note 55.

Chapter III. International Space Law

> *The overriding and all-pervasive principle of good faith, the binding force of custom, the scope for the application of general principles of law, the general concept of law as a living growth rather than as a body of hard and fast rules in a state of arrested development; all of these have their contribution to make to the basic intellectual structure of the law of space.*[129]

International space law governs any cultural heritage that falls within its regimen. Thus, in conjunction with any relevant cultural heritage law (which is discussed in Chapter IV of this Thesis), it provides the legal regime currently applicable to the protection of such space heritage. "[S]pace law, as it now exists, is not an independent legal system. It is merely a functional classification" of those rules of international and municipal law governing outer space.[130] The sources of space law are the same as those found in international law generally.[131] These sources are articulated in Article 38(1) of the Statute of the International Court of Justice:

> a. international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
> b. international custom, as evidence of a general practice accepted as law;
> c. the general principles of law recognized by civilized nations;
> d. subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.[132]

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[129] Jenks, *Space Law, supra* note 25 at 205.
[130] Cheng, *Studies*, *supra* note 23 at 383.
[131] P.P.C. Haanappel, *The Law and Policy of Air Space and Outer Space: A Comparative Approach* (The Hague: Kluwer Law International, 2003) at 183.
[132] *ICJ Statute, supra* note 18, art 38(1).

Thus, treaties, customary international law, and general principles of law act as the primary sources of space law, while judicial decisions and the writings of jurists act as subsidiary means for the determination of rules of law.

A. Treaty Law

The Outer Space Treaty, the oldest and most comprehensive of the treaties governing space law, is the cornerstone of space law.[133] This treaty has been ratified by 102 States and signed by an additional twenty-six, demonstrating its near-universal acceptance.[134] All of the major space-faring States have acceded to this Treaty. Articles I, II, and III of the Outer Space Treaty are considered to be fundamental principles of space law.[135] It is Article III that establishes the unquestionable applicability of international law to the realm of outer space. This Article states that:

> States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding.[136]

Therefore, in any discussion of space law, it is important to note other relevant provisions in international law that may have an impact. It is due to this provision also that we can consider international cultural heritage law as relevant to outer space.

In addition to international law generally, it is also important to consider that "the law relating to the conclusion, validity, effect, interpretation and discharge of treaties and other international agreements applies to treaties and agreements covering

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[133] Lyall & Larsen, *supra* note 90 at 53.
[134] *Agreement Status, supra* note 65 at 11.
[135] Dierdericks-Verschoor, *supra* note 20 at 42; Lyall & Larsen, *supra* note 90 at 458.
[136] *Outer Space Treaty,* art III.

space matters."[137] Though the Vienna Convention on the Law of Treaties (hereinafter, Vienna Convention) came into force after the drafting of the outer space treaties, it can still be applied to the extent that the principles enshrined therein represent rules of customary international law.[138] The International Court of Justice has confirmed that Articles 31 and 32 of the Vienna Convention, the relevant provisions regarding treaty interpretation, represent customary international law.[139]

The Return and Rescue Agreement, Liability Convention, and Registration Convention all elaborate specific aspects of the Outer Space Treaty. These conventions, with ninety-two, eighty-nine, and fifty-nine ratifications respectively, provide more detailed rules relating to return and rescue, liability, and registration requirements.[140] Unlike the Outer Space Treaty, the Return and Rescue Agreement does not offer much benefit to non-space-faring States,[141] which may account for the small disparity in ratifications between the two treaties.

The Moon Agreement, the most recent and least subscribed of the outer space treaties (with a mere fifteen ratifications), provides the least value in terms of binding rules of treaty law. The provisions contained within this Agreement bind only those fifteen parties. Somewhat misleadingly, the Moon Agreement does, in fact, apply to

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[137] Jenks, *Space Law, supra* note 25 at 205.
[138] M. Fitzmaurice, O. A. Elias & Panos Merkouris, *Issues of Treaty Interpretation and the Vienna Convention on the Law of Treaties: 30 Years On* (Leiden: Martinus Nijhoff Publishers, 2010) at 5; Freeland & Jakhu, *supra* note 23 at 48; see *Vienna Convention on the Law of Treaties*, 23 May 1969, 1155 UNTS 331, art 31-32 [*Vienna Convention*].
[139] *Case Concerning the Territorial Dispute (Libyan Arab Jamahiriya v. Chad),* Judgment, [1994] ICJ Rep 6 at 41; *Case Concerning Maritime Delimitation and Territorial Questions (Qatar v Bahrain)*, Judgment, [1995] ICJ Rep 6 at 33; *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, [2004] ICJ Rep 136 at 94.
[140] *Agreement Status, supra* note 65 at 11.
[141] Roy S.K. Lee, "Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space" in Nandasiri Jasentuliyana & Roy S.K. Lee, eds, *Manual on Space Law Volume I* (Dobbs Ferry: Oceana Publications, 1979) 53 at 73.

all celestial bodies in the solar system for which no specific international agreement has been reached.[142] Thus, for example, the Moon Agreement would apply to the proposed activities of the Netherlands on Mars,[143] a State which is party to the Agreement.[144]

B. Customary International Law

Customary law, as a component of international law, has a role to play in space law as well. "'[I]nternational custom' means really that part of the applicable rules and norms of the international legal system that is not covered by treaties (sub-paragraph (a)) or the general principles of law (sub-paragraph (c)).'"[145] The two elements of customary international law are State practice and *opinio juris*. "[O]pinio juris is the view that is held by, or that may be said, with effect opposable to that state, to be held by, a state as to what the law is at any given moment."[146]

For the purposes of customary international law under sub-paragraph (b) of Article 38 of the Statute of the International Court of Justice, acceptance by a generality of States is sufficient to form customary international law; acceptance by all States is not required.[147] In an area where few States have had the capability to demonstrate a consistent practice, the practice of those prevalent States able to

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[142] *Moon Agreement, supra* note 19, art 1(1).
[143] MarsOne, "Mars One Will Settle Men on Mars in 2023 – Press Release" online: < http://mars-one.com/en/component/content/article/11-news/284-mars-one-will-settle-men-on-mars-in-2023-press-release?highlight=YToxOntpOjA7czoxMToibmV0aGVybGFuZHMiO30=>
[144] *Agreement Status, supra* note 65 at 8.
[145] Bin Cheng, "Custom: The Future of General State Practice in a Divided World" in R. St.J. Macdonald & Douglas M. Johnston, eds, *The Structure and Process of International Law: Essays in Legal Philosophy Doctrine and Theory* (Dordrecht: Martinus Nijhoff Publishers, 1986) 485 at 513. [Cheng, *Custom*]
[146] *Ibid* at 548.
[147] *Ibid* at 549.

demonstrate such practice is sufficient to form the basis of a rule of customary law.[148] "As regards the question who constitutes the prevalent or dominant section of any society, it may be said that this consists basically of those who have the intention of making their will prevail and the ability to do so."[149] According to Bin Cheng, "what is critical is whether it has been accepted by those among the states concerned which have both the ability and the will to uphold it, whenever the rule is, to their detriment, not being observed."[150]

With regard to subsidiary sources of international law, "the more the field is covered by decided cases the less becomes the authority of commentators and jurists."[151] The corollary, therefore, is also true: the less the field is covered by decided cases, the authority of commentators and jurists is greater.[152] Thus, where there is very little case law in the area of space, the importance of jurists' writings is more and can be further reliably utilized.

In a field as relatively young as space law, how does customary international law come into being? "[T]he adoption of a soft law instrument is only the first step toward the establishment of a binding legal regime."[153] The International Court of Justice has recognized that a treaty provision can accurately reflect customary international law under two circumstances: when it codifies existing customary

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[148] *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion,* [1996] ICJ Rep 226; Vaughn Lowe, *International Law* (Oxford: Oxford University Press, 2007) at 83.
[149] Cheng, *Custom*, *supra* note 145 at 545.
[150] *Ibid* at 547.
[151] *Kronprinsessan Margareta*, UK Privy Council, [1921] 1 AC 486.
[152] Virgilu Pop, *Who Owns the Moon? Extraterrestrial Aspects of Land and Mineral Resources Ownership* (New York: Springer, 2008) at 44.
[153] Francesco Francioni, "Beyond State Sovereignty: The Protection of Cultural Heritage as a Shared Interest of Humanity" (2004) 25 Mich J Int'l L 1209 at 1227.

international law, or when such provision crystallizes emerging customary law.[154] Many of the provisions of the Outer Space Treaty satisfy these requirements. The Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space created binding norms, which were subsequently enumerated and elaborated in the Outer Space Treaty.[155] Through direct consent provided by States in the passing of this Resolution, along with the total absence of protest, space-faring States have crafted binding norms of customary international law.[156]

Some standards, such as UN COPUOS Space Debris Mitigation Guidelines, have begun to play an important role both for cultural heritage law and space law. "While standards are not traditionally mentioned among the sources of international law…they have become more influential in shaping state conduct in regard to international relations."[157]

C. Jus Cogens

[154] *North Sea Continental Shelf, supra* note 24 at 25; Lowe, *supra* note 148 at 83 (2007).
[155] Lachs, *Outer Space, supra* note 77 at 138; Bin Cheng "United Nations Resolutions on Outer Space: 'Instant' Customary Law?" (1965) 5 Indian J Int'l L 23 [Cheng, "Instant Customary Law"]; Ivan A. Vlasic, *A Space Treaty: A Preliminary Evaluation*, (1967) 55 Cal L Rev 507 at 508-09; S. Vladlen Vereshchetin & Gennady M. Danilenko, "Custom as a Source of International Law of Outer Space" (1985) 13 J Space L 22 at 33, Ram Jakhu & Maria Buzdugan, "Development of the Natural Resources of the Moon and Other Celestial Bodies" (2008) 6 Astropolitics 201 at 217; Ricky J. Lee, "Reconciling International Space Law with the Commercial Realities of the Twenty-first Century" (2000) 4 Sing JICL 194 at 204.
[156] Lachs, *Outer Space, supra* note 77 at 138.
[157] Valentina Sara Vadi. "Investing in Culture: Underwater Cultural Heritage and International Investment Law" (2009) 42 Vand J Transnat'l L 853 at 866.

Jus cogens norms of international law are absolute obligations, derogation from which can not be justified.[158] Such norms are identified in Article 53 of the Vienna Convention:

> A treaty is void if, at the time of its conclusion, it conflicts with a peremptory norm of general international law. For the purposes of the present Convention, a peremptory norm of general international law is a norm accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character.

Thus, an important element of *jus cogens* is that acceptance and recognition must flow from the whole of the international community.[159] There are several provisions of the Outer Space Treaty that, it has been argued, have become *jus cogens* norms of international space law. Such arguments are noted with regard to the relevant provisions below.

D. Non-Appropriation

The principle of non-appropriation as articulated in Article II of the Outer Space Treaty is considered a norm of customary international law.[160] It has also been argued that this provision is a *jus cogens* norm, or peremptory norm, of international law.[161]

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[158] Whiteman, *supra* note 25 at 610; Carl Q. Christol, "Judge Manfred Lachs and the Principle of Jus Cogens" (1994) 22 J Space L 33.
[159] *Ibid* at 37.
[160] Eilene Galloway, "Maintaining International Space Cooperation for Peaceful Uses" (2004) 30 J Space L 311 at 312; Cheng, *Studies*, *supra* note 23 at 465; Freeland & Jakhu, *supra* note 23 at 46; Pop, *supra* note 152 at 38; Ricky J. Lee, "Article II of the Outer Space Treaty and Human Presence on Celestial Bodies: Prohibition of State Sovereignty, Exclusive Property Rights, or Both?" in *Proceedings of the International Institute of Space Law* (Reston: American Institute of Aeronautics and Astronautics, 2006) 95 at 98-99 [Lee, *Article II*]; Lyall & Larsen, *supra* note 90 at 71; Kenneth F. Schwetje, "Protecting Space Assets A Legal Analysis of Keep-Out Zones" (1987) 15 J Space L 131 at 141.
[161] Csabafi, *supra* note 25 at 47; Whiteman, *supra* note 25 at 625-626; Freeland & Jakhu, *supra* note 23 at 55; *see also,* Jenks, *Space Law, supra* note 25 at 200; Jenks, *Prospects, supra*

The text of Article II is as follows: "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." In international law, "[o]ccupation, as an original mode of acquisition of state territory, is effected through taking possession of, and establishing an administration over territory in the name of and for the acquiring state."[162] Thus, the use and administration over territory in outer space will not substantiate the acquisition of that territory; "no amount of the use of outer space will ever suffice to justify, from a legal viewpoint, a claim of ownership rights over the whole, or any part of outer space."[163]

"National controls for long periods and considerable stretches of lunar territory will pose a threat to the very principle of non-appropriation of lunar territory for national purposes and thus to the very basis of the public order or the earth-space arena."[164] There are "legal complications arising from the prolonged occupation of, particularly, parts of celestial bodies through exploration or use. Such occupation can easily come into conflict with the 'free access' principle which is inherent in the concept of non-appropriation[.]"[165] This is precisely the concern with regard to heritage destined for *in situ* preservation on a celestial body; it will result in perpetual occupation of the surface on which the heritage rests.

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note 25 at 458; Cepelka & Gilmour, *supra* note 25 at 47.
[162] *Ibid* at 32.
[163] Freeland & Jakhu, *supra* note 23 at 53.
[164] S. Bhatt, *Legal Controls of Outer Space: Law, Freedom and Responsibility* (Ramnagar: S. Chand & Co., 1973) at 135.
[165] Cheng, *Studies*, *supra* note 23 at 400

While use does not constitute appropriation in violation of Article II, neither does symbolic activity.[166] Thus, symbolic statements regarding lunar sites as U.S. national heritage in the Apollo Act should likewise not represent appropriation. In order to constitute appropriation, both elements of factual possession and intention to possess would have to be met.[167] This interpretation dovetails with Lach's reading that Article II prohibits the creation of titles.[168] Even such extensive occupation of outer space as described above cannot constitute an appropriation[169] or confer ownership over portions of space or celestial bodies.[170]

Article 12 of the Moon Agreement clarifies that the placement of stations or facilities do not create a right of ownership with regard to the surface of the Moon; therefore, extended or indefinite occupation of an area of the surface is explicitly permissible and would not constitute an appropriation.[171] Despite the limited ratification of the Moon Agreement, this provision appears to accurately reflect the intention of the non-appropriation provision of the Outer Space Treaty, particularly when the views of prominent jurists are taken into consideration. In sum, the *in situ* preservation of space heritage should not run afoul of the space law principle of non-appropriation.

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[166] M.S. McDougal, Harold D. Lasswell & Ivan A. Vlasic, *Law and Public Order in Space* (New Haven: Yale University Press, 1963) at 789.
[167] Johanna Catena, "Legal Matters Relating to the 'Settlement' of 'Outposts' on the Moon" in *Proceedings of the International Institute of Space Law* (Reston: American Institute of Aeronautics and Astronautics, 2005) 414 at 418.
[168] Lachs, *Outer Space, supra* note 77 at 43.
[169] Freeland & Jakhu, *supra* note 23 at 53-54; Oduntan, *supra* note 28.
[170] *Ibid at* 189.
[171] Stephen Gorove. "Property Rights in Outer Space: Focus on the Proposed Moon Treaty" (1974) 2 J Space L 27 at 29; Lyall & Larsen, *supra* note 90 at 71.

E. Freedom of Access and Use

The freedom of access and use of outer space, as articulated within Article I of the Outer Space Treaty, is a fundamental rule of both treaty-based and customary space law:[172]

> Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies. It is impermissible for one State to interfere with another State's free access or use of outer space.[173]

"The inherent limitation on free access is its exercise. Like any other right in this sphere, it cannot be regarded as absolute and must be performed with reasonable regard to the interest of others exercising a like right;"[174] likewise, it must conform with other limitations imposed by international law.[175]

It is argued that exclusive rights to outer space or celestial bodies is not permitted in accordance with the right of free access.[176] While exclusivity is not permitted with regard to land, exclusivity can be exercised with regard to stations and facilities.[177] "A state cannot claim any exclusive right over a maritime belt circumventing either an anchored lightship or a lighthouse in the open sea. Similarly, no such claim can be made over any area of terra firma surrounding a landed spacecraft or installations

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[172] Cheng, "Instant Customary Law," *supra* note 155.
[173] Edwin W. Paxson, III., "Sharing the Benefits of Outer Space Exploration: Space Law and Economic Development" (1993) 4 Mich J Int'l L 487 at 494; Daniel A. Porras, "The "Common Heritage" of Outer Space: Equal Benefits for Most of Mankind" (2006) 37 Cal W Int'l LJ 143 at 172.
[174] Cepelka & Gilmour, *supra* note 25 at 33.
[175] Jakhu & Buzdugan, *supra* note 155 at 216-217.
[176] Cody Tucker, "Lunar Rights: How Current International Law Addresses Rights to Use and Exploit Lunar Resources" (2009) 43 Ann Air & Sp L 591 at 601.
[177] Lee, *Article II, supra* note 160 at 100.

constructed on a celestial body."[178] Thus, there is no inherent right to exclusive use of a zone surrounding a facility in international law.

"It is necessary to observe that although there are valid claims to the occasional exclusive use of space for the sake of security, such claims ought to be rare and should not ignore the right of states to inclusive use."[179] Though the preservation of cultural heritage certainly does not qualify as "security," such an allowance for exclusive use does open up the possibility of exclusive use in certain circumstances. As the preservation of humanity's cultural heritage can be considered a benefit to all mankind in accordance with Article I of the Outer Space Treaty, it may be a permissible exclusive use of a section of celestial body surface area. There may also be mechanisms in place that can mitigate such exclusive use, such as Article XII of the Outer Space Treaty, discussed in further detail below.[180]

Whether or not there is a right to exclusive use of outer space, "there is no general international law rule giving the right of free access to those areas under the quasi-territorial jurisdiction of states such as any space objects in outer space, including celestial bodies."[181]The type of jurisdiction exercised under these circumstances is functional rather than exclusive; functional jurisdiction is limited to the length of time and extent necessary for a State to secure its rights with regard to its outer space activities.[182] Thus, a State is permitted to exercise functional jurisdiction over areas of

[178] Cepelka & Gilmour, *supra* note 25 at 35.
[179] Bhatt, *supra* note 164 at 83.
[180] See Chapter III.F. below.
[181] Cepelka & Gilmour, *supra* note 25 at 35.
[182] Csabafi, *supra* note 25 at 131; Oduntan, *supra* note 28 at 225.

the lunar surface as necessary for the relevant space activity, which could include preservation of space heritage.[183]

F. Visits

Article XII of the Outer Space Treaty provides for a system of reciprocal visits to space installations:

> All stations, installations, equipment and space vehicles on the moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

"This provision…is designed principally to assure the non-military character and use of stations, installations, equipment and space vehicles on celestial bodies, although the requirement of compulsory advance notice and the principle of reciprocity dilute considerably the potency of the clause"[184] when compared to its Antarctic Treaty forerunner, which opens installations and equipment to inspection at all times with no notice or reciprocity requirement.[185]

"The unsatisfactory manner in which the Treaty dealt with cooperation on the Moon and other celestial bodies may be seen from the fact that the opening up, to representatives of states parties to the Treaty, of stations, equipment and space

[183] See also Chapter VI.A. below.
[184] Nicholas M. Matte, *Space Activities and Emerging International Law* (Montreal: Centre for Research of Air and Space Law McGill University, 1984) at 321.
[185] *Antarctic Treaty*, *supra* note 41, art VII.

vehicles is on a basis of reciprocity only." [186] Unfortunately, this weakness also impacts whatever benefit may be provided in terms of cultural heritage. Though such visits may help to mitigate issues with exclusivity of use, and provide benefits with regard to accessibility of the cultural heritage of mankind, the requirement for reciprocity could prove to be a stumbling block. "What is meant by reciprocity and what the legal effects are vis-a-vis member states who do not have stations, equipment and space vehicles on the Moon and other celestial bodies, are not dealt with" in the text of the Article. [187] Additionally, using the provision for cultural heritage visits would not conform to the original intent to allow inspections, although such an interpretation would promote cooperation in space activities.

G. Jurisdiction and Control

1. Article VIII of the Outer Space Treaty

Article VIII of the Outer Space Treaty grants jurisdiction, control and ownership over space objects located beyond a State's territory.[188] This is the critical provision governing a State's jurisdiction over its space heritage. The first two sentences of Article VIII are as follows:

> A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their

[186] Nicolas M. Matte, "Treaty Relating to the Moon" in Nandasiri Jasentuliyana & Roy S.K. Lee, eds, *Manual on Space Law Volume I* (Dobbs Ferry: Oceana Publications, 1979) 253 at 254.
[187] *Ibid*.
[188] Dierdericks-Verschoor, *supra* note 20 at 42.

component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth.

This provision is considered by Bin Cheng to be declaratory of the customary international law that existed at the time the treaty was drafted;[189] he also states that the jurisdiction and control provision of the Moon Agreement is applicable as a mere amplification of the provision contained in the Outer Space Treaty.[190] The relevant text of the Moon Agreement is as follows: "States Parties shall retain jurisdiction and control over their personnel, vehicles, equipment, facilities, stations and installations on the moon. The ownership of space vehicles, equipment, facilities, stations and installations shall not be affected by their presence on the moon."[191] It seems clear that this provision merely enumerates what is considered a space object with respect to the particularities of the Moon Agreement. Imre Csabafi has even stated that "[a]s a rule of jus cogens, derived from the principle of sovereign equality, every State has exclusive jurisdiction over its spacecraft, installations and personnel therein."[192]

So, what is jurisdiction? In the words of Sir Derek Bowett, "[j]urisdiction is a manifestation of state sovereignty. It has been defined as 'the capacity of a state under international law to prescribe or to enforce a rule of law."[193] With respect to space law, "jurisdiction and control include the power of such State to legislate with respect to its space objects and the personnel on board thereof."[194] Jurisdiction itself can be broken

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[189] Cheng, *Studies*, *supra* note 23 at 466-467; see also Pop, *supra* note 152 at 38.
[190] Cheng, *Studies*, *supra* note 23 at 466.
[191] *Moon Agreement*, *supra* note 19, art 12(1).
[192] Csabafi, *supra* note 25 at 47.
[193] D.W. Bowett, "Jurisdiction: Changing Patterns of Authority Over Activities and Resources" in R. St.J. Macdonald & Douglas M. Johnston, eds, *The Structure and Process of International Law: Essays in Legal Philosophy Doctrine and Theory* (Dordrecht: Martinus Nijhoff Publishers, 1986) 555 at 555.
[194] Haanappel, *supra* note 131 at 24.

down into two types of power: the power to make laws and take decisions, known as jurisfaction, and the power to implement and enforce laws, regulations and decisions, known as jurisaction.[195]

Professor Bin Cheng describes the three types of jurisdiction: territorial jurisdiction (inapplicable in an outer space context due to the non-appropriation principle), quasi-territorial jurisdiction (asserted over space objects, aircraft, and vessels), and personal jurisdiction (asserted over nationals).[196] For the purposes of personal jurisdiction, "nationality is a legal bond having as its basis a social fact of attachment, a genuine connection of existence, interests and sentiments, together with the existence of reciprocal rights and duties."[197] This Thesis is primarily concerned with quasi-territorial jurisdiction.

The decision in the *Las Palmas* arbitration describes the situation with regard to quasi-territorial sovereignty exercised beyond the bounds of territorial jurisdiction: "The fact that the functions of a State can be performed by any State within a given zone is…precisely the characteristic feature of the legal situation pertaining in those parts of the globe which, like the high seas or lands without a master, cannot or do not yet form the territory of a State."[198] In certain cases, "extraterritorial jurisdiction of a sovereign state may become imputable as a result of the factual or presumed exercise of control."[199]

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[195] Cheng, *Studies*, *supra* note 23 at 622-623.
[196] *Ibid* at 622.
[197] *Nottebohm Case (Liechtenstein v. Guatemala)*, [1955] ICJ Rep 4 at 23.
[198] *Island of Palmas (U.S. v Netherlands)*, (1928) 11 RIAA 829 at 875.
[199] Oduntan, *supra* note 28 at 52.

The registration referred to in Article VIII can be considered a status of nationality.[200] This granting of nationality may be compared to the granting of nationality by a State over its flag vessel on the high seas. This form of jurisdiction is "quasi-territorial" jurisdiction because it is comparable to the jurisdiction of sovereign States over their territory.[201] It "applies not only to the object as such, but also to all things and persons on board."[202]

The Outer Space Treaty "protects the attribution of jurisdiction on the basis of the national registry as well as the identification of space objects as a way of securing the principle of liability and the right to retrieve such objects."[203] The assumption of responsibility and liability for space objects is predicated on an assumption of jurisdiction over such objects.[204] Both principles of the right to the return of a space object and liability for a space object are discussed in greater detail in subsequent sections of this Chapter as key issues for space heritage.

One important factor to note with regard to space heritage is the fact that "the State of registry has a right to require other States to refrain from interfering with the direction and supervision of the object[.]"[205] Thus, States can regulate, within the bounds of space law, which activities will interfere with the direction and supervision of their space heritage. While, with regard to terrestrial heritage, some States will

[200] van Bogaert, *supra* note 68 at 115.
[201] *Lotus (France v. Turkey),* (1927) PCIJ (ser. A) No. 10 at 25.
[202] Cheng, *Studies*, *supra* note 23 at 467.
[203] Cocca, *supra* note 85 at 177-178.
[204] Stephen Gorove, "Criminal Jurisdiction in Outer Space" (1972) 6 Int'l L 313 at 316 [Gorove, *Criminal Jurisdiction*].
[205] Lachs, *Outer Space, supra* note 77 at 69.

enact legislation to declare cultural objects as State property to protect such objects,[206] this action is fortunately not necessary with regard to space heritage due to the effects of Article VI and Article VIII of the Outer Space Treaty.

2. Abandonment

The jurisdiction, control, and ownership of space objects as established in Article VIII of the outer space treaty is permanent;[207] jurisdiction and control remain with the State of registry.[208] Prior exercise of jurisdiction and control is an implied pre-requisite in the wording of the text in order for the State to "retain" such jurisdiction and control.[209] "There is no suggestion that a State or other entity can divest itself of obligations in relation to space objects by their abandonment. In short, authors Lyall and Larsen believe that a State cannot cease to be 'responsible for' or avoid any correlative duties by abandoning a space object.[210] Several prominent jurists have stated that they believe abandonment of a space object to be both impossible and prohibited by law.[211]

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[206] John Henry Merryman, "The Nation and the Object" (1994) 3 J Cultural Prop 61 at 62. [Merryman, "Nation and Object"]

[207] N. Jasentuliyana, "Regulation of Space Salvage Operations: Possibilities for the Future" (1994) 22 J Space L 5 at 13.

[208] *Report of the Scientific and Technical Subcommittee on its Forty-Ninth Session*, COPUOS, UN Doc. A/AC.105/1001 (28 Feb. 2012); Ram Jakhu et al., "Space Policy, Law and Security" in Joseph Pelton & Angie Bukley, eds, *The Farthest Shore: A 21st Century Guide to Space* (Burlington: Apogee Books, 2009) 202; *see also* van Bogaert, *supra* note 68 at 135; Tucker, *supra* note 176 at 601; Stephan Hobe, "The Legal Framework for a Lunar Base Lex Lata and Lex Ferenda" in *Outlook on Space Law over the Next 30 Years* (Boston: Kluwer Law International, 1997) 135 at 135; Lachs, *Outer Space, supra* note 77 at 69; Lyall & Larsen, *supra* note 90 at 83; Dierdericks-Verschoor, *supra* note 20 at 42; Oduntan, *supra* note 28 at 180.

[209] Gorove, *Criminal Jurisdiction, supra* note 204 at 318.

[210] Lyall & Larsen, *supra* note 90 at 84.

[211] *Ibid* at 67, 84; Ram S. Jakhu, "Iridium-Cosmos Collision and its Implications for Space Operations" in Kai-Uwe Schrogl et al., eds, *Yearbook on Space Policy 2008/2009* (Springer

Bin Cheng, however, holds the view that States are not precluded from abandoning their space objects.[212] With regard to the possible dereliction of space objects, Clarence Jenks believed that:

> neither the launching of a space object nor its return to Earth within the jurisdiction of another State makes it a derelict on the ground that the launcher has lost ownership by losing control. The principle does not appear to imply that a space object can never become a derelict and thereby subject to appropriation by a third party. One can conceive of circumstances in which the only reasonable course would be to regard the space object as having become derelict, for instance if the launcher has disclaimed any interest in it, or has made no attempt to recover it over a long period of time.[213]

Even if a space object itself can be abandoned, effectively abandoning jurisdiction and control, "the responsibility for space objects rest[s] with the launching State and could not be abandoned."[214]

In sum, though it may be possible for a State of registry to abandon jurisdiction and control of its space object, responsibility and liability will remain with the launching State. With regard to space heritage, however, it seems unlikely that a State would actually disclaim an object that it believed to be a part of its national heritage or the heritage of mankind. If such abandonment were to be possible, however, it may leave open the option for another State to take on protection of such disclaimed heritage. It should be noted, however, that "[t]he suggestion that neglect of cultural

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Wien, 2010) 254 at 259; H. Baker, *Space Debris: Legal and Policy Implications* (Leiden: Martinus Nijhoff Publishers, 1989); Jasentuliyana, *supra* note 207 at 16.

[212] Cheng, *Studies*, *supra* note 23 at 466; see also: Wayne N. Jr White, "Real Property Rights in Outer Space" in Proceedings of the International Institute of Space Law (Reston: American Institute of Aeronautics and Astronautics, 2010) 370 at 376.

[213] Jenks, *Space Law, supra* note 25 at 240.

[214] *Report of the Legal Subcommittee on its Fifty-First Session*, COPUOS, UN Doc A/AC.105/1003 (2012) at 10.

objects weakens a nation's claim to exclusive sovereignty over them does not arise in international cultural property discussions."[215]

H. Return of Space Objects

The return of space objects is an important aspect of space law with regard to cultural heritage. It is this area of law that will provide for the repatriation of space heritage objects that may be removed from their resting places in outer space or on celestial bodies. The final sentence of Article VIII of the Outer Space Treaty, which governs this issue, is as follows: "Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return." It is this clause upon which Article V of the Return and Rescue Agreement is based, which reads as follows:

> 1. Each Contracting Party which receives information or discovers that a space object or its component parts has returned to Earth in territory under its jurisdiction or on the high seas or in any other place not under the jurisdiction of any State, shall notify the launching authority and the Secretary- General of the United Nations.
> 2. Each Contracting Party having jurisdiction over the territory on which a space object or its component parts has been discovered shall, upon the request of the launching authority and with assistance from that authority if requested, take such steps as it finds practicable to recover the object or component parts.
> 3. Upon request of the launching authority, objects launched into outer space or their component parts found beyond the territorial limits of the launching authority shall be returned to or held at the disposal of representatives of the launching authority, which shall, upon request, furnish identifying data prior to their return.
> 4. Notwithstanding paragraphs 2 and 3 of this article, a Contracting Party which has reason to believe that a space object or its component parts discovered in territory under its jurisdiction, or recovered by it elsewhere, is of a hazardous or deleterious nature may so notify the

[215] Merryman, "Public Interest," *supra* note 107 at 362.

> launching authority, which shall immediately take effective steps, under the direction and control of the said Contracting Party, to eliminate possible danger of harm.
> 5. Expenses incurred in fulfilling obligations to recover and return a space object or its component parts under paragraphs 2 and 3 of this article shall be borne by the launching authority.

Thus, the rights and obligations created are as follows: the finding State must notify the launching authority, must take such steps as practicable to recover the object, must return the object or hold it at the disposal of launching authority representatives, and may notify the launching authority if they believe the object to be hazardous; the launching authority may request the recovery and return of their space object, must take effective steps to mitigate danger caused by their space object, and must pay for the expenses incurred in the recovery and return of the space object.

It is interesting to note that while the Outer Space Treaty confers rights upon the State of registry, the Return and Rescue Agreement confers rights on the launching authority. The Return and Rescue Agreement defines the "launching authority" as "the State responsible for launching."[216] The Registration Convention defines the "State of registry" as "a launching State on whose registry a space object is carried…"[217] Therefore, in either case it will be a launching State which retains the granted rights. The "launching State" is defined by both the Registration Convention and Liability Convention as "(i) A State which launches or procures the launching of a space object; (ii) A State from whose territory or facility a space object is launched[.]"[218] This definition "was broadly conceived to cover every State which has a predominant role

[216] *Return and Rescue Agreement*, *supra* note 19, art 6.
[217] *Registration Convention, supra* note 16, art I(c).
[218] *Ibid,* art I(a); *Liability Convention, supra* note 16, art I(c).

in the launching."[219] Thus, the only circumstance under which the difference in terminology may be problematic is when there is more than one launching State, in which case the holder of such rights should be determined by the agreement of the launching States, or in the event of a change of the State of registration to a non-launching State (though the discussion of whether or not this is possible in international law is beyond the scope of this Thesis).

The Moon Agreement specifically applies Article V of the Return and Rescue Agreement to circumstances under which the Moon Agreement operates.[220] Therefore, there is a degree of protection offered for space heritage objects under either Article VIII of the Outer Space Treaty, under Article V of the Return and Rescue Agreement, or under the Moon Agreement. In a case where all relevant States are parties to both the Outer Space Treaty and the Return and Rescue Agreement or to the Outer Space Treaty and the Moon Agreement, the provisions of the Return and Rescue Agreement will control, and the provisions of the Outer Space Treaty will only apply to the extent that they do not conflict with the relevant provisions in the Return and Rescue Agreement.[221]

Fundamentally, both of the relevant provisions would provide for the return of a space object to the registering State if a space object were removed from its resting place in outer space or on a celestial body. Thus, if a party without the authority to perform such retrieval removed space heritage objects, the State in which such object came to reside would be obligated to return it to the State of registry.

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[219] van Bogaert, *supra* note 68 at 118.
[220] *Moon Agreement, supra* note 19 at 12(2).
[221] *Vienna Convention, supra* note 138, art 30.

Under the Outer Space Treaty, this obligation would be absolute, in that the words "shall return" are used. Under the Return and Rescue Agreement, this obligation seems weaker, requiring only that when requested, the State "take such steps as it finds practicable to recover the object." Bin Cheng, however, argues that the obligation to return space objects under the Return and Rescue Agreement is also absolute, and is unconditional when requested by the launching authority.[222]It also requires that the State of registry "[pay] for the expenses incurred in recovering and returning space objects, if it has requested the recovery and return of such objects."[223]

I. Liability

The rules with regard to liability for damage to space objects are important to the preservation of space heritage; these rules will determine when States are liable for damage to such heritage. The Liability Convention is an elaboration of Article VII of the Outer Space Treaty,[224] which has, in conjunction with the State responsibility requirements of Article VI, become part of customary international law.[225] Article VII states:

> Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air or in outer space, including the moon and other celestial bodies.

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[222] Cheng, *Studies*, *supra* note 23 at 283.
[223] *Ibid* at 281.
[224] Ram S. Jakhu, Legal Issues Relating to the Global Public Interest in Outer Space (2006) J Space L 31 at 52 [Jakhu, "Global Public Interest"]; Cheng, *Studies*, *supra* note 23 at 636.
[225] Lyall & Larsen, *supra* note 90 at 71.

Liability arises under the Article VI of the Outer Space Treaty in the sense that such liability is imposed as a secondary obligation flowing from the attribution of space activities to the State.[226] Importantly, Article VI states, in relevant part, that:

> States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.

This provision subjects States to responsibility for the activities of their nationals in outer space, including the authorization and supervision of such activities. With regard to the Liability Convention,

> An assessment of the terms of Articles 3 and 7 of the 1967 treaty makes it clear that international law is generally relevant to the liability of states for launching space objects and for the space activities resulting from those launches. Because international law is applicable to such conduct, it is important to identify some international principles concerning space activity that do not derive from formal treaties[227]

States are responsible for their internationally wrongful acts.[228] "Any violation by a State of any obligation, of whatever origin, gives rise to State responsibility."[229] In international law, the breach of treaty obligations is just such a violation. In accordance with the holding in the *Chorzów Factory* case, there are three elements of liability in international law: a legal obligation owed by a State, an act by the State which breaches that obligation, and an apparent link between the wrongful act and the

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[226] Ricky J. Lee, "The Liability Convention and Private Space Launch Services" (2006) 31 Ann Air & Sp L 351 at 359.
[227] Christol, *Space Law, supra* note 86 at 260.
[228] *Corfu Channel, Merits, (UK v Albania)* [1949] ICJ Rep 4 at 23-34.
[229] *Rainbow Warrior (New Zealand v France)*, (1990) 20 RIAAA 217 at 251.

damage caused.[230] The "failure to subject non-governmental national space activities to authorization and continuing supervision would constitute an independent and separate cause of responsibility" under Article VI of the Outer Space Treaty.[231] The applicable standard in this situation would be a due diligence standard[232] Once that standard is met, "State responsibility occurs the moment the breach is committed, and not when the State is seen to have failed in its duty to prevent, suppress or repress such a breach."[233]

The *Corfu Channel* case also established the "knew or should have known" international legal standard for liability.[234] This is both the general fault standard in customary international law, and presumably the standard that would be applied for fault liability under Article III of the Liability Convention, which states: "In the event of damage being caused elsewhere than on the surface of the earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible." This is the relevant provision of the Liability Convention with regard to space heritage located in outer space, as it is the provision that governs liability for damage caused to one space object by another space object. The *Corfu Channel* fault liability standard can by applied here in accordance with the primary treaty interpretation rules provided by the

[230] *Chorzów Factory (Germany v. Poland)*, (1928) PCIJ (ser. A) No 17 at 47.
[231] Bin Cheng, "Article VI of the 1967 Space Treaty Revisited" (1972) 26 J Space L 7 at 13-14. [Cheng, "Article VI"]
[232] *Ibid* at 15.
[233] *Ibid.*
[234] *Corfu Channel, supra* note 228 at 22-23.

Vienna Convention, which permit the use of "any relevant rules of international law applicable in the relations between the parties."[235]

If damage is caused to a State's space heritage under this standard, liability will arise in international law. Given that the dangers to these heritage objects are well established,[236] any damage caused by interaction with or proximity to such a site would likely satisfy the "knew or must have known" standard. In addition to claims under international law, the Liability Convention does not foreclose the possibility of pursuing liability claims in domestic courts under domestic tort law standards.[237] In fact, the Liability Convention specifically permits the pursuit of claims in a launching State,[238] though domestic law in a given State may preclude claims for damages in space.[239]

While "[r]esponsibility and breaches of obligation do not necessarily involve the payment of compensation, especially when no damage has been caused…[t]he term liability is often used specifically to denote the obligation to bear the consequences of a breach of legal duty, in particular the obligation to make reparation for any damage caused."[240] The question regarding what sorts of damages are compensable under the Liability Convention has been widely discussed. The Convention defines damage as: "loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or

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[235] *Vienna Convention, supra* note 138 at 31.2.(c).
[236] NASA Recommendations, *supra* note 5.
[237] Michael Mineiro, "Assessing the Risks: Tort Liability and Risk Management in the Event of a Commercial Human Space Flight Vehicle Accident" (2009) 74 J Air L & Com 371, 389.
[238] *Liability Convention, supra* note 16 at XI(2).
[239] Paul Stephen Dempsey, "Liability for Damage Caused by Space Objects Under International and National Law" (2011) online: < http://works.bepress.com/context/paul_dempsey/article/1000/type/native/viewcontent>, 4.
[240] Cheng, "Article VI," *supra* note 231 at 9-10.

property of international intergovernmental organizations[.]" According to Eilene Galloway, this defines the full scope of damages available under the Liability Convention.[241] The definition provided does not draw a distinction between direct damage and indirect, or consequential damage. Carl Christol believed that the liability convention can apply to both direct and indirect damage,[242] and Bin Cheng believes that the question of direct versus indirect damage is a matter of adequate causality that did not specifically need to be addressed.[243] On the other hand, Edward Finch holds the belief that indirect damages are specifically not included under the Liability Convention.[244] In fact, the drafters of the Liability Convention rejected a proposed draft in which indirect damages would be enumerated within the definition of damages.[245] Thus, under the rules of treaty interpretation established by the Vienna Convention, indirect damages should be excluded from damages recoverable under the Liability Convention,[246] though indirect damages could be otherwise recovered in public international law.

Generally in international law, any damages can be awarded provided that they are proximately caused by the wrongful act and that such damages can be reasonably estimated.[247] Economic damages that are too uncertain or remote from a wrongful act,

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[241] Eilene Galloway, "Which Method of Realization in Public International Law Can Be Considered Most Desirable and Having the Greatest Chances of Realization?" in *Settlement of Space Law Disputes, Cologne Institute of Air & Space Law Colloquium* (1979) 163.
[242] Christol, *Space Law, supra* note 86 at 260.
[243] Bin Cheng. "Convention on International Liability for Damage Caused by Space Objects" in Nandasiri Jasentuliyana & Roy S.K. Lee, eds, *Manual on Space Law Volume I* (Dobbs Ferry: Oceana Publications, 1979) 83 at 115.
[244] Edward R. Finch, "Outer Space Liability, Past, Present and Future" (1980) 14 Int'l Law 123 at 126.
[245] *COPUOS Legal Subcommittee 3d Session Report*, UN Doc A/AC.105.21/Annex (1964).
[246] *Vienna Convention, supra* note 138 at 32(a); see the discussion of the applicability of the Vienna Convention in the text accompanying notes 137-139.
[247] Clyde Eagleston, Measure of Damages in International Law (1929) 39 Yale LJ 52 at 53.

however, cannot be recovered.[248] The Commentaries to the Articles on State Responsibility also discuss the fact that a State can be "held responsible for all the consequences, not being too remote, of its wrongful conduct."[249]

Though reparations that "wipe out the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed"[250] are the standard measure of damages in international law, it is not always possible to make full restitution in this way. In the case of the destruction of irreplaceable space heritage, restitution would be impossible. In such a case, it is "a well-established rule of international law that an injured State is entitled to obtain compensation from the State which has committed an internationally wrongful act"[251] to address the actual loss incurred would apply, as would an entitlement to satisfaction such as a formal apology.[252]

In sum, the basic legal responsibility for a space object lies with the launching authority.[253] Thus, the launching State of any space object causing damage to space heritage would be held liable for such damage. Though the damages are recoverable, however, they would not actually restore the heritage. Thus, ideally liability acts as more of a protective deterrent than as an effective remedy for damage to space heritage.

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[248] *Trail Smelter Arbitration (U.S. v. Canada)*, (1941) 3 RIAA 1938.
[249] *International Law Commission's Articles on State Responsibility: Introduction, Text and Commentaries* (James Crawford ed, Cambridge University Press, 2002) at 230-231. [ASR Commentaries]
[250] *Chorzów Factory, supra* note 130 at 47.
[251] *Gabcikovo-Nagymaros Project (Hungary v Slovakia),* [1997] ICJ Rep 7 at 81.
[252] *ASR Commentaries, supra* note 249 at 245; *International Law Commission, Articles on Responsibility of States for Internationally Wrongful Acts*, U.N. Doc. A/56/83 (2001), art 37 [*Articles on Responsibility*].
[253] Christol, *Space Law, supra* note 86 at 260.

J. Environmental Protection

Given the close connection between terrestrial cultural and natural heritage law and environmental law, it is useful to consider if the environmental provisions of space law can be seen to provide any benefit to space heritage. As Armel Kerrest aptly points out, environmental damage is not considered in the liability convention, barring States from seeking compensation for such damage.[254] The Moon's lack of a mechanism for environmental renewal, however, does make it highly susceptible to environmental damage and change.[255] Such damage or change is likely to negatively impact space heritage resting on the surface of the Moon. Under international law, it is an established rule that States are obliged not to cause harm beyond the limits of national jurisdiction.[256] It is argued that this obligation has crystallized into a rule of customary international law.[257]

Unlike the drafters of the Outer Space Treaty, the drafters of the Moon Agreement had the benefit of knowledge and understanding of the fragility of the Moon's environment resulting from human excursions to the Moon.[258] Professor Hobe notes that though clauses regarding lunar environmental protection are present in Article IX of the Outer Space Treaty and Article 7 of the Moon Agreement, they are not as

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[254] Armel Kerrest. "Outer Space as International Space: Lessons from Antarctica in Science Diplomacy" in *Antarctica, Science and the Governance of International Spaces* (2011) 458.
[255] Williamson, *supra* note 33 at 47.
[256] *Trail Smelter Arbitration, supra* note 248; *Stockholm Declaration on the Human Environment*, UN Doc A/CONF.48/14 (1972); *Rio Declaration on Environment and Development*, UN Doc A/CONF.151/5 (1992); Lyall & Larsen, *supra* note 90 at 458.
[257] Patricia W. Birnie & Alan E. Boyle, *International Law & the Environment* (Oxford: Clarendon Press, 1992) at 89-95.
[258] Paul B. Larsen, "Application of the Precautionary Principle to the Moon" (2006) 71 J Air L & Com 101 at 105.

thoroughly articulated as necessary to achieve the objective of lunar environmental protection.[259] The second clause of Article IX contains the environmental provision. It is reproduced as follows:

> States Parties to the Treaty shall pursue studies of outer space, including the moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose.

Unfortunately, this provision only protects celestial bodies from harmful contamination, so unless its principle is interpreted to possess a broader meaning either under the treaty provision itself or in customary international law, it will not provide benefit for our purposes.

While paragraph 1 of the Moon Agreement's Article 7 mandates "measures to prevent the disruption of the existing balance of [the Moon's] environment," paragraph 3 is the more useful provision for the purposes of this Thesis. It states:

> States Parties shall report to other States Parties and to the Secretary-General concerning areas of the moon having special scientific interest in order that, without prejudice to the rights of other States Parties, consideration may be given to the designation of such areas as international scientific preserves for which special protective arrangements are to be agreed upon in consultation with the competent bodies of the United Nations.[260]

While this provision only provides protection for sites of scientific interest, for the time being, this provision does apply to historic sites, as one of the rationales for their preservation is the study of the effects of long-term exposure to the space and lunar

[259] Hobe, *supra* note 208 at 142.
[260] *Moon Agreement, supra* note 19, art 7(3).

environments.[261] Unfortunately, this provision does not set forth procedures for designation.[262]

Francis Lyall argues that the environmental provisions of the Moon Agreement "may be taken to express the international will on such matters" due to the discussions that led to the Moon Agreement regarding these provisions and the fact that the Moon Agreement was adopted in the UNGA without a vote.[263] Likewise, it is worth noting that the International Court of Justice in the *Kasikili/Sedudu Island* case held that subsequently obtained scientific knowledge can be utilized in the interpretation of the scope of treaties drafted before the acquisition of such knowledge.[264]

K. Article IX of the Outer Space Treaty

Finally, Article IX of the Outer Space Treaty is a keystone provision for the protection of space heritage. "Ironically, in the first of the three provisions in which the strongest binding element is to be found, Article IX of the Treaty speaks of the contracting States being 'guided by the principle of co-operation and mutual assistance', rather than of their being 'bound' by it."[265]

> In the exploration and use of outer space, including the moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty.[266]

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[261] NASA Recommendations, *supra* note 5 at 19.
[262] Lyall, "OST Art. IX," *supra* note 55 at 664.
[263] Francis Lyall, "Planetary Protection from a Legal Perspective – General Issues" in Hofmann, Rettberg, & Williamson, eds, *Protecting the Environment of Celestial Bodies* (2010, IAA Cosmic Study) 55 at 57.
[264] *Kasikili/Sedudu Island (Botswana v Namibia)*, [1999] ICJ Rep 1045.
[265] Cheng, *Studies*, *supra* note 23 at 402.
[266] *Outer Space Treaty, supra* note 2, art IX.

"This rule is directly applicable to the exercise of State jurisdiction in outer space. Thus, States must not take actions that contravene the general principle of co-operation and mutual assistance or they will incur international responsibility for such actions.[267] Contained in this provision is an implied call for reciprocity in the conduct of space activities.

The third clause of Article IX provides the rules that are most essential to the discussion of space heritage. It reads as follows:

> If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the moon and other celestial bodies, may request consultation concerning the activity or experiment.

If a State were to declare its consideration of certain space objects as space heritage which would be damaged by direct interaction or close approach, it would provide other States Parties with unquestionable reason to believe that such an activity "would cause potentially harmful interference" with such protection. The State, therefore, would be bound to undertake consultations before proceeding with its activity. Though only the consultations are mandatory, and thus the activity itself is not halted by this rule, it provides an important pause in the process to consider potential damage not only to space heritage, but also to relations between States. The reciprocity that is built

[267] Csabafi, *supra* note 25 at 123.

into the first provision of Article IX therefore provides an incentive for States to act in conformity with the wishes of their peers in terms of potential harmful interference. The second half of this provision merely permits a State, believing their activities may be harmed, to request consultations. This provision is weaker than its counterpart, but still provides a benefit both in terms of good faith and reciprocity.

Chapter IV. International Cultural Heritage Law

"There is a general reason that we should think about objects of value in ways consistent with their value. There is nothing wrong in not liking Picassos, but that is different from not respecting them. There is a universal reason for respecting what is of value, whether it is instrumental or intrinsic: it is the right reaction to what is of value, whether you personally care for it or not. Things of value should be respected wherever they are: whether in private hands or publicly held, whether out of sight or on public display, whether within the country in which they were made, or abroad."[268]

A. History and Overview

The first individual noted in recorded history who called for the protection of national cultural heritage in the form of art, was a Greek historian named Polybius.[269] The principle that "cultural property is inviolable, and cannot be misappropriated by a conquering state" was first codified in the United States' Lieber Code in 1863.[270] The first modern instrument created for the protection of cultural heritage, and the starting point for our discussion with regard to space heritage, was the Hague Convention 1954.[271] In the context of instruments of modern cultural heritage law beginning with the Hague Convention 1954, the relative age of the heritage law with which this Thesis is concerned is similar to that of outer space law. Given their temporal

[268] Derek Gillman, *The Idea of Cultural Heritage* (Leicester: Institute of Art and Law, 2006) at 112.
[269] John Moustakas, "Group Rights in Cultural Property: Justifying Strict Inalienability" (1988) 74 Cornell L Rev 1179 at 1179.
[270] T.M. Guerin, *General Orders Affecting the Volunteer Force* (U.S. Government Printing Office, United States War Department, 1863) at 69; Sharon A. Williams, *The International and National Protection of Movable Cultural Property: A Comparative Study* (New York: Oceana Publications, 1978) at 15-16.
[271] Craig Forrest, *International Law and the Protection of Cultural Heritage* (New York: Routledge, 2010) at 24.

proximity, these two forms of law lend themselves well to comparison and complementary use.

"The impetus for the development of an international protective regime was not only the recognition that many properties in individual States had significance for human kind as a whole, but also that a permanent system of co-operation was required to assist States in their role as guardians of this heritage."[272] This rationale is similar to the rationale for the early development of the space law regime, which was established to promote co-operation, preserve the valuable resource that is outer space for all mankind, and avoid conflict with regard to this new arena.[273]

There are two competing philosophies with regard to cultural heritage: the national heritage school and the common heritage of mankind school.[274] While certain States certainly could maintain the policy that their heritage objects and sites in outer space are national treasures which form a part of their national identity (the United States with regard to Tranquility Base or Russia with regard to the Lunakhod rovers, for example), the common heritage of mankind view of cultural heritage is better suited to the existing space law regime, given that space has been classified as "the province of all mankind."[275] This view of cultural heritage, which dovetails with the legal view of outer space, holds that "[t]he history and development of our species is one history, and the culture of the world is greater than the sum of individual

[272] *Ibid* at 227.
[273] *Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space*, UN Doc A/RES/18/1962 (1963).
[274] John Henry Merryman, "Two Ways of Thinking About Cultural Property" (1986) 80 AJIL 831.
[275] *Outer Space Treaty*, *supra* note 2 at I.

cultures"[276] and that the heritage of this common human culture exists regardless of national jurisdiction, property rights, or present location.[277]

In a cultural heritage context, the province of mankind concept is "concerned with keeping and preserving cultural property in their present locations or ensuring export by legal means" rather than ensuring that access or any specific benefit from the heritage can be shared with all mankind.[278] This idea is similar to benefit of mankind concept enshrined in the Outer Space Treaty,[279] though the application of the concept with regard to the environment forms a closer parallel to cultural heritage law.[280]

In general, it is possible to draw a parallel between cultural heritage law and environmental law.[281] This makes sense in the context that cultural heritage is a non-renewable resource.[282] Though humanity will continue to produce new heritage, any objects or sites that are lost cannot be recovered. Thus, cultural heritage should be treated, legally, the same way that an environmentally endangered species may be treated.[283] Therefore, environmental provisions with regard to outer space are relevant to cultural protection.[284]

Considering the status of cultural heritage in outer space before significant danger presents itself to such heritage is imperative to protecting the perception that it is indeed the heritage of all mankind.

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[276] Forrest, *supra* note 271 at 11.
[277] *Ibid* at 13.
[278] Sharon Williams, *supra* note 270 at 55.
[279] *Ibid* at 57-58; *Outer Space Treaty, supra* note 2 at I.
[280] Sharon Williams, *supra* note 270 at 60-63
[281] Gillman, *supra* note 268 at 32.
[282] Blake, *Defining, supra* note 99 at 69.
[283] Gillman, *supra* note 268 at 33.
[284] See Chapter III.J. above.

> Claims that a particular work of art or building or archaeological site belongs to some particular heritage are usually made when there is a perception of danger, either because something is going to happen (such as destruction, or looting or sale overseas) or conversely something is failing to happen (such as conservation or upkeep). Calling on the 'heritage of all mankind' is certainly useful if we want to stop destruction, looting, decay or benign neglect, and where we want to signal to the agents of such change that they should think about values other than their own. But although claims to preserve important cultural things on behalf of all mankind may be noble and worthy of our support in principle, they frequently conflict with two other potentially competing social facts: that many things are claimed by particular cultures, and that many things are privately owned. The quick answer would be that all things are equally part of 'world heritage' and a particular national or local heritage.[285]

The principle that space heritage is both the heritage of mankind and the heritage of the launching State may help to promote its protection before it is too late, while simultaneously avoiding contentious value judgments regarding the status of the heritage and protecting individual State interests.

The cultural heritage of mankind status makes it "incumbent on the holding State to ensure that the interests of humankind are taken into consideration when decisions are made concerning items of cultural heritage, such as terms of access, dissemination of information as well as physical protection."[286] It is desirable not only that cultural heritage in space be protected, but also that it be protected with these factors in mind. "The emerging regime of cultural heritage law performs five inter-related functions: protection, co-operation, rectification, criminal justice and dispute resolution."[287] In general, from an object-oriented approach, the appropriate handling of cultural heritage should be determined on the basis of three factors: whether the

[285] Gillman, *supra* note 268 at 9.
[286] Forrest, *supra* note 271 at 13.
[287] James A.R. Nafziger, "Cultural Heritage Law: The International Regime" in J.A.R. Nafziger & T. Scovazzi, eds, *The Cultural Heritage of Mankind* (Dordrecht: Martinus Nijhoff Publishers, 2008) 145 at 161.

movement or acquisition of the object is likely to cause danger to the object or the context in which the object was found; whether such movement or acquisition is likely to more fully reveal the truth of the object; and the relative availability of the object for research, education, and enjoyment as a result of such movement or acquisition.[288]

Given the issues of sovereignty and jurisdiction present in the space law regime,[289] questions regarding cultural heritage sites are particularly relevant to this discussion. "Experts often argue that the original configuration of an historic building or site has integrity similar to that of a work of art. Yet our ideas about what constitutes a complete architectural complex (or a complete painting, poem, or symphony) have developed over centuries, and across classes, regions and cultures."[290] These ideas are, in part, but not wholly, applicable to sites like Tranquility Base. It will be necessary to take into account the unique features of such sites and consider the lack of gravity and atmosphere when determining the scope of protection for these sites, which may require a larger area of protection to prevent blowback from landings or damage from faulty trajectories.[291]

The debates in the cultural heritage law arena regarding whether or not the country of origin should have a right to return of possession of their cultural heritage[292] is null in the space law arena – the Return and Rescue Agreement, in combination with Article V of the Outer Space Treaty, render this question moot. A

[288] Merryman, Nation and Object, *supra* note 206 at 65.
[289] See Chapter III, sections D., E., and G. above.
[290] Gillman, *supra* note 268 at 110.
[291] See Chapter VI.A. below.
[292] See Karen J Warren, "A Philisophical Perspective on the Ethics and Resolution of Cultural Property Issues" in *The Ethics of Collecting Cultural Property* (Phyllis Mauch Messenger ed, University of New Mexico Press, 1990) at 1.

State is inherently entitled to the return of its space objects, thus ownership, at least, should not present a complex problem.

"Cultural heritage is value in the sense that it is neither the object nor the practice itself which is of some importance to a people, but the importance itself. It is embodied in an object, a landscape, a dance or all three in combination. And it is this which legal regimes aim to protect."[293] In determining the scope of the areas to be protected in space, we must determine what constitutes the embodiment of these values for the purposes of cultural heritage in space. Generally speaking, important values from a heritage perspective include expressive, archaeological, historic and economic values, though symbolic, informational, aesthetic, scientific, cultural, ethnic, public, recreational, educational technical, social or legal values are often also factors.[294] In the realm of cultural heritage in space, the most important factors may be historic, symbolic, informational, scientific and technical. The critical issue at hand is the physical preservation of such cultural objects themselves, and, in conjunction, the preservation of their context to the greatest feasible extent.[295]

B. Treaty Law

The key body associated with the development of the protection of cultural heritage law is the United Nations Educational, Scientific and Cultural Organization (UNESCO), which has been responsible for the bulk of cultural heritage law since

[293] Forrest, *supra* note 271 at 3-4.
[294] *Ibid* at 4.
[295] Merryman, "Public Interest," *supra* note 107 at 355.

World War II.[296] "Bilateral and multilateral agreements represent the most formal legal bases for co-operation in avoiding and resolving disputes over the status of cultural material."[297] This Chapter will review the key multilateral agreements that have emerged from UNESCO, as well as one convention from the International Institute for the Unification of Private Law (UNIDROIT).

1. The Hague Convention 1954

There are two categories of international cultural heritage protections: those in effect with regard to times of armed conflict, and those in effect with regard to peacetime. The Hague Convention 1954[298] is primarily an instrument designed with regard to armed conflict. This Convention enshrines the concept that cultural heritage is the province of all mankind.[299] In addition to putting forth this idea, the preamble states "protection cannot be effective unless both national and international measures have been taken to organize it in a time of peace."

Interestingly, Article 1(a) characterizes cultural property as property of "great importance to the cultural heritage of every people" rather than to the cultural heritage of a people, a nation, or a State. Article 1, which defines cultural property, provides the guidelines of what may be considered cultural property under the Hague Convention 1954. Examples of such "movable or immovable property of great

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[296] Patrick J. O'Keefe and Lyndel V. Prott, *Cultural Heritage Conventions and Other Instruments: A Compendium with Commentaries* (Builth Wells: Institute of Art and Law, 2011) at 1 9O'Keefe & Prott, *Compendium*0.
[297] Nafziger, *supra* note 287 at 198.
[298] *Hague Convention 1954, supra* note 15.
[299] *Ibid.*

importance to the cultural heritage of every people" that may pertain to space heritage include objects of historical interest and scientific collections.[300]

The list provided in paragraph 1(a) is inclusive rather than exclusive, so an object need not fall specifically into one of these categories, it must simply meet the "great importance" test. Paragraph (b) of this article pertains specifically to buildings intended to "preserve or exhibit" cultural property, and thus is not relevant to this discussion of cultural property situated in outer space, as by definition, if an item of space heritage has been placed into such a structure, it has become terrestrial heritage, even if it is fundamentally related to our shared history of space exploration. The definition of cultural property itself does not mention the territory or location of an object, and specifies that origin or ownership are irrelevant.[301]

Articles 2 and 3 which deal with protection and safeguarding of cultural property respectively, Article 3 being the more operative provision calling upon the High Contracting Parties to undertake a specific activity, in this case, preparing for the safeguarding of cultural property in a time of peace "against the foreseeable effects of armed conflict." Unfortunately, this provision specifically applies only to cultural property situated within the territory of a State, and thus would not apply to cultural property in outer space or on a celestial body. Likewise, Article 4.1, which provides for respect for cultural property, applies only to cultural property located in a State's territory.

Paragraphs 3 and 4 of Article 4, however, are not specifically tied to the territorial location of a piece of cultural property. Paragraph 3 concerns the

[300] *Hague Convention 1954, supra* note 15, art 1(a).
[301] *Ibid,* art 1.

prohibition, prevention, and halting of theft, pillage, misappropriation and vandalism of cultural property. Thus, a State that is a High Contracting Party to this Convention would be bound to avoid taking these actions or permitting their nationals to undertake this actions, even against cultural property that may be located in space or on a celestial body. Paragraph 4 states that States "shall refrain from any act directed by way of reprisals against cultural property." This would therefore indicate that if a State were engaged in a conflict with another State that is also a party to this Convention, it would be impermissible for such State to direct reprisals against cultural heritage, including any cultural heritage that may be located in outer space.

Article 5 discusses occupation of the territory of another High Contracting Party, and thus is inapplicable to a space context given Article 2 of the Outer Space Treaty. Article 6 permits but does not require the marking of cultural property with a "distinctive emblem" shown in Article 16 (two white triangles, a blue triangle, and a blue square forming a pentagon). Such marking could be used on space heritage if desired by a State. Article 7 deals with fostering and securing military respect for cultural heritage and introducing military regulations to ensure compliance with the Hague Convention 1954 in case of a conflict. Given that this provision is worded regarding cultural heritage generally, it would include space heritage, however, in this context the most it would provide in the way of protection is education within the military that such objects could be considered cultural property to be so protected.

Chapter II of the Hague Convention 1954 deals with heritage under special protection on the "International Register of Cultural Property under Special Protection." Items can only be included on this list if they are contained in a refuge or

a center containing monuments or if they are immovable cultural property.[302] It is not foreseeable in the near future that space heritage objects would be moved into refuges or centers located in outer space, and thus would not be able to be labeled under special protection for this purpose. Though the Convention does not define "immovable," the objects located in outer space are inherently movable in the sense that they were moved from Earth to outer space.

Chapter III of this Convention deals with the transportation of cultural property. Article 12, however, defines transportation as "within a territory or to another territory," and thus excludes transportation exclusively in outer space or to a territory from outer space. Chapter IV, which consists only of Article 15, concerns personnel who are "engaged in the protection of cultural property," requiring that they be respected and allowed to continue their duties if captured by the opposing party in a conflict. As there is no territorial designation here, this provision would apply to personnel engaged in the protection of space heritage. Chapter V sets forth the emblem that may be used for marking cultural property including space heritage, as mentioned above with regard to Article 6, and the procedures for using this emblem.

Chapter VI deals with the scope of application of the Hague Convention 1954, and specifies that it is operative "in the event of a declared war or of any other armed conflict" between contracting parties, "even if the state of war is not recognized by one or more of them."[303] Such a conflict need not be "of an international character," but in the event of such a non-international conflict, it would only relate to conflicts

[302] *Hague Convention 1954*, *supra* note 15, *Regulations* art 12.3.
[303] *Ibid,* art 18.

occurring within the territory of a High Contracting Party[304] and thus would potentially exclude instances in which such a conflict may extend to outer space or take place exclusively in outer space. Only those provisions that specify that they "take effect in a time of peace" are operative outside of an armed conflict.[305] While the definition and scope of "armed conflict" is certainly relevant here, in the sense that it would be important to determine if, for example, non-kinetic attacks on satellites or other space assets alone would constitute armed conflict, that question is far too complex to be adequately addressed in the scope of this Thesis. Needless to say, such an analysis would be helpful in determining the applicability of the Hague Convention 1954 to space heritage during a conflict involving outer space.

Article 23 specifies that a High Contracting Party can call upon UNESCO for "technical assistance in organizing the protection of their cultural property" or with any other issue that arises out of the application of the Hague Convention 1954. As this provision only uses the term "their" and does not specify the location of "their" cultural property, it is reasonable to assume that a request for assistance in protecting cultural property which is located in outer space would be permissible under this Article, particularly given that the technical aspects of protection of heritage in outer space would be especially daunting. Special agreements outside of this Convention are permitted,[306] as are amendments to the Convention in accordance with the procedure set forth in Article 39, clearly establishing the possibility for specific amendments or agreements dealing with space heritage.

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[304] *Hague Convention 1954*, *supra* note 15, art 19.
[305] *Ibid,* art 18.
[306] *Ibid,* art 24.

2. Illicit Transfer Convention

The Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (hereinafter "Illicit Transfer Convention")[307] is an example of a more nationalistic perspective on cultural heritage. Though it specifies that interchange of cultural property can "increase the knowledge of the civilization of Man," it is primarily directed at national culture, explaining that cultural property is one of the basic elements of such.[308]

For the purposes of this Convention, cultural property must be specifically designated by a State, in addition to such property meeting the basic criteria of importance in one of several listed areas, including history or science, and belonging to a specified set of categories, including "property relating to history, including the history of science and technology and military and social history, to the life of national leaders, thinkers, scientists and artists and to events of national importance."[309] This test is the "definitional test."[310] As O'Keefe explains, the *travaux preparatoires* of the Convention do not indicate that the method of specific designation should be restrictive, rather, that a State could use any method of designation that it deems appropriate, including implementing legislation.[311] The *travaux preparatoires* can be used as a supplementary means of treaty interpretation in accordance with the Vienna Convention.[312]

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[307] *Illicit Transfer Convention, supra* note 12.
[308] *Ibid*.
[309] *Ibid,* art 1.
[310] Sharon Williams, *supra* note 270 at 180.
[311] Patrick J. O'Keefe, Commentary on the 1970 UNESCO Convention (Builth Wells: Institute of Art and Law, 2007) at 36.
[312] *Vienna Convention, supra* note 138, art 32.

It would be difficult to imagine that the property remaining at Tranquility Base would not be considered important to history or science or would not fall into the category relating to events of national importance (in this case, the Moon landing). Therefore, provided that a State was to designate space heritage as cultural property for the purposes of this convention, such property could appropriately be considered cultural property.

Article 4 further clarifies that cultural property belonging to a specific set of categories, including "property created by the individual or collective genius of nationals" or created within the territory of the State by individuals who are not nationals, will be part of a specific State's cultural heritage. This is the "connection test."[313] Thus, territory is only relevant at the time of the creation of an object, and even then is only relevant if non-nationals of the State in question created such an object. Thus, objects launched into outer space can still qualify as the cultural property of a State.

The problem with the Illicit Transfer Convention from the perspective of space heritage, however, is the fact that it would only effect activities occurring after such space heritage had already been disturbed. Article 3 renders the "import, export, or transfer of ownership of cultural property effected contrary to the provisions" of the Convention to be illicit. The remaining provisions of this Convention help to define what sorts of trading are illicit, how to verify that certain trades are permitted, how to prevent illicit trading and how to deal with illicit trading after it has taken place. With the exception of those provisions dealing with occupation or possession of territory,[314]

[313] Sharon Williams, *supra* note 270, art 181.
[314] *Illicit Transfer Convention , supra* note 12, art 11-12.

this Convention would apply to any space heritage that has been removed from its resting place in outer space.

Article 9 sets forth procedures for a State to call upon other effected States to assist in dealing with a particular set of circumstances in which cultural property has been taken during the "pillage of archaeological or ethnological materials." This provision is important, not due to any relevance to outer space but because its implementation demonstrates the willingness of States to take commitments to cultural heritage seriously. The United States, which is a major art importing State, was the first State to respond to a country's request for import restrictions under Article 9 of the Convention, demonstrating a willingness on the part of the United States to actively uphold the provisions of international cultural heritage law through their actions taken under their Convention on Cultural Property Implementation Act.[315] As a major holder of space heritage, and as a State that is actively trying to protect its space heritage, this action goes a long way toward establishing goodwill in these endeavors.

3. World Heritage Convention

As is apparent from both the title of the World Heritage Convention and the preamble (which references "the world heritage of mankind as a whole"), this Convention is geared more towards the heritage of mankind concept than the

[315] *Convention on Cultural Property Implementation Act*, Publ L No 97-446 [1983], as amended; Ann Guthrie Hingston, "U.S. Implementation of the UNESCO Cultural Property Convention" in Phyllis Mauch Messenger, ed, *The Ethics of Collecting Cultural Property* (Albuquerque: University of New Mexico Press, 1990) 129.

nationalistic view of heritage.[316] The Convention deals with both cultural and natural heritage, which are defined separately. For the purposes of cultural heritage, the definition is broken down into three groups: monuments, groups of buildings, and sites.[317] The definition of sites most closely matches what might include Tranquility Base or its ilk, "works of man or the combined works of nature and of man," which include sites of outstanding universal historical value.[318] Tranquility Base includes not only the works of man which both enabled and provide record of man's first travel to the Moon, but includes the natural beauty of the site itself and the natural materials which were shaped by the interaction between nature and man, such as footprints and rover tracks.

From the perspective of natural heritage, sites and features that are of universal outstanding scientific value are included, but these do not require or indeed include man's added value.[319] Thus, while there may be natural heritage sites or features in outer space, particularly on celestial bodies, such heritage is beyond the scope of this Thesis. Though the definition of cultural heritage has always included mixed sites, "[i]n 1992, the revised *Guidelines* included for the first time cultural landscapes that can be 'mixed' sites, i.e. sites that are of significance from both cultural and natural standpoints."[320]

The problem with the World Heritage Convention from a space perspective becomes apparent in Article 3, which states in its entirety that "[i]t is for each State

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[316] *World Heritage Convention, supra* note 13.
[317] *Ibid,* art 1.
[318] *Ibid*.
[319] *Ibid,* art 2.
[320] Janet Blake, *Commentary on the 2003 UNESCO Convention on the Safeguarding of the Intangible Cultural Heritage* (Leicester: Institute of Art and Law, 2006) at 5.

Party to this Convention to identify and delineate the different properties situated on its territory mentioned in Articles 1 and 2 above." Thus, to qualify for listing, sites must fall within the categories of cultural or natural heritage specified, must be of "outstanding universal value," and must be located in the territory of a State Party.[321] The sites discussed by this Thesis are, by definition, located in outer space and thus not on the territory of any State. Thus, States cannot designate these sites even if they would otherwise meet the definitions provided. "Irrespective of all their natural value, sites located on the Moon or other celestial bodies cannot be inscribed on the World Heritage List[.]"[322]

Likewise, Article 4 prescribes a primary duty of States to protect such sites as described in the definitions of cultural and natural heritage, but only those sites which are "situated on its territory." While not applicable to outer space, it is interesting to note that this provision can be considered an obligation *erga omnes*,[323] an obligation owed to the community of States Parties as a whole,[324] and is thus enforceable by any party to the Convention.[325]

Article 5 also sets forth duties for States based on the heritage situated within their territory, however, some of these duties could also benefit those sites not situated in the territory of any State, such as: developing "scientific and technical studies and research" to counteract "the dangers that threaten [the State's] cultural or natural

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[321] O'Keefe & Prott, *Compendium, supra* note 296 at 78.
[322] Tullio Scovazzi, "Articles 8-11: World Heritage Committee and World Heritage List" in *The 1972 World Heritage Convention: A Commentary* (Francesco Francioni ed, Oxford University Press, 2008) 147 at 160.
[323] *Barcelona Traction (Belgium v Spain)* [1970] ICJ Rep 3 at 4; Roger O'Keefe, "World Cultural Heritage: Obligations to the International Community as a Whole?" (2004) 53 ICLQ 189 at 190.
[324] *Articles on Responsibility, supra* note 252, art 48(1)(a).
[325] *Ibid,* art 48(2)(a).

heritage" and fostering "the establishment or development of national or regional centers for training in the protection, conservation and presentation of the cultural and natural heritage and to encourage scientific research in this field." The obligation not to intentionally damage cultural or natural heritage also unfortunately only applies to heritage situated in the territories of other States.[326]

Article 7 is the first of the articles in this Convention that could be said to directly benefit non-territorial heritage. This Article establishes that "international protection of world cultural and natural heritage" generally means "the establishment of a system of international co-operation and assistance designed to support States Parties to the Convention in their efforts to conserve and identify" such heritage.[327] While Article 11.1 requires that States submit an inventory of natural and cultural heritage in their respective territory, it does also state that the list "shall not be considered exhaustive." While the intention is to specify that there may be other heritage in the territory of the State that is not present on the list, it also makes clear that heritage not on the list generally can still qualify for protection. Article 12 further elaborates on this principle, providing that "[t]he fact that property belonging to the cultural or natural heritage has not been included in either of the two lists mentioned in paragraphs 2 and 4 of Article 11 shall in no way be construed to mean that it does not have an outstanding universal value[.]"

Article 11.3, which pertains to inclusion of property situated in a disputed territory, states that inclusion on the list by one State does not prejudice the rights of the other parties to the dispute. While this statement has no impact on heritage in

[326] *World Heritage Convention, supra* note 13, art 6.3.
[327] *Ibid,* art 7.

space, it does provide an indication that amendments could be made to this Convention to encompass heritage in space, territory claimed by no State, within the spirit of the Convention. Cooperation between the Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, which was created by Chapter III of the Convention, with other "organizations having objectives similar to those of this Convention" is provided for in Article 13.7, also providing some flexibility for the future.

Article 29 requires that States "give information on the legislative and administrative provisions which they have adopted and other action which they have taken for the application of this Convention, together with details of the experience acquired in this field." Such details of experience could include details of experience with regard to cultural heritage in space. Revision of the Convention by UNESCO is provided for in Article 37. This set of provisions, taken together, provides indications of opportunities for learning, improvement, and revision in the heritage regime that could include heritage in outer space.

The High Court of Australia, which is the "only official judicial body to interpret the Convention[,]"[328] held that the duty to protect heritage arises regardless of whether such heritage has been identified by the State and submitted for inclusion on the world heritage list.[329] Unfortunately, the interpretation does not address whether cultural property not situated on the territory of a State is included, and such

[328] O'Keefe & Prott, *Compendium, supra* note 296 at 79.
[329] *Richardson v. Forestry Commission*, [1988] 164 CLR 261 (Austl, HC).

interpretation by a national high court is merely persuasive in international law regardless.[330]

4. UNIDROIT Convention 1995

While the UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects (hereinafter "UNIDROIT Convention 1995")[331] is an important piece of international cultural heritage law, given its intent to close loopholes in national private law,[332] its impact on space heritage is not significant. This is true because it deals primarily with the restitution and return of cultural objects that have been stolen or removed.[333] While objects of importance for history or science are covered by this Convention, including property relating to the history of science,[334] therefore encompassing space heritage within its scope, it only impacts those space cultural objects that were used in the pursuit of exploration of outer space, but were never actually launched into space. Those heritage objects that are actually "space objects" would find more relevant and effective protection under the Return and Rescue Agreement.[335] The Return and Rescue Agreement applies to all space objects, and thus would not require an analysis of which such objects would constitute space heritage.[336]

C. Customary International Law

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[330] *ICJ Statute, supra* note 18, art 38.
[331] *UNIDROIT Convention, supra* note 15.
[332] O'Keefe & Prott, *Compendium, supra* note 296 at 110.
[333] *UNIDROIT Convention, supra* note 15, art 1.
[334] *Ibid,* art 2 & Annex.
[335] *Return and Rescue Agreement, supra* note 19.
[336] *Ibid,* art 5. For further discussion of this topic, see Chapter III.H. above.

"[T]he work of UNESCO and the international practice developing in connection with it has made abundantly clear that the international community has recognized cultural diversity as the common heritage of humanity."[337] The development of customary international law in the cultural heritage arena, which would be binding even upon those States who are not parties to the relevant conventions, may help to solve some of the difficulties relating to cultural heritage in outer space.[338]

> The exponential growth of international cultural property law in the past fifty years bears witness to the emergence of a new principle according to which parts of cultural heritage of international relevance are to be protected as the common heritage of humanity. This principle is valid both in the event of armed conflict and in peacetime.[339]

The recognition of cultural heritage as the common heritage of mankind in international law is the first step towards a binding international law for space heritage.

Two relatively recent documents produced by UNESCO would seem to indicate the development of a customary international cultural heritage law. Both emerged in the aftermath of the atrocities that occurred with respect to Buddhist cultural heritage in Afghanistan. The first, published in 2001, discusses the adoption of a declaration that "would not be intended to create obligations for States, but would restate the fundamental principles of the existing legal instruments and reinforce certain aspects not covered by these instruments[.]"[340] The second, adopted in 2003, is

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[337] Francioni, *supra* note 153 at 1228.
[338] See Chapter III.B. above.
[339] Francioni, *supra* note 153 at 1213.
[340] *Acts Constituting "A Crime Against the Common Heritage of Humanity,"* UN Doc 31 C/46 (2001).

that very declaration.[341] One perambulatory statement of this declaration is as follows: "Mindful of the development of customary international law as also affirmed by the relevant case-law, related to the protection of cultural heritage in peacetime as well as in the event of an armed conflict[.]" This "resounding affirmation of an emergent political consensus"[342] would also indicate a belief from UNESCO that, in fact, an applicable customary international law of cultural heritage has crystallized. Unfortunately, given the territorial nature of State practice and *opinio juris* with regard to cultural heritage, this customary protection would also not extend to outer space, an area beyond national jurisdiction.

D. The Territorial Nature of Cultural Heritage Law

It is easy to see that the primary difficulty with the application of terrestrial cultural heritage law to outer space is the issue of territorial sovereignty. The treaties governing cultural heritage law have been primarily drafted with a view to the heritage situated on the territory of a sovereign State, and customary international law reflects the same understanding. This problem stems from a concept enshrined early in modern international case law. Firstly, the *Lotus* case describes some inherent characteristics of international law:

> International law governs relations between independent states. The rules of law binding upon states therefore emanate from their own free will as expressed in conventions or usages generally accepted as expressing principles of law and established in order to regulate the relations between those co-existing independent communities or with a

[341] *Declaration Concerning the Intentional Destruction of Cultural Heritage*, UN Doc 32 C/25 (17 Oct. 2003).
[342] Roger O'Keefe, *supra* note 323 at 209.

> view to the achievement of common aims. Restrictions upon the independence of states cannot therefore be presumed.[343]

Growing from this principle, one must look to the language regarding territorial sovereignty memorialized in the *Island of Palmas* case:

> Sovereignty in the relations between States signifies independence. Independence in regard to a portion of the globe is the right to exercise therein, to the exclusion of any other State, the functions of a State. The development of the national organization of States during the last few centuries, and as a corollary, the development of international law, have established this principle of the exclusive competence of the State in regard to its territory in such a way as to make it the point of departure in settling most questions of international relations.[344]

Given these early developments, it is easy to understand why cultural heritage treaties have focused largely on the contentious issue of the protection of cultural heritage within the boundaries of a State. This protection reflects a restriction on a State's territorial sovereignty, a signifier of its independence. Thus, while some general provisions regarding protection of cultural heritage would apply to space heritage as discussed above, the regime is largely designed to solve a problem distinct from that of space heritage.

While some cultural heritage law provisions can and do apply to space heritage as discussed in this Chapter, such limited protections are insufficient as a regime for the protection of space heritage generally. Such protections include prohibitions on theft or vandalism and illicit transfer, as well as general overtures of a responsibility to protect. A solution must be devised, as terrestrial cultural heritage law was designed to overcome a territory sovereignty problem distinct from the issues of territory in space law.

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[343] *Lotus (France v. Turkey),* (1927) PCIJ (ser. A) No. 10.
[344] *Island of Palmas, supra* note 198 at 838.

Chapter V. Terrestrial Cultural Heritage Comparisons

Given the limits of the cultural heritage legal regime generally, it is helpful to look to specific parallels to outer space in order to seek solutions for space heritage. While there has been much debate on comparisons of space law to other areas in international law, "it appears more meritorious to consider analogous notions and concepts as an auxiliary means of interpreting the legal status of outer space."[345] This is the approach applied by this Thesis in interpreting means to protect heritage in space.

A. Underwater Cultural Heritage

The high seas are one area that is often compared to outer space from a legal perspective. The lack of territorial sovereignty, and by extension, territorial jurisdiction in this arena lends itself to useful comparison, particularly when dealing with such issues as cultural heritage that have been otherwise primarily territorial in nature. It is useful to note, however, that with regard to the law of the sea, a decline of freedoms would seem to indicate that the status of outer space may also be prone to "change when economic, military or other advantages induce states to lay claim on certain parts of outer space."[346]

The Underwater Heritage Convention "stands as a *lex specialis* for UCH [underwater cultural heritage] and its protection, whereas [UNCLOS] remains an

[345] Matte, *Space Activities, supra* note 184 at 175.
[346] *Ibid* at 177.

authoritative *lex generalis* for the whole law of the sea and, in principle, for all issues related to it."[347] Any parallel convention that may be drafted in the future with regard to space heritage would stand in the same relationship to the Outer Space Treaty.

With regard to UNCLOS, there are two provisions that directly relate to underwater cultural heritage. The first is Article 149, which states: "All objects of an archaeological and historical nature found in the Area shall be preserved or disposed of for the benefit of mankind as a whole, particular regard being paid to the preferential rights of the State or country of origin, or the State of cultural origin, or the State of historical and archaeological origin." The definition of the "Area" contained in UNCLOS[348] matches that of the Underwater Heritage Convention,[349] discussed in more detail below. The second relevant provision is Article 303, which states that:

> 1. States have the duty to protect objects of an archaeological and historical nature found at sea and shall cooperate for this purpose.
> 2. In order to control traffic in such objects, the coastal State may, in applying article 33, presume that their removal from the seabed in the zone referred to in that article without its approval would result in an infringement within its territory or territorial sea of the laws and regulations referred to in that article.
> 3. Nothing in this article affects the rights of identifiable owners, the law of salvage or other rules of admiralty, or laws and practices with respect to cultural exchanges.
> 4. This article is without prejudice to other international agreements and rules of international law regarding the protection of objects of an archaeological and historical nature. [350]

[347] Guido Carducci, "New Developments in the Law of the Sea: The UNESCO Convention on the Protection of Underwater Cultural Heritage" (2002) 96 AJIL 419 at 420.
[348] *UNCLOS, supra* note 39, art 1(1).
[349] *Underwater Heritage Convention, supra* note 40, art 1.1.5.
[350] *UNCLOS, supra* note 39, art 303.

These UNCLOS provisions at least provide acknowledgement and some level of protection for heritage, unlike the Outer Space Treaty, which provides none. The principles contained in these provisions are further elaborated in the Underwater Heritage Convention.

The sole purpose of the Underwater Heritage Convention is to protect underwater cultural heritage.[351] Taking into account the reference in Article 2(3) of the Convention to the benefit of humanity, it seems clear that this Convention falls into the category of instruments intended to protect the cultural heritage of mankind, rather than to provide specific protection with regard to national heritage interests.[352]

For the purposes of this Thesis, the three most relevant statements from the preamble of this Convention are as follows:

> *Convinced* of the public's right to enjoy the educational and recreational benefits of responsible non-intrusive access to *in situ* underwater cultural heritage, and of the value of public education to contribute to awareness, appreciation and protection of that heritage,…*Conscious* of the need to respond appropriately to the possible negative impact on underwater cultural heritage of legitimate activities that may incidentally affect it,…*Aware* of the availability of advanced technology that enhances discovery of and access to underwater cultural heritage[.]

These provisions provide insight into the spirit of the treaty. The first of these provisions deals with underwater heritage tourism. This is also particularly relevant to space tourism, a parallel industry. While the Underwater Heritage Convention recognizes the benefits of such tourism, it does clarify that such access must be both responsible and non-intrusive. Though determining which types of activities are

[351] Ya-juan Zhao, "The Relationships Among the Three Multilateral Regimes Concerning the Underwater Cultural Heritage" in *The Cultural Heritage of Mankind* (J.A.R. Nafziger & T. Scovazzi eds., Martinus Nijhoff Publishers, 2008), 601 at 614.
[352] Carducci, *supra* note 347 at 424.

responsible and non-intrusive in an underwater context may be significantly different than in an outer space context, the principle at work would remain the same. The second provision above deals with activities that are not intended to involve heritage, but do so incidentally. This is also a major concern for space activities that may not be intended to approach cultural heritage, but may cause damage due to proximate landings, equipment malfunctions, or other such events. Finally, a increased pace of development of advanced technology which provides unprecedented access to underwater cultural heritage also provides unprecedented access to space heritage. Thus, given the goals of this Convention, it provides a good model for analysis in looking at critical issues to be addressed in any protection of cultural heritage in space.

The definition of underwater cultural heritage restricts the category to objects which have been "partially or totally under water…for at least 100 years[.]"[353] On the one hand, the age of heritage objects can play a role in their significance, and assigning a time requirement can provide a criterion that is easy to apply in determining if an object qualifies. If such delineation were to be used with regard to outer space, however, it would need to be a shorter timeframe, such as perhaps fifty years. The use of such a timeframe would be contraindicated, however, given that it is clear from the time of launch at least which objects would qualify as space "firsts" from the perspective of human space exploration. It would be worthwhile to include such objects in a protection regime as early as possible. The exclusion from this definition of pipelines, cables, and installations on the seabed still in use provides a

[353] *Underwater Heritage Convention, supra* note 40, art 1.1(a)

valuable basis for comparison to space, where communications satellites still in use, for example, should not be included.[354]

For a comparison to outer space, the "Area" as defined by the Underwater Heritage Convention is of primary concern; the Area is "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction."[355] Of course, it is the area beyond the limits of national jurisdiction that is comparable to space, and it is this portion of the definition that is most critical.

Usefully, the Underwater Heritage Convention differentiates between "activities directed at underwater cultural heritage" and "activities incidentally affecting underwater cultural heritage."[356] The distinction is made based on whether the heritage is the "primary object" of the activity.[357] Interestingly, the Convention is only concerned with indirect damage or disruption to underwater cultural heritage with regard to activities directed at such heritage.[358] Those activities directed at underwater cultural heritage would include salvage operations or tourist visits at such sites. Activities incidentally affecting underwater cultural heritage might include mining operations, establishment of communications infrastructure, and the transportation of persons or cargo unrelated to the heritage sites. These distinctions would be useful and equally applicable in an outer space context.

This Convention also creates a special set of rules for "state vessels and aircraft" which would likewise be useful with regard to outer space. These vessels and aircraft are limited to those "owned or operated by a State and used, at the time of the

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[354] *Underwater Heritage Convention, supra* note 40, art 1(b)-1(c).
[355] *Ibid,* art 1.5.
[356] *Ibid,* art 1.6-1.7.
[357] *Ibid*.
[358] *Ibid,* art 1.6.

sinking, only for government non-commercial purposes, that are identified as such[.]"[359] To utilize this distinction in terms of outer space, however, it would be necessary to take into account the differing meaning of the term "commercial" when applied in different regions. For example, in the United States, the government will often contract with the private sector who will provide services for a fee to the government and other entities. These activities would be commercial activities. In Europe, however, governments will directly engage in revenue-generating activities, which are also commercial activities.[360]

Article 2.8 of the Underwater Heritage Convention preserves State's rights with regard to State vessels and aircraft under international law, including UNCLOS, and states that it should not be "interpreted as modifying the rules of international law and State practice" in this regard. State vessels and aircraft are not obligated to report discoveries of underwater cultural heritage.[361] Though State vessels and aircraft are subject to a different set of rules and regulations, they can be "considered UCH, therefore *objects* of protection[.]"[362] The inclusion of State space objects as space heritage for any regime applicable to outer space would be critical, given that the majority of those space objects which could be considered heritage objects are, in fact, the property of a State.

There may be an inherent conflict present in Article 2 of the Underwater Heritage Convention with regard to commercial activities. Paragraph 7 of this Article

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[359] *Underwater Heritage Convention, supra* note 40, art 1.8.
[360] Joanne Irene Gabrynowicz, "One Half Century and Counting: The Evolution of U.S. National Space Law and Three Long-Term Emerging Issues" (2010) 4:2 Harv L & Pol'y Rev 405 at 424.
[361] *Underwater Heritage Convention, supra* note 40, art 13.
[362] Carducci, *supra* note 347 at 423.

states that "[u]nderwater cultural heritage shall not be commercially exploited." Paragraph 10 of the same article, however, states that "[r]esponsible non-intrusive access to observe or document in situ underwater cultural heritage shall be encouraged to create public awareness, appreciation, and protection of the heritage except where such access is incompatible with its protection and management." The question then arises as to whether responsible tourist activities that are carried on commercially (rather than, say, as a not-for-profit government education initiative) would be prohibited despite the fact that such activities would otherwise be permissible. It would be preferable to avoid this problem in creating a solution for outer space. As commercial activities in space are generally promoted, activities that are non-intrusive, conducted responsibly, and which are unlikely to cause damage or disruption to space heritage should be explicitly permitted under the terms of any convention or agreement on the subject.

Rule 2 of the Rules Concerning Activities Directed at Underwater Cultural Heritage, contained in the Annex to this Convention, helps to answer the question "[d]oes it bar *all* commercial activity involving underwater heritage?"[363]

> The commercial exploitation of underwater cultural heritage *for trade or speculation or its irretrievable dispersal* is fundamentally incompatible with the protection and proper management of underwater cultural heritage. *Underwater cultural heritage shall not be traded, sold, bought or bartered as commercial goods.*
> This Rule cannot be interpreted as preventing:
> (a) the provision of professional archaeological services or necessary services incidental thereto whose nature and purpose are in full conformity with this Convention and are subject to the authorization of the competent authorities;
> (b) the deposition of underwater cultural heritage, recovered in the course of a research project in conformity with this Convention, provided such deposition does not prejudice the scientific or cultural

[363] Nafziger, *supra* note 287 at 184.

> interest or integrity of the recovered material or result in its irretrievable dispersal; is in accordance with the provisions of Rules 33 and 34; and is subject to the authorization of the competent authorities. (emphasis added)

Taking into account the more developed text of the Rule above, it does not appear that the intention of the Underwater Heritage Convention is intended to bar responsible tourism. Article 10 of the ICOMOS Charter which preceded this Convention supports this interpretation in the statement that "[p]ublic access to in situ underwater cultural heritage should be promoted, except where access is incompatible with protection and management."[364] One author has interpreted the promotion of tourism related to the discovery of underwater cultural heritage to be a purpose of the Convention.[365]

Importantly, this Convention includes a provision with regard to territorial appropriation that would be equally necessary in an outer space context. Article 2.11 states that "[n]o act or activity undertaken on the basis of this Convention shall constitute grounds for claiming…national sovereignty or jurisdiction." Such a provision would ensure compatibility with Article II of the Outer Space Treaty.

Likewise, a provision such as Article 3 of the Underwater Heritage Convention provides for compatibility with international law; "the rights, jurisdiction and duties of States" under international law and UNCLOS specifically are preserved. It is also worth noting that "[i]f there is any overlap, then the 2001 Convention has to be interpreted and applied in a manner consistent with the UNCLOS."[366] Such a principle would also need to hold true with regard to any specific space heritage treaty that may

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[364] *International Charter on the Protection and Management of the Underwater Cultural Heritage*, 11th ICOMOS General Assembly, (1996), art 10.
[365] Valentina Sara Vadi, "Investing in Culture: Underwater Cultural Heritage and International Investment Law" (2009) 42 Vand J Transnat'l L 853 at 864.
[366] Zhao, *supra* note 351 at 628.

be drafted and its relationship to international law generally and the Outer Space Treaty specifically.

Article 4 specifies that the law of salvage and law of finds only apply under a specific set of circumstances. They would not, however, apply in an outer space context due both to their limited applicability only to the high seas and to Article 8 of the Outer Space Treaty's jurisdiction and control provisions.[367]

"If a ship has been deserted…by those who were in charge of it, without hope of recovering it (*sine spe recuperandi*) and without intention of returning to it (*sine animo revertendi*), it is considered in some legal systems to be abandoned property (*res derelictae*), so which the law of finds rather than salvage applies."[368] Most jurisdictions do indeed require both "abandonment in fact and the intention to abandon" in order to consider a vessel or its cargo abandoned.[369] Even with regard to underwater cultural heritage, there is a strong rebuttable presumption against the abandonment by the owner that would be required for the law of finds to take effect.[370] Abandonment may be impermissible under the space law regime, further rendering this question moot.[371]

In terms of jurisdiction, there are several relevant provisions in the Underwater Heritage Convention. Firstly, Article 5 creates an obligation for States to "use the best practicable means at its disposal to prevent or mitigate any adverse effects that might arise from activities under its jurisdiction incidentally affecting underwater cultural

[367] See Chapter III.G.1. above.
[368] Patrick J. O'Keefe & James A.R. Nafziger, "The Draft Convention on the Protection of the Underwater Cultural Heritage" (1994) 25 Ocean Devel & Int'l L 391 at 396.
[369] *Ibid* at 406.
[370] Carducci, *supra* note 347 at 426.
[371] See Chapter III.G.2. above.

heritage." Here, the responsibility to protect heritage from indirect activities is determined by jurisdiction over the activities. Authors Prott and Patrick O'Keefe have interpreted this provision to impact activities under a State's "control."[372] This obligation would be suitable for application in an outer space context.

Article 16 of the Underwater Heritage Convention creates an obligation for States to "ensure that their nationals and vessels flying their flag do not engage in any activity directed at underwater cultural heritage in a manner not in conformity with this Convention." Article 11 likewise utilizes nationality and flag States to determine reporting responsibilities upon discovery of or intention to engage in an activity directed at underwater cultural heritage in the Area. In applying these provisions, "[t]he 2001 Convention has made full use of the traditional nationality jurisdiction and flag State jurisdiction, in accordance with which States Parties are able to control activities of their nationals and vessels that fly their flag."[373] If adapted to an outer space context, these provisions would need to include nationals and registered space objects of a State in accordance with the Registration Convention.

It is interesting to note, however, that rather than using the terminology relating to nationals and flag States, Article 5 utilizes the terminology "under its jurisdiction." The distinction appears to denote the inclusion of territorial jurisdiction; the obligations arising under Article 5 could include territorial jurisdiction, thus, the Article does not specify which forms of jurisdiction apply specifically.

State intervention is permitted to prevent immediate danger to underwater cultural heritage in the Area even if such State would not ordinarily have

[372] O'Keefe & Prott, *Compendium, supra* note 296 at 133.
[373] Zhao, *supra* note 351 at 623.

jurisdiction.[374] This right can be exercised regardless of whether the danger is caused by human intervention or not.[375] Additional relevant obligations imposed by this Convention include: the imposition of sanctions for violations of national implementation measures,[376] cooperation and assistance between States to protect and manage underwater cultural heritage,[377] and dissemination of information on underwater cultural heritage excavated or recovered by means contrary to international law.[378]

In general, both this Convention and its Annex state that "*in situ* preservation shall be considered as the first option"[379] and in so doing, "implicitly rejects the idea that UCH is in danger because of the simple fact that it is underwater and therefore needs to be recovered."[380] If *in situ* preservation is rejected and the objects are removed, "then a reasoned and detailed record would have to be prepared and kept in order to satisfy other provisions of the Convention, in particular Articles 14 and 15."[381] Under these articles, States will be required to take such action within their domestic spheres.[382]

1. The R.M.S. Titanic

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[374] *Underwater Heritage Convention, supra* note 40, art 12.3.
[375] *Ibid*.
[376] *Ibid,* art 17.1.
[377] *Ibid,* art 19.1.
[378] *Ibid,* art 19.4.
[379] *Ibid,* art 2(5), Annex rule 1.
[380] Carducci, *supra* note 347 at 424.
[381] O'Keefe & Prott, *Compendium, supra* note 296 at 133.
[382] Eke Boesten, *Archaeological and/or Historic Valuable Shipwrecks in International Waters: Public International Law and What it Offers* (The Hague: T.M.C. Asser Press, 2002) at 171.

One particularly useful underwater parallel for Tranquility Base in outer space is the resting place of the R.M.S. Titanic on the ocean floor. In the history of shipwrecks, the 1912 sinking of the Titanic is relatively recent, and much like Tranquility Base, the items to be found at the Titanic site have little intrinsic value.[383] Instead, their value is due to the cultural significance of the site: artifacts, photos, and videos can be sold or displayed due to their historic significance and public tours are likely to generate additional revenue.[384] When dangers to the Titanic site proved to be a serious threat, after multiple expeditions removing over five thousand artifacts from the site,[385] the governments of the United States, United Kingdom, Canada and France negotiated the Agreement Concerning the Shipwrecked Vessel RMS Titanic (hereinafter "Titanic Agreement"). These States represented the group of States with the technology and proximity to access the Titanic site.[386] Though the Titanic Agreement has never entered into force (it was signed by both the United States and United Kingdom, but has been stalled by the lack of implementing legislation in the United States),[387] it still serves as a useful template for management of a specific cultural heritage site beyond territorial jurisdiction.

The spirit of the Titanic Agreement includes the goals of ensuring "the protection of the RMS Titanic and its artifacts for the benefit of present and future

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[383] Sarah Dromgoole, "The International Agreement for the Protection of the Titanic: Problems and Prospects" (2006) 37 Ocean Devel & Int'l L 1 at 2.
[384] *Ibid*.
[385] *Agreement Concerning the Shipwrecked Vessel RMS Titanic* (2003), online: NOAA Office of General Counsel < http://www.gc.noaa.gov/documents/titanic-agreement.pdf> [*Titanic Agreement*].
[386] Dromgoole, *supra* note 383 at 4.
[387] *Titanic Agreement*, *supra* note 385 (ratification by two States would be required for the Treaty to enter into force, per art 11.2).

generations."[388] This Agreement, much like the Underwater Heritage Convention, promotes *in situ* preservation as the primary means of protection, with removal only "justified by educational, scientific or cultural interests, including the need to protect the integrity of the RMS Titanic and/or its artifacts from a significant threat."[389] These goals appear to be equally relevant in an outer space context.

The Titanic Agreement defines the parameters of what should be included as "Artifacts" ("the cargo of RMS Titanic and other contents, including those associated objects that are scattered in its vicinity and any portion of the hull")[390] and sets forth the recognition of the Titanic as a memorial to those who lost their lives and as an underwater site "of exceptional international importance having a unique symbolic value."[391] While the value as a memorial and associated provisions would not be relevant to any present cultural heritage sites in outer space, the recognition of the site's cultural value is a necessary step in gaining international acceptance of the wreck as a cultural heritage site. Such acceptance fosters the goal of protecting the site. Defining the scope of those artifacts to be protected by the Agreement with regard to the site in question is a useful way to provide more specific guidance than would be provided under a broader, generally applicable treaty.

The Titanic Agreement utilizes quasi-territorial and personal jurisdiction over its flag vessels and nationals, respectively. This is similar to the forms of jurisdiction used in the Underwater Heritage Convention and would apply appropriately to outer space in terms of registration requirements, as well as authorization and control under

[388] *Titanic Agreement*, *supra* note 385.
[389] *Ibid,* art 4(2).
[390] *Ibid,* art 1(b).
[391] *Ibid,* art 2.

Article VI of the Outer Space Treaty. This jurisdiction under the Titanic Agreement is utilized to provide project authorizations for entries to the Titanic hull and activities directed at Titanic artifacts.[392]

The Annex to the Titanic Agreement provides specific rules to be applied, setting forth general principles, such as requiring "minimum adverse impact on RMS Titanic and its artifacts"[393] and "proper recording and dissemination to the public of historical, cultural and archaeological information"[394] as well as more specific technical rules governing interactions with the site. Such detailed rules provide helpful guidance to States wishing to provide authorizations for projects relating to the Titanic site.

Article 9, which is the international law clause of this Agreement, is worded very specifically for the context of this site. Rather than providing a general statement about the applicability of international law, this Article preserves the "rights, jurisdiction and duties" of States under international law as reflected in UNCLOS. This Article also preserves "present or future claims and legal views of any State concerning the law of the sea or the future development of international law regarding cultural heritage." The specificity of this provision provides a drafting template under which a parallel provision could be drafted with regard to a specific space heritage site such as Tranquility Base. Article 9 is a clear indication of how specific agreements afford significantly more flexibility than generally applicable multilateral conventions, and can be easier to negotiate as fewer parties will be integral to the drafting.

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[392] *Titanic Agreement*, *supra* note 385, art 4.
[393] *Ibid*, Annex rule I.4.
[394] *Ibid*, Annex rule I.5.

B. Cultural Heritage in Antarctica

Antarctica is another area that is often considered as parallel to outer space. This parallel is drawn due to the Antarctic regime governed by the Antarctic Treaty, as "a number of notions and concepts of law" are immediately relevant to outer space.[395] Under this Treaty, it is considered to be "in the interest of all mankind"[396] to restrict use of Antarctica exclusively to peaceful purposes[397] and to promote cooperation in this area.[398] Issues relating to claims of sovereignty regarding Antarctica, however, have received quite different consideration and treatment as compared with outer space."[399] A suggestion has been made that Antarctica be declared a World Park, an international environmental sanctuary, both to preserve the unique environment and also to study international environmental issues.[400] This suggestion has not, however, come to fruition.

The Antarctic Treaty itself is devoid of provisions pertaining to the protection of cultural heritage. The most closely related provision is Article IX, which establishes a system for the implementation of measures to preserve and conserve living resources and to facilitate scientific research. Article 3.2(b)(vi) of the Environmental Protocol to the Antarctic Treaty states that "activities in the Antarctic Treaty area shall be planned and conducted so as to avoid… degradation of, or substantial risk to, areas of biological, scientific, *historic*, aesthetic or wilderness significance[.]"[401] (emphasis

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[395] Matte, *Space Activities, supra* note 184 at 176.
[396] *Antarctic Treaty*, *supra* note 41.
[397] *Ibid,* art 1.
[398] *Ibid,* art 1-2.
[399] Matte, *Space Activities, supra* note 184 at 177.
[400] S.N.K. Blay, R.W. Piotrowicz, & B.M. Tsamenyi. *Antarctica After 1991: The Legal and Policy Options* (Tasmania: Pacific Law Press, 1989) at 17.
[401] *Protocol on Environmental Protection to the Antarctic Treaty* (1991) 30 ILM 1455.

added) The Antarctic Treaty System Consultative Meetings have addressed the issue of preservation of historic sites,[402] and the United Kingdom,[403] Australia,[404] and New Zealand[405] have all established organizations dedicated to the protection of cultural heritage in Antarctica.

Annex V to the Protocol on Environmental Protection to the Antarctic Treaty further elaborates protection for historic sites and monuments. The Antarctic Specially Protected Areas are of most relevance to the topic of this Thesis, in that they "are intended to protect environmental, scientific, historic, aesthetic, and wilderness values[.]"[406] The Annex provides for the creation of Management Plans that prohibit, restrict, or manage activities in such Areas.[407] These Areas were either previously designated by past Antarctic Treaty Consultative Meetings[408] or proposed by a Party, or one of the bodies designated by the Annex[409] and approved at the Antarctic Treaty Consultative Meeting.[410]

There is a separate classification for Historic Sites and Monuments, regardless of whether or not they fall within sites that have already been listed for special

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[402] *The Antarctic Treaty Explained*, online: British Antarctic Survey Natural Environment Research Council <http://www.antarctica.ac.uk/about_antarctica/geopolitical/treaty/explained.php>.
[403] *Protecting the Sites*, online: Antarctic Heritage Trust <http://www.nzaht.org/AHT/>.
[404] Managing Cultural Heritage, online: Britis Antarctic Survey Natural Environment Research Council <http://www.antarctica.gov.au/environment/antarcticas-cultural-heritage/managing-cultural-heritage>.
[405] Antarctic Heritage Trust, *supra* note 403.
[406] *Annex V to the Protocol on Environmental Protection to the Antarctic Treaty: Area Protection and Management,* (1991) UKTS 15, Cm. 8655, art 3 (*Annex V*); Sterns & Tennen, *supra* note 34 at 274.
[407] *Annex V, supra* note 406, art 2.
[408] *Ibid,* art 3(3).
[409] *Ibid,* art 5(1).
[410] *Ibid,* art 6(1).

protection or management.[411] The procedure for listing such sites and monuments is substantially the same as the procedure for designating Antarctic Specially Protected Areas.[412] These "Historic Sites and Monuments shall not be damaged, removed or destroyed."[413]

The Annex provides detailed instructions for Publicity and Exchange of Information to ensure appropriate awareness of the regime governing these sites,[414] as well as detailed procedures for crafting proposed management plans for protected areas.[415] Overall, this document provides a model that may be very useful in crafting a multilateral solution to the problem of space heritage.

C. Conclusions

Ultimately, the Underwater Heritage Convention, the Titanic Agreement, and Annex V to the Antarctic Treaty all provide examples of models that could be used in the drafting of a space heritage agreement. The Underwater Heritage Convention serves as an example of a topical multilateral treaty; the Titanic Agreement serves as an example of a limited multilateral (or bilateral) agreement to protect a specific site, which could be used with regard to Tranquility Base as a proof-of-concept for space heritage protection; and Annex V to the Antarctic Treaty could serve as a model for a Protocol to the Outer Space Treaty.

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[411] *Annex V, supra* note 406, art 8(1).
[412] *Ibid,* art 8(2)-8(3).
[413] *Ibid,* art 8(4).
[414] *Ibid,* art 9-10.
[415] *Ibid,* art 5.

Chapter VI. Endeavors to Protect Cultural Heritage in Space

There are a number of current initiatives that attempt to protect heritage in space. Tranquility Base, the foremost example of space heritage discussed by this Thesis, has been the subject of several such recent efforts. These endeavors merit discussion in the context of space law and cultural heritage law, as appropriate.

A. NASA Recommendations and 'Keep Out Zones'

On July 20, 2011, NASA released their Recommendations to Space-Faring Entities regarding "How to Protect and Preserve the Historic and Scientific Value of U.S. Government Lunar Artifacts." This document is intended to provide interim recommendations until a multilateral solution is found, or at least until more formal U.S. government guidance is developed.[416] These Recommendations protect not only the Apollo artifacts and impact sites, but also impact sites and equipment from unmanned U.S. missions;[417] an extensive catalogue of protected Apollo artifacts is included as an Appendix to the document.[418]

This document states that it is consistent with international law, including the Outer Space Treaty, and clarifies that it does not promulgate binding legal requirements.[419] Importantly, the NASA Recommendations assert the continuing

[416] NASA Recommendations, *supra* note 5 at 5.
[417] *Ibid*.
[418] *Ibid* at 49-67.
[419] *Ibid* at 6.

ownership by the U.S. government of NASA artifacts on the Moon, affirming Article VIII rights under the Outer Space Treaty, and implicitly rejecting any possibility of abandonment.[420] The document specifically seeks "coordination in advance of lunar activities that would impact NASA artifacts of historic and scientific interest to ensure that all appropriate interests are recognized and protected."[421] This statement is a clear call for consultations in accordance with Article IX of the Outer Space Treaty. NASA is providing an unambiguous assertion of which actions will cause harmful interference with their space objects. From this perspective, any State which intends to act in a way contrary to the Recommendations would be required to consult with the U.S. first, or bear responsibility for violating the Outer Space Treaty.

Operation of rocket engines in close proximity to protected sites can cause contamination and degradation of the site, due to the fact that the lunar surface is coated with a layer of dust and loose particles.[422] "Lunar soil particles with diameters on the order of several micrometers are adhesive to metal and glass surface[;]" and cause significant difficulties in the interaction between lunar dust and machines on the surface.[423] One concrete example of damage to a space object and to scientific data that may be obtained from such an object is recounted as follows:

> The Apollo 12 [Landing Module] landed 155 m from the Surveyor 3 spacecraft and retrieved material samples from the spacecraft for later analysis. Even though Surveyor was in a crater and below the horizontal plane by 4.3 m and thus "under" the main sheet of material

[420] NASA Recommendations, *supra* note 5 at 6.
[421] *Ibid*.
[422] *Ibid* at 24.
[423] B. Kent Joosten, et al. "Lunar and Mars Outposts and Habitats" in Future Aeronautical and Space Systems, Ahmed K. Noor & Samuel L. Venneri, eds, (Reston: American Institute of Aeronautics and Astronatuics, 1997) 497 at 511.

> blown from the LM, the Surveyor spacecraft received significant sandblasting and pitting from the Apollo landing.[424]

The described mission was undertaken for the purpose of analyzing the long-term effects of exposure to the space environment on the lunar surface.[425] Such preservation for scientific value is yet another reason that heritage objects in space must be protected.

"[T[here is now increasingly talk of safety or 'keep-out' zones around space objects."[426] The NASA Recommendations establish a keep-out zone around lunar heritage sites ranging from 0.5 to 2.0 kilometers in radial distance.[427] The Recommendations define a keep-out zone as "the recommended boundary areas into which visiting spacecraft should not enter."[428]

Keep-out zones are also expressly referenced in the Russian National Space Act. The Russian Federation exercises functional jurisdiction over the area around their space objects: "In direct proximity to a space object of Russian Federation within the zone minimally necessary for ensuring safety of space activity, rules may be established that shall be binding for Russian and foreign organizations and citizens."[429] Critically, this provision relies on "safety" as the foundation for the establishment of keep out zones. The idea that such zones would be permissible specifically for safety purposes seems most likely to succeed in international law.[430]

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[424] NASA Recommendations, *supra* note 5 at 13.
[425] Spenneman, "Out of this World," *supra* note 4 at 360.
[426] Cheng, *Studies*, *supra* note 23 at 467.
[427] NASA Recommendations, *supra* note 5 at 7.
[428] *Ibid* at 9.
[429] *Act on Space Activities*, Russian House of Soviets Decree No. 5663-1 at 17(5).
[430] White, *supra* note 212 at 375.

Adrian Bueckling has stated his belief that jurisdiction should extend to the vital supply and operation area around a station on a celestial body,[431] thereby permitting such zones in the context of operational requirements. Imre Csabafi shares the view that such zones may be established if they are "reasonable and instrumental to the lawful exercise of one of the 'freedoms of outer space.'"[432] Thus, functional jurisdiction can be exercised over areas surrounding installations and scientific experiments on the Moon.[433] According to Gennady Zhukov and Yuri Kolosov, these zones would not constitute territorial appropriations even when established for an extended period of time.[434] It has been suggested that, utilizing functional jurisdiction, a State could "enact unilateral legislation that creates such 'designated areas' of functional sovereignty in outer space."[435]

Proposals for how these zones could be implemented have included unilateral establishment, as well as zones predicated on agreements that are either bilateral or multilateral in nature.[436] Such zones should not run afoul of Article II of the outer space treaty, as "[t]here is a clear distinction between sovereignty and the right to exercise a preventive, protective, or regulatory jurisdiction."[437] Writing in 1987, then-U.S. Air Force Chief of Air and Space Law Kenneth Schwetje, a strong proponent of keep-out zones for safety, security, and traffic management, stated that: "Implicit in the works of all Soviet international lawyers considering the issue is that the

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[431] Adrian Bueckling, "The Formal Legal Status of Lunar Stations" (1973) 1 J Space L 113 at 117.
[432] Csabafi, *supra* note 25 at 63.
[433] *Ibid* at 100.
[434] Gennady Zhukov & Yuri Kolosov, *International Space Law* (Westport: Praeger Publishing Group, 1984) at 64.
[435] Jakhu & Buzdugan, *supra* note 155 at 225; citing Csabafi, *supra* note 25.
[436] Schwetje, *supra* note 160 at 132.
[437] *Ibid* at 134.

exclusionary zones are an inherent right of the State of registry. While advocating international agreements to accomplish this end, not one Russian lawyer has ever denied the possibility of a unilateral declaration of exclusionary zones."[438] From this perspective, absent protest from other States, implementation of binding zones around the lunar landing sites may be permissible, provided they are reasonable, both in size and time, under the circumstances and that reciprocity is offered in the case of comparable circumstances.[439] In putting forth non-binding recommendations, the U.S. has demonstrated a desire and willingness to cooperate on this issue rather than risk conflict. Thus, while the NASA Recommendations as drafted certainly comply with international law, they offer relatively weak protection for the Apollo artifacts and lunar heritage sites.

B. Apollo Lunar Landing Sites National Historic Park Bill

On 8 July 2013, the Apollo Lunar Landing Legacy Act was introduced to the U.S. House of Representatives.[440] The bill was introduced to "preserve and protect" the landing sites of all the Apollo missions "for the benefit of present and future generations" and "for scientific inquiry[,]" as well as "to improve public understanding of the Apollo program and its legacy."[441]

The administration of the Historical Park created by the Act is to be conducted in accordance with "applicable international law and treaties"; thus committing such administration to conform with the constraints of the Outer Space Treaty, Return and

[438] Schwetje, *supra* note 160 at 139.
[439] McDougal, *supra* note 166 at 293.
[440] *Apollo Act, supra* note 43.
[441] *Ibid,* art 3.

Rescue Agreement, Liability Convention, and Registration Convention, as well as any cultural heritage conventions to which the United States is a party.[442] Unfortunately, the act identifies the sites as "nationally significant" rather than classifying them as humanity's heritage, weakening the Act from the perspective of "benefit of mankind" principle.[443]

The Apollo Act is carefully crafted to avoid conflict with the non-appropriation principle, specifying that "[t]he Historical Park may only be comprised…of the artifacts on the surface of the Moon" and therefore does not classify any of the surface of the Moon itself as part of the park.[444] It likewise states that access to the sites will be managed by means including "coordination with other space faring nations and entities."[445] This appears to take Article IX of the Outer Space Treaty directly into account, all but calling for consultations in the event that a State would wish to access one of these sites. From the perspective of Article IX, the Act would have a similar effect to that of the NASA Recommendations.

The Apollo Act also calls for monitoring of the sites,[446] which will help to protect the interests of the U.S. from a liability perspective in the event of damage to a site. The Act, however, has one critical flaw in that calls for the Apollo 11 landing site in particular to be submitted to UNESCO for designation as a World Heritage Site.[447] As we have seen in Chapter IV of this Thesis, such classification is impossible, as States are only welcome to submit those sites located on their territory.

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[442] *Apollo Act, supra* note 43, art 6.
[443] *Ibid,* art 3.
[444] *Ibid,* art 5.
[445] *Ibid,* art 7.
[446] *Ibid.*
[447] *Ibid,* art 8.

Nicolas Matte has likened the zones created by Article 7(3) of the Moon Agreement to such national parks: "following a proposal of the United States delegation, provisions have been made for the establishment of protected zones on the Moon as international scientific reserves, in cases of special interest. They would be similar to national parks on earth, serving to protect sites or phenomena of… importance."[448] As the United States is not a party to the Moon Agreement, however, the Act cannot be asserted as seizing upon a right granted by that treaty.

Of course, as States are not bound in international law by the national legislation of other States,[449] this Act would have little impact outside of the United States unless the Apollo 11 site were to be successfully classed as a World Heritage Site, in which case the international rules of the World Heritage Convention would apply. If passed, the Apollo Act would, however, bind U.S. nationals and any entities launching from U.S. facilities, comprising a significant number of potential actors in this arena.

C. California & New Mexico Heritage Lists

As of 2010, both California and New Mexico have added Tranquility Base to their State lists of protected sites.[450] This sort of unilateral action which only impacts the nationals of the launching State, however, does help to fill in the gap left by Article VII of the Liability Convention in upholding the principle under general international law that international law should not regulate relations between a State and its

[448] Matte, "Treaty Relating to the Moon" *supra* note 186 at 262.
[449] Hersch Lauterpacht, *Oppenheim's International Law* (London: Longman, 1992) at 376.
[450] Walsh, *supra* note 1 at 236.

nationals,[451] though this principle is changing due to the evolution of human rights law.

The evaluation of significance provided in the nomination to the California Register of Historical Resources sheds valuable light on the reasons for the site's inclusion on California's registry:

> The assemblage of Objects Associated with Tranquility Base (OATB) is significant to the history of California and meets all four of the California Register of Historical Resources eligibility criteria. The OATB are:
> (1) associated with events that have made a significant contribution to the broad patterns of American and human history because, consistent with California's role as a leader in technological innovation, the research, development, and testing of the technology that was used in the Apollo 11 mission was largely carried out in the State of California. Moreover, the aerospace research industry and military research were crucial in the economic development of portions of the state, including the areas surrounding Pasadena (Jet Propulsion Laboratory) and Edwards Air Force Base.
> (2) associated with the lives of persons significant in our past because each of the three astronauts of Apollo 11 (Neil Armstrong, Buzz Aldrin, and Michael Collins).
> (3) embody a distinctive type of engineering technology unique to the early aerospace industry because the technology used for Apollo 11 represents the earliest ground-breaking sophisticated technology of its kind, from which all subsequent and current aerospace technology is based, and which was developed largely in facilities located in the State of California.
> (4) can provide important information on the early development of space technology.
> The Period of Significance is the year 1969. The Date of Significance is July 20, 1969. All of the 106+ objects within the boundaries are considered contributing elements to the significance of the site. Based on the relative lack of atmosphere and no known return visit to Tranquility Base, the property is assumed to retain integrity.[452]

[451] Cheng, *Studies*, *supra* note 23 at 308.
[452] Primary Record, Objects Associated with Tranquility Base, (26 October 2009) online: State of California Department of Parks and Recreation <http://ohp.parks.ca.gov/pages/1067/files/tranquility%20base_draft.pdf>.

This action cites both the nationalistic and universal qualities of the Tranquility Base historic site and thus avoids one of the pitfalls of the Apollo Act. Because only the movable objects are listed, it is permissible to list the space heritage located at Tranquility Base under California law.[453] As both registrations only consider the objects themselves as protected, rather than the surface of the Moon itself, such registration does not run afoul of the non-appropriation principle.[454] Given the location of prominent launch sites in both California and New Mexico, the desirability of binding entities launching from these facilities to heritage requirements under State law is apparent.

D. Conclusions

While the NASA Recommendations, Apollo Act, and inclusion on State heritage lists all take important initials steps to acknowledge the status of one or more Apollo landing sites as cultural heritage sites, these steps are unfortunately baby steps. They simply provide protection for the site(s) from the actions of nationals and mandate consultations with foreign actors in international law. It is essential that more robust protections be developed moving forward.

[453] *California Public Resources Code* § 5020.1.
[454] Walsh, *supra* note 1 at 236.

Chapter VII. Solutions for the Preservation of Space Heritage

A. A Binding Multilateral Solution

1. New Treaty or Annex

A multilateral treaty negotiated through either COPUOS or UNESCO would be an ideal solution, provided that it would be able to obtain sufficient ratifications among space-faring nations to be effective. The Moon Agreement and Underwater Heritage Convention both suffer from under-subscription, and thus pursuing a treaty through either body suffers a chance of failure, even if the draft of such treaty can be agreed upon. That is not to say, however, that these bodies themselves have been failures, merely that attempts to put forth binding multilateral treaties in recent years have been fraught with difficulty. An alternative to an entirely new treaty, which may be easier to achieve, would be an Annex to the Outer Space Treaty dealing with space heritage. Annex V to the Antarctic Environmental Protocol would provide a useful model for the protection of space heritage in this context; "the parties to the Antarctic Treaty have a veto on the setting up of Areas, and on inclusions on the list of Antarctic Historic Sites and Monuments."[455]

Article 7(3) of the Moon Agreement, or a modified version thereof, could also be utilized as a first step in providing the necessary protections. This non-contentious provision indicates an awareness of a problem and a willingness to address it in the international arena. Though it is regrettable that the Moon Agreement did not provide

[455] Lyall, "OST Art. IX," *supra* note 55 at 664.

a system for visits or inspections of Moon facilities or sites, this gap could be rectified with a new agreement pertaining to space heritage.[456]

Either of these proposed multilateral treaty solutions would need to include: a procedure for designating heritage objects and sites, a statement that heritage objects are still space objects for the purpose of international space law, the establishment of protective zones around objects and/or sites, a procedure for the visitation of these zones, and a mechanism for international cooperation in the management of these sites. The "emerging concept of planetary parks…to protect areas of celestial bodies for purposes in addition to scientific exploration an use, including historic and aesthetic values, as well as the interests of future generations" could be implemented to the benefit of space heritage.[457] The inclusion of an effective planetary protection policy that protects not only the space environment generally, but also specific sites for their unique scientific or historic value would be of benefit to the space law system.[458] It would be more beneficial, however, to reach a solid agreement regarding space heritage than to overreach, including more environmentally based provisions, and thus potentially fail in both endeavors.

2. Amendments to the World Heritage Convention

It would be possible to extend the full spectrum of World Heritage Convention protections to space heritage through amendment to the World Heritage Convention itself. The most critical of these amendments would be a change to Article 3. The revised provision would read as follows: 'It is for each State Party to this Convention

[456] Oduntan, *supra* note 28 at 179.
[457] Sterns & Tennen, *supra* note 34 at 277-278.
[458] *Ibid* at 269.

to identify and delineate the different properties situated on its territory, or in outer space and under its jurisdiction, mentioned in Articles 1 and 2 above.' Articles 4 and 5 would require similar amendments for the provided protections to fully apply. Article 11, regarding heritage located in disputed territory, could be amended to include space heritage over which there is a jurisdictional dispute.

Though the amendments required would be relatively minor in terms of the scope and number of changes, this solution is not very likely to come to fruition given the wide acceptance of the World Heritage Convention and the potentially contentious inclusion of space heritage. The fact that underwater heritage, which is also beyond the limits of territorial jurisdiction, was discussed in a separate convention rather than as an amendment to World Heritage Convention could also indicate potential problems with this solution. Even if such amendments were to succeed, difficulty would arise where some States would only be party to the original Convention, while those who ratified the amendment would fall under a different set of rules.

3. UN Trusteeship

Another multilateral solution is the use of the UN Trusteeship System to administer space heritage. "The International Trusteeship System provides for the administration of certain non-self-governing territories by fully developed States acting as trustees[.]"[459] Article 75 of the UN Charter establishes the system "for the administration and supervision of such territories as may be placed thereunder by

[459] Simma, *supra* note 46 at 1099.

subsequent individual agreements."[460] Contrary to popular belief, "the TC was not abolished, it only suspended its operation (on 1 November 1994)."[461]

Placing space heritage sites into trusteeship as specified in the Charter would be an effective solution providing protection for such heritage. Territories can be "voluntarily placed under the system by states responsible for their administration."[462] Thus, it would be most appropriate for the State retaining jurisdiction and control over the objects at a particular site to place such a site into the system as the owner of the space heritage. These trusteeship mandates historically applied to territories that "were deemed to be principally unsuitable for development into self-governing States."[463] Obviously, barring future colonization of celestial bodies, sites in outer space would fall into this category.

Such use of the Trusteeship System would fall within appropriate established objectives, namely: "to further international peace and security;" and "to ensure equal treatment in social, economic, and commercial matters for all Members of the United Nations and their nationals[.]"[464] This use would prevent conflict resulting from questions of the freedom of use of outer space or destruction of space heritage, and would ensure that States are able to maintain equal access to such sites as permissible within the bounds of their protection, both for scientific and commercial purposes.

The terms of each trusteeship agreement are "agreed upon by the states directly concerned," thus, such States owning heritage objects in a territory or wishing to use or explore such territory have an established mechanism to ensure their interests are

[460] *UN Charter*, *supra* note 45, art 75.
[461] Simma, *supra* note 46 at 1129.
[462] *UN Charter*, *supra* note 45, art 77.
[463] Simma, *supra* note 46 at 1115.
[464] *UN Charter, supra* note 45, art 76(a), 76(d).

respected in any final agreement.[465] Trusteeship agreements have generally been concluded between the administering authority and the UN; there has not been any doubt about the treaty character of these agreements despite the fact that they were only binding between one State, the administering authority, and the UN.[466] Thus, participation of additional States beyond that State having jurisdiction and control over the heritage and wishing to protect that heritage would not be necessary. The composition of the Trusteeship Council itself is flexible, allowing for a balancing of the interests of those States that are sources of space heritage, and those that are not.[467]

Trusteeship agreements "include the terms under which the trust territory will be administered and designate the authority which will exercise the administration of the trust territory."[468] The administering authority can be the UN, or one or more States.[469] As a general rule, there has historically been only a single State acting as the administering authority of the territory in trusteeship, the notable exception to this trend being Nauru.[470] As it had never done so, there is an unresolved question as to whether the UN itself should become an administering authority as it is permitted to do under the Charter.[471] This could be an ideal solution from a cooperation perspective, but it is unlikely given its wide divergence from the status quo.

"Theories about sovereignty could not help to resolve the legal questions that arose" regarding trusteeship territories; in these cases, international instruments such

[465] *UN Charter, supra* note 45, art 79.
[466] Simma, *supra* note 46 at 1118.
[467] *UN Charter, supra* note 45, art 86.
[468] *Ibid,* art 81.
[469] *Ibid*.
[470] Simma, *supra* note 46 at 1122.
[471] *Ibid*.

as mandates, charters, and trusteeship agreements determined sovereignty.[472] The concept of sovereignty was alien to trusteeship cases,[473] thereby providing a useful mechanism for outer space. Given that trusteeship does not confer sovereignty on an administering State, no conflict with the non-appropriation principle would exist. Administration by the UN itself could not possibly be construed as "national appropriation" and thus would provide an even more stable, reliable solution.

The Charter specifies that with the exception of agreements made in the context of trusteeship, there would be no alteration to States' rights with regard to any existing international instruments; thus, participation in the trusteeship system would otherwise not impact States' rights in international space law or cultural heritage law.[474]

As the Trusteeship Council's rules of procedure were amended so that "...the TC could be convened 'where occasion may require[,]" it would be possible to reconvene the Council to administer space heritage.[475] When the UN Secretary General originally proposed the dissolution of the Trusteeship Council, some States "believed that the TC should be given a new mandate, such as the responsibility for safeguarding the 'common heritage of mankind'."[476] A subsequent proposal by the Secretary General stated:

> Member States appear to have decided to retain the Trusteeship Council. The Secretary-General proposes, therefore, that it be reconstituted as the forum through which Member States exercise their collective trusteeship for the integrity of the global environment and common areas such as the oceans, atmosphere, and outer space. At the

[472] Simma, *supra* note 46 at 1103.
[473] *International Status of South West Africa*, Advisory Opinion, [1950] ICJ Rep 128 at 27.
[474] *UN Charter, supra* note 45, art 80.
[475] Simma, *supra* note 46 at 1129.
[476] *Ibid*. at 1129.

> same time, it should serve to link the United Nations and civil society in addressing these areas of global concern, which require the active contribution of public, private, and voluntary sectors.[477]

The use of the Trusteeship Council advised by this Thesis fits within the ambit of the Secretary General's proposal.

Visits to the trust territories are provided for in the UN Charter,[478] and there are, in fact, specific rules spelling out the procedure for such visits.[479] Such visits would be a more effective solution for heritage than visits taking place under Article XII of the Outer Space Treaty.

In accordance with the Charter, the Trusteeship Council is mandated, as appropriate, to avail itself of assistance from specialized UN agencies.[480] This provision provides a clear option for collaboration between the Trusteeship Council, UNESCO, and COPUOS. In fact, UNESCO has previously provided help and support to the Trusteeship Council, so a partnership between the two bodies for the administration of space heritage sites would not be unusual.[481]

B. A "Soft Law" Solution

As "[t]he international treaty-making process can be slow and, at times, may not even result in an agreement[,]"[482] soft law alternatives have recently been pursued as alternatives to binding multilateral agreements. "In general, we may say that the era of

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[477] *Report of the Secretary-General, United Nations Reform: Measures and Proposals*, UN Doc A/51/950 (1997) at 85.
[478] *UN Charter, supra* note 45, art 87.
[479] Simma, *supra* note 46 at 1132-1134.
[480] *UN Charter, supra* note 45, art 91.
[481] Simma, *supra* note 46 at 1138.
[482] Steven A. Mirmina "Reducing the Proliferation of Orbital Debris: Alternatives to a Legally Binding Instrument" 99 AJIL 649 at 652.

treaty formation for the law of outer space is over, and it has been replaced by more specific and incremental steps including memoranda of understandings, Framework Agreements, voluntary regimes, codes of conduct, and case law decisions."[483]

The type of soft law solution contemplated here is a "pledge" – this category encompasses such documents as non-binding UN agreements.[484] A soft law pledge is more flexible, and is preliminary and thus is not as precedential or public as a treaty and does not necessitate a complex ratification process.[485] One benefit of such agreements is that they are drafted on a consensus basis, in the self-interest of the involved States, and therefore do not require an effective enforcement mechanism in order to hold legal weight.[486] Though they can still take substantial time to negotiate, declarations are adopted much more quickly than treaties come into force, due to the lack of a lengthy ratification procedure.

Such resolutions have been used consistently in space law.[487] In the most successful case, the Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space, it led to the formation of both customary law and treaty law, thus becoming binding norms.[488] A soft law solution should be used as a step towards achieving a longer-term space heritage solution. "Working outside the concept of territorial sovereignty, but remaining within those of the jurisdiction of licensing states, any arrangements need to provide sufficient room for

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[483] Jonathan F. Galloway, "Revolution and Evolution in the Law of Outer Space" (2008) 87 Neb L Rev 516 at 518.
[484] Kal Raustiala, "Form and Substance in International Agreements" (2005) 99 Am J Int'l L 581 at 587.
[485] *Ibid* at 591.
[486] Jonathan F. Galloway, *supra* note 483 at 519.
[487] See, *Broadcasting Principles, supra* note 49; *Remote Sensing Principles, supra* note 49; *NPS Principles, supra* note 49.
[488] See note 155 above and accompanying text.

states voluntarily to assume obligations and to avoid any implication that these are imposed."[489] Any such solution would need to address the same issues as a multilateral treaty, as discussed above.

C. Bilateral Agreements

Bilateral agreements could be used, either alone or in conjunction with a soft law solution and/or a unilateral action. Bilateral treaties can also contribute to the subsequent development of multilateral treaties; they serve as a proof-of-concept for treaty provisions.[490] "Bilateral agreements fulfill an important role in international cooperation for space activities."[491] They have been, and will be in the future, a significant vehicle for cooperation in space.[492] Such agreements have been used by the United States, the USSR, and a number of other space-faring nations.[493] Bilateral agreements can take the forms of: a classical convention, executive agreements, memoranda of understanding or exchange of letters.[494] These agreements are useful both for space-faring States and non-space-faring States who wish to cooperate and share benefits.[495] "Bilateral arrangements for co-operation in space are based partly on bilateral agreements sufficiently formal in character to have been registered with the United Nations as international engagements and partly on arrangements which have not been expressed in comparable legal form."[496] Bilateral agreements have also been

[489] Lyall, "OST Art. IX," *supra* note 55 at 664.
[490] Hosenball, *supra* note 53.
[491] van Bogaert, *supra* note 68 at 281.
[492] Hosenball, *supra* note 53.
[493] van Bogaert, *supra* note 68 at 276-281.
[494] *Ibid* at 278.
[495] Hosenball, *supra* note 53.
[496] Jenks, *Space Law, supra* note 25 at 82.

used from an underwater cultural heritage perspective to protect particular wrecks on the high seas.[497] Such agreements could be general in subject matter, or pertain to a specific site or series of sites, similarly to the Titanic Agreement.

D. Unilateral Action

Unilateral actions, such as unilateral declarations and national legislation, are another avenue open to the address the subject of space heritage. "The exercise of such unilateral action ultimately depends on whether the exercise of jurisdiction is within reasonable limits."[498] Good faith and reasonableness are essential in the exercise of appropriate functional jurisdiction.[499] Good faith is a fundamental principle of international law, which is the principle from which rules concerning reasonableness and fairness derive.[500]

It may

> be said that the obligation of States not to appropriate outer space or celestial bodies in any way does not affect their other rights, original or derived, to legislate for the protection of their lawful interests, the preservation of resources in outer space and to issue regulations desirable or necessary on grounds of public order and morals without unnecessarily interfering with the principle of the freedom of outer space.[501]

1. Article IX of the Outer Space Treaty

The utilization of Article IX of the Outer Space Treaty is a solution that, while not complete, may be expediently implemented. In order to exploit Article IX, a State

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[497] Dromgoole, *supra* note 383 at 2.
[498] Csabafi, *supra* note 25 at 66.
[499] *Ibid* at 100.
[500] O'Connor, J.F. *Good Faith in International Law* (Hanover; Dartmouth, 1991) at 124.
[501] Csabafi, *supra* note 25 at 99-100.

must make clear what actions will cause potentially harmful interference with their preservation of space heritage. There are a number of possibilities available for this purpose. "Security can be achieved on the basis of reciprocal tolerance and accommodation." [502] Article IX lays the foundation of such reciprocity and cooperation.

One such option available is a procedure of updates to the UN space object registry. Whether the mission of a space object is at its end, the object is out of control or out of orbit, or even if it has been shattered into many pieces, such information can be added to the UN registry in accordance with a broad interpretation of the relevant provisions of the Registration Convention.[503] In fact, COPUOS has recommended that "[a]ny useful information relating to the function of the space object in addition to the general function requested by the Registration Convention" and "[a]ny change of status in operations" be provided to the Secretary General for registry purposes.[504] Thus, States can update the registry of space objects to indicate that such objects are now considered space heritage and to catalogue artifacts associated with the object and provide location information.

A State may also issue unilateral statements, such as the NASA Recommendations, to unambiguously provide concrete information as to what actions will interfere with their heritage. Providing a well-reasoned rationale for why such actions present a danger, as NASA has done, should aid the effectiveness of such an action. A vital flaw with this solution, however, is the fact that though a consultation

[502] Bhatt, *supra* note 164 at 84.
[503] van Bogaert, *supra* note 68 at 121.
[504] *Recommendations on Enhancing the Practice of States and International Intergovernmental Organizations in Registering Space Obects*, UN Doc A/Res/62/101 (2008).

may be requested, it is possible within the bounds of the Treaty that such consultation may not occur.[505] The subjective premise of Article IX poses difficulty in its viability as a serious solution to this problem.[506] National legislation is also recommended in order to protect sites from nationals of that State, a feat which cannot be achieved under international law. This action would serve a corollary function to the solutions proposed here.

2. Construction of Facilities

Finally, a less viable unilateral solution is the construction of stations or facilities around important sites of space heritage. This solution would obviate the need to address concerns such as keep-out zones, functional jurisdiction, and the exclusive use of outer space, as the jurisdiction and control over facilities is already decided in international space law. This proposal, however, comes at great cost. Of course, the financial expense of constructing a lunar facility would be very high, but such an action would also raise questions of whether the action was conducted in good faith or with due regard for the activities of other States in outer space. In that regard, it poses a threat to the international space order. That said, while this is clearly not a viable solution for space heritage generally, the threat of such a solution has the possibility to spark urgency in the multilateral discussion, perhaps resulting in a more expedient resolution of the question than would otherwise occur. Fundamentally, though, this idea should be used as a last resort, both for legal and practical reasons.

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[505] Cheng, *Studies*, *supra* note 23 at 257.
[506] *Ibid* at 258.

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Chapter VIII. Conclusions

As commercial space technology continues to develop in the future, "[m]any people will want to visit the place where their ancestors first reached the Moon's surface and opened up the first non-Earth place for human residence and activities."[507] Thus, it is necessary to protect these sites, not only for their present scientific and historic value, but also for future generations. "From an economic perspective, the preservation of historical assets has the potential to generate a powerful heritage industry and increase tourism and related business."[508] Therefore, the concerns for humanity's heritage are also accompanied by concerns for the financial viability of space enterprises. Lunar tourism has already been contemplated by such ventures as Golden Spike, and the Google Lunar X prize is offering boons to participants for approaching lunar heritage sites. Future interaction with these sites is inevitable. If "the point of history is to learn from the past"[509] then it is necessary to preserve the past in order to learn from it.

"The main objective for sustainable heritage tourism planning is to answer two questions, namely, 'which are the most appropriate cultural heritage places for development for tourism?' and 'what is the best way to manage those heritage places

[507] T.F. Rogers, "Safeguarding Tranquility Base: Why the Earth's Moon Base Should Become a World Heritage Site" (2004) 20 Space Policy 5 at 5.
[508] Vadi, *supra* note 157 at 899.
[509] Michael S. Goodman, "Making Space for History" (2001) Space Pol'y 229 at 230.

for sustainability?'"[510] These questions must be answered first by the legal gatekeepers of heritage, before it is too late. At present, States are in the best position to determine appropriate approach vectors for heritage sites necessary for their sustained viability. Therefore, it is the responsibility of States, be it unilaterally, bilaterally, or multilaterally, to provide such rules. "In short, the force of technological change must be tempered by the rule of law."[511]

This Thesis has revealed that there are some protections available for space heritage in the international legal regime, but unfortunately, many of these protections only become available after such heritage has been disturbed. These rules include liability for damage to space objects, return of space objects that have returned to Earth, prohibitions against theft and vandalism of cultural property, and prohibitions on illicit transfer. The World Heritage Convention only applies to space heritage in a very limited way: it specifies that heritage not included on the World Heritage List can still qualify for protection as heritage, and calls for international co-operation in identifying and conserving such heritage. The most helpful provisions in international law for the protection of space heritage can be found in Articles VIII and IX of the Outer Space Treaty, respectively establishing jurisdiction, ownership, and control over space objects and mandating that States conduct their space activities with due regard for other States.

There are various means available to States for protecting their heritage from their own nationals, several of which the United States has experimented with, but the question of protection from other States' space activities is more difficult to answer.

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[510] Hilary du Cros, "A New Model to Assist in Planning for Sustainable Cultural Heritage Tourism" (2001) 3 Int'l J Tourism Research 165 at 166.
[511] Jonathan F. Galloway, *supra* note 483 at 520.

"While removal of (parts of) a spacecraft and damage to such craft by non-nationals are covered by the UN conventions, and while national legislation may cover the actions of nationals, there is no convention that can prevent a party from going near a spacecraft/artifact on the lunar or any other planetary surface (apart from Earth) while not actually damaging it."[512] It is possible in international law that "keep-out zones" can be establishing utilizing the functional jurisdiction available to States with regard to their space activities, but the unilateral imposition of such zones is untested. Given that exclusivity in an area surrounding a space object on the celestial body only provides marginal additional hindrance to other States using to wish and explore space, but would be a great boon in the protection of humanity's heritage in space, the principle that "[a] socially important interest shall not perish for the sake of respect for an objectively minor right"[513] should apply in this instance.

The most viable and effective means for the protection of space heritage is a multi-step process that begins with the use of existing protections under the space law and cultural heritage regimes. As these protections are already in place, there does not need to be any lapse before implementation. States should promptly take unilateral action in cases where they have not done so to maximize the benefit that they can receive under Article IX of the Outer Space Treaty for the protection of space heritage. Next, States should enter into either general or site specific bilateral agreements with individual States that are actively planning activities in the vicinity of their space heritage in the near term. Meanwhile, a soft law solution should be pursued in the form of a UN declaration, preferably through COPUOS, though UNESCO is also a

[512] Spenneman, "Out of this World," *supra* note 4 at 363.
[513] Bin Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (Cambridge: Cambridge University Press, 1953) at 74.

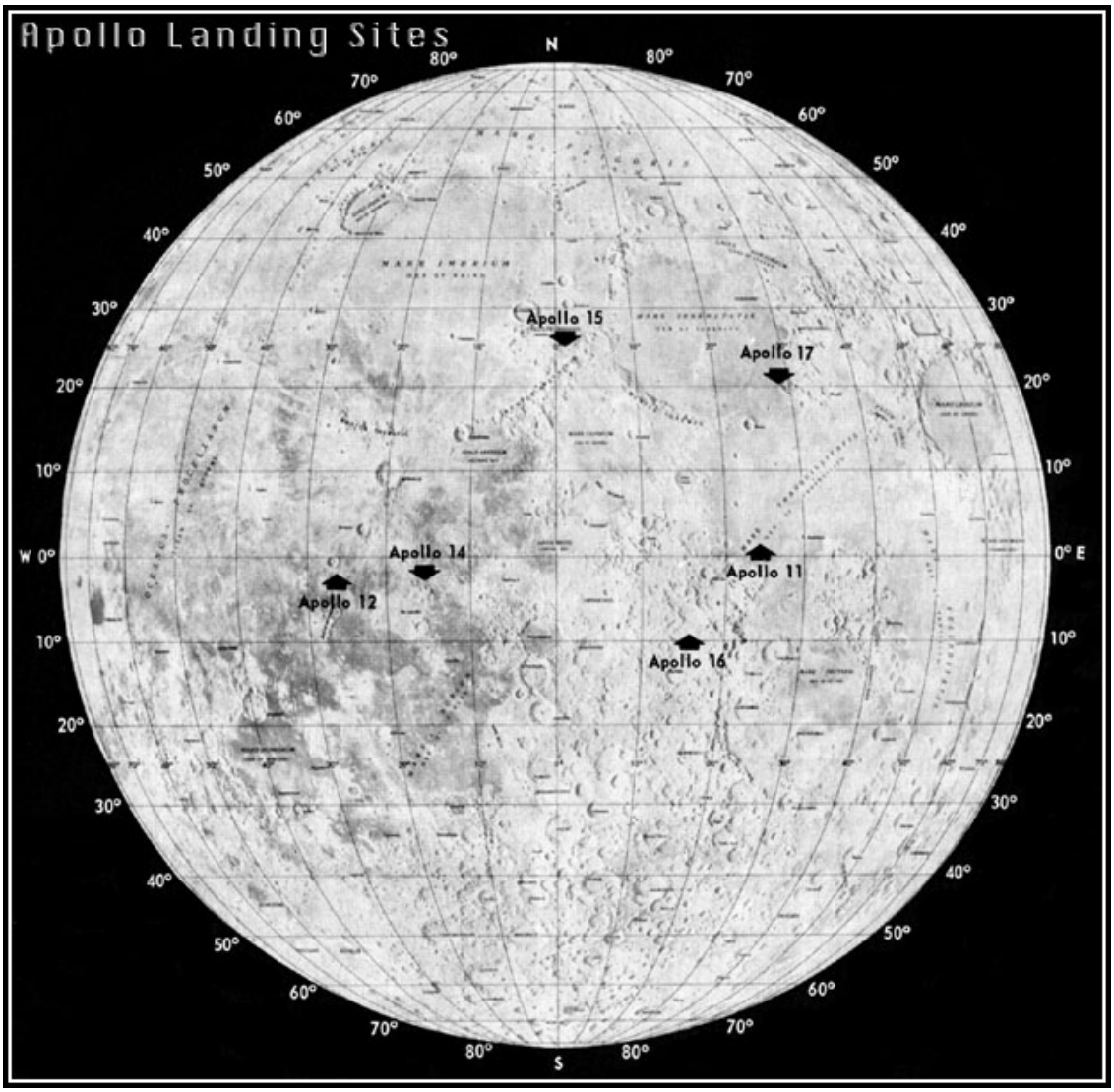
viable option. Hopefully, these steps will eventually lead to a new multilateral treaty, a Protocol to the Outer Space Treaty, or the utilization of the UN trusteeship system for the protection of space heritage. Even if none of these binding multilateral treaty solutions are achieved, there is still a possibility that customary international law will emerge, originating from the soft law solution and State practice.

Generally speaking, "international law has evolved from the 'law of co-existence' to the 'law of cooperation.'"[514] In the space heritage arena, this is apparent in the NASA Recommendations, which seek a cooperative solution to the problem of protecting lunar sites and artifacts. In international law, these Recommendations seek to utilize the provisions of Article IX of the Outer Space Treaty in good faith to achieve a desirable result. The importance of the pursuit of a solution in good faith cannot be overstated, regardless which recommended solution(s) is (are) applied, or if some entirely different solution prevails. "To do nothing is to fail, individually and collectively, to shoulder this responsibility."[515] Thus, it is our responsibility as lawyers to continue to pursue and advocate solutions to the problem of space heritage before other explorers return to the Moon.

[514] Jakhu, "Global Public Interest," *supra* note 224 at 41.
[515] O'Keefe & Nafziger, *supra* note 368 at 391.

Annex

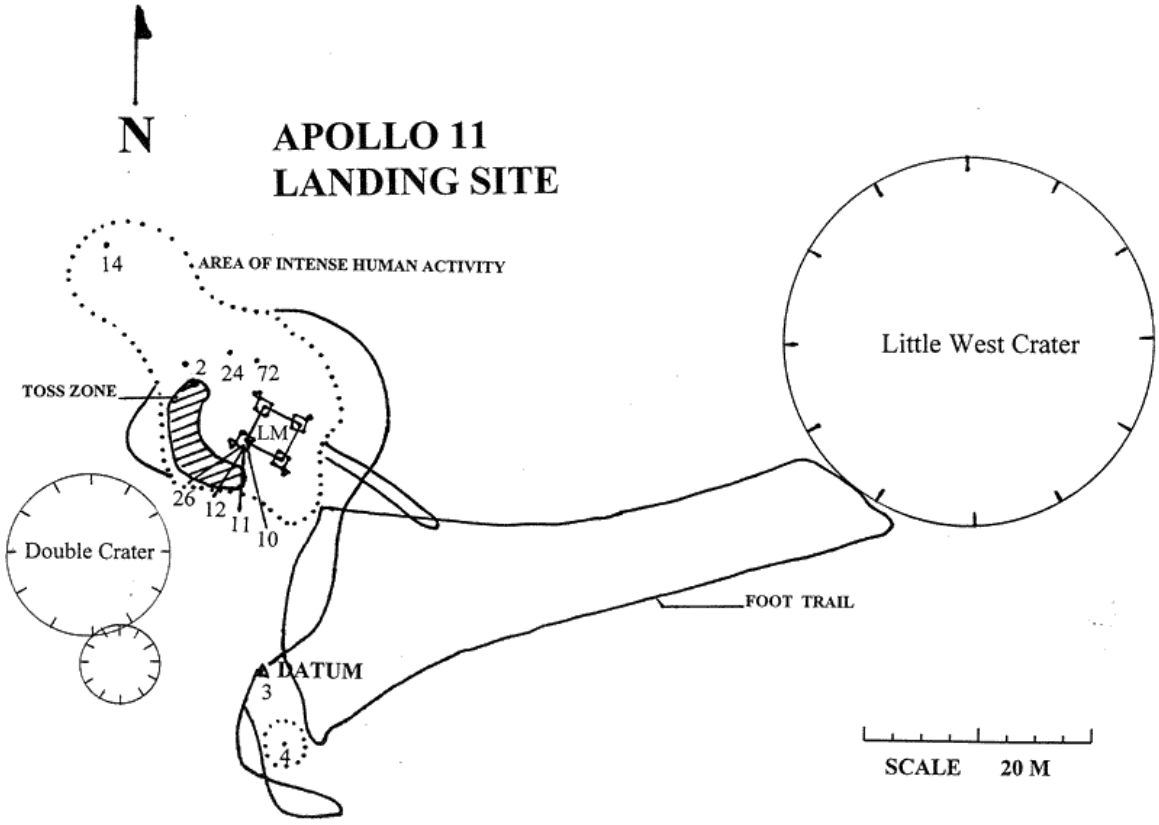
Figure 1: Map of Apollo Landing Sites



Available at:

http://airandspace.si.edu/explore-and-learn/topics/apollo/FIGURES/LandingSitesMaps.jpg

Figure 2: Map of Tranquility Base



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