Journal of Air Law and Commerce

Volume 84 | Issue 3 Article 2

2019

Preserving Humanity's Heritage in Space: Fifty Years After Apollo 11 and Beyond

Andrea J. Harrington
USAF Air Command and Staff College, andrea.j.harrington@gmail.com

PRESERVING HUMANITY'S HERITAGE IN SPACE: FIFTY YEARS AFTER APOLLO 11 AND BEYOND

Dr. Andrea J. Harrington*

ABSTRACT

As numerous governments and commercial entities plan ambitious expeditions into outer space and to celestial bodies, humanity's heritage in space is threatened. Fifty years following the Apollo 11 landing, we have recognized the historic, scientific, and cultural importance of this event and other spacefaring firsts, but the existing means to protect the resulting heritage is inadequate. This Article 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 international space law, focusing primarily on the language of relevant treaties in these fields. There have been several endeavors undertaken by the United States to protect the Apollo landing sites in general and Tranquility Base in particular, including the One Small Step Act passed by the U.S. Senate in July 2019. These actions are reviewed herein for appropriateness and efficacy. Recommendations to optimize the protection of space heritage in the future are then presented. This Article concludes that the most effective approach consists of a multistep process that can include unilateral actions, bilateral treaties, and a multilateral soft law solution, ideally culminating in a multilateral treaty before potentially leading to the formation of customary international law. Fundamentally, cooperation and good faith are the cornerstones of any solution to this issue under international law. It is important that the legal rules governing interac-

* Professor Harrington is an Associate Professor and Director of the Schriever Space Scholars at USAF Air Command and Staff College. The views expressed are those of the author and do not reflect the official policy or position of the U.S. Air Force, Department of Defense, or the U.S. government.

tion with and preservation of these objects and sites be clearly determined to avoid irreversible damage to a unique and irreplaceable resource.

TABLE OF CONTENTS

I. INTRODUCTION

A. The Cultural Importance of Space Exploration

"ONE SMALL STEP for man, one giant leap for mankind."[1] These iconic words, spoken by Neil Armstrong fifty years ago 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 constitute significant accomplishments in our shared history. How, then, are we to protect the evidence of these achievements for future generations? A 2018 White House Report acknowledges that "[t]here are no legal definitions of 'preservation' and 'protection' precisely applicable to lunar sites and artifacts."[2] This Article strives to analyze the concerns and options regarding protecting cultural heritage in space and provide recommendations for further application and development.

---

[1] Eric M. Jones, *One Small Step: Apollo 11 Lunar Surface Journal*, NASA (1995), https://www.hq.nasa.gov/alsj/a11/a11.step.html [https://perma.cc/TA86-4N6A] (last updated Apr. 18, 2018) (transcribing the Apollo 11 audio provided by NASA).

[2] Office of Sci. & Tech. Policy, Exec. Office of the President, Protecting & Preserving Apollo Program Lunar Landing Sites & Artifacts 1 (2018).

The National Air and Space Museum in Washington receives more visitors annually than all but one international art museum (the Musée du Louvre).[3] 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 a museum. Even if the registering states of these objects, which retain jurisdiction and control in space law,[4] were able to retrieve them, as suggested by the Russian delegate to the United Nations Committee on the Peaceful Uses of Outer Space Legal Subcommittee in 2019,[5] 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 early space exploration as accurately as possible. "The question of whether and how space exploration serves society and culture deserves deeper thought."[6] The preservation of these artifacts leaves room for such thought in the future.

This Article analyzes the status of these space heritage objects, with a twofold goal of articulating possibilities for their protection in accordance with the existing international law regime and 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

> No 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

---

[3] Justin St. P. Walsh, *Protection of Humanity's Cultural and Historic Heritage in Space*, 28 SPACE POL'Y 234, 235 (2012).

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

[5] *See generally* Comm. on the Peaceful Uses of Outer Space on Its Sixty-Second Session, Working Paper Submitted by the Russian Federation, U.N. Doc. A/AC.105/L.319 (Feb. 4, 2019); Comm. on the Peaceful Uses of Outer Space on Its Fifty-Ninth Session, Working Paper Submitted by the Russian Federation, U.N. Doc. A/AC.105/L.304, at 12 (2016).

[6] Linda Billings, *To the Moon, Mars, and Beyond: Culture, Law, and Ethics in Space-Faring Societies*, 26 BULL. SCI. TECH. & SOC'Y 430, 435 (2006).

> other people and also because of the presence of an atmosphere on Earth with the concomitant erosive forces of wind and water.[7]

Thus, this Article uses Tranquility Base and its artifacts as the model for analysis of space heritage.

The issue of humanity's cultural heritage in space has arisen as one of many unanswered questions in space law, with no international agreements specifically addressing it. With the beginning of the space age fifty-six years ago and a series of remarkable achievements in space exploration behind us, it is necessary to determine what should be done regarding the "artifacts" of this exploration.

NASA has promulgated their recommendations for spacefaring entities with the goal of protecting the lunar artifacts left behind by the Apollo missions.[8] 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 that arise as a result of craft landings.[9] Experience has shown that even artifacts that are sheltered by craters can be significantly sandblasted and pitted as a result of the moving particles.[10] These recommendations, supposedly drafted in conformity with the Outer Space Treaty, however, are completely nonbinding.[11] Legislation that has passed the U.S. Senate and is under consideration by the House of Representatives as of July 2019 would make these recommendations binding on U.S. entities seeking to land on the Moon.[12]

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

---

[7] Dirk H.R. Spennemann, *Out of this World: Issues of Managing Tourism and Humanity's Heritage on the Moon*, 12 INT'L J. HERITAGE STUD. 356, 362 (2006).

[8] NAT'L AERONAUTICS & SPACE ADMIN., NASA'S RECOMMENDATIONS TO SPACE-FARING ENTITIES: HOW TO PROTECT AND PRESERVE THE HISTORIC AND SCIENTIFIC VALUE OF U.S. GOVERNMENT LUNAR ARTIFACTS (2011), http://www.nasa.gov/pdf/617743main_NASA-USG_LUNAR_HISTORIC_SITES_RevA-508.pdf [https://perma.cc/WSL5-BN58] [hereinafter NASA's RECOMMENDATIONS TO SPACE-FARING ENTITIES].

[9] *Id.* at 7–8, 11.

[10] *Id.* at 13.

[11] *See id.* at 6.

[12] One Small Step to Protect Human Heritage in Space Act, S. 1694, 116th Cong. § 3(b)(1) (as passed by Senate, July 18, 2019); H.R. 3766, 116th Cong. (as referred to H. Comm. on Sci., Space, & Tech., July 16, 2019).

sites with careless expeditions and landing sites may be desecrated so that the items 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.[13]

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 regime by which a country can protect its heritage from other countries.[14] Both California and New Mexico have added Tranquility Base to their list of protected heritage sites.[15] However, this solution, and those proposed in the bill put forth to the U.S. House of Representatives, only serve to restrict the activities of a small subset of the potential visitors to the Moon. Though the Senate bill calls for the President to initiate negotiations for a binding international agreement, there is still a long road from this bill to a potential agreement.[16] 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 United Nations (U.N.) Educational, Scientific, and Cultural Organization (UNESCO) website defines heritage as "our legacy from the past, what we live with today, and what we pass on to future generations" and states that cultural heritage is an "irreplaceable source[ ]" of inspiration.[17] The Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (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

---

[13] John Catchpole, *In Commemoration of the 25th Anniversary of the Last Apollo Lunar Mission: Future History*, 39 Spaceflight 416, 416 (1997).

[14] *See* Dirk H.R. Spennemann, *Extreme Cultural Tourism: From Antarctica to the Moon*, 34 Annals Tourism Res. 898, 907–08 (2007).

[15] Kenneth Chang, *To Preserve History on the Moon, Visitors Are Asked to Tread Lightly*, N.Y. Times (Jan. 9, 2012), https://www.nytimes.com/2012/01/10/science/space/a-push-for-historic-preservation-on-the-moon.html [https://perma.cc/6AJS-6Y8X].

[16] One Small Step Act, S. 1694 § 2(b)(3).

[17] *About World Heritage*, UNESCO, http://whc.unesco.org/en/about/ [https://perma.cc/G7YZ-XV9G] (last visited Aug. 24, 2019).

following categories."[18] These categories include "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."[19] The Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage 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.[20] 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 are within the "province of all mankind."[21] 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.[22]

C. What Is a Space Object?

The definition of the term "space object" is critical to understanding the issues discussed in this Article, particularly given that rules regarding state jurisdiction, registration, and liability function primarily by reference to this term.[23] Likewise, it is critical to first understand which objects comprise space objects before determining which space objects may be classified as space heritage.

---

[18] Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property art. 1, Nov. 14, 1970, 823 U.N.T.S. 231[hereinafter Illicit Transfer Convention].

[19] *Id.*

[20] Convention Concerning the Protection of the World Cultural and Natural Heritage art. 1, Nov. 16, 1972, 27 U.S.T. 37, 1037 U.N.T.S. 151 [hereinafter World Heritage Convention].

[21] Outer Space Treaty, *supra* note 4, art. 1.

[22] *See generally* UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects, June 24, 1995, 2421 U.N.T.S. 457 [hereinafter UNIDROIT Convention]; World Heritage Convention, *supra* note 20; Illicit Transfer Convention, *supra* note 18; Convention for the Protection of Cultural Property in the Event of Armed Conflict and Regulations for the Execution of the Said Convention, May 14, 1954, 36 U.S.T. 2279, 249 U.N.T.S. 240 [hereinafter Hague Convention of 1954].

[23] Bin Cheng, Studies in International Space Law 463 (1997).

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.[24] Article XII uses the terms "stations, installations, equipment and space vehicles,"[25] 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 that other parties will have a right to visit. The Outer Space Treaty uses the term "objects" frequently,[26] but the diversity of terminology "seems to indicate that no consideration was given to the uniformity of terminology by the UN-COPUOS" (Committee on the Peaceful Uses of Outer Space).[27] The Return and Rescue Agreement uses the terms "space object" and "spacecraft" for a space object carrying personnel.[28]

The Liability Convention is, from a chronological perspective, the first of the space conventions to provide a definition of the term "space object," though the definition is self-referential.[29] There, the term is defined to include "component parts of a space object as well as its launch vehicle and parts thereof."[30] The Registration Convention utilizes an identical definition.[31] Both of these two conventions consistently use the term "space object."[32]

The Moon Agreement, however, uses the terms personnel, vehicles, equipment, facilities, stations, and installations,[33] rather than space object, except with regard to landing on and launching from the Moon and to aggression conducted from the Moon to other objects.[34] The question remains as to "whether the vari-

---

[24] Outer Space Treaty, *supra* note 3, arts. VII–VIII, X.

[25] *Id.* art. XII.

[26] *Id.* arts. IV, VII–VIII.

[27] IMRE ANTHONY CSABAFI, THE CONCEPT OF STATE JURISDICTION IN INTERNATIONAL SPACE LAW 11 (1971).

[28] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space arts. 1–5, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119 [hereinafter Return and Rescue Agreement].

[29] *See* Convention on the International Liability for Damage Caused by Space Objects art. I(d), Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter Liability Convention].

[30] *Id.*

[31] Convention on Registration of Objects Launched into Outer Space art. I(b), Jan. 14, 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15 [hereinafter Registration Convention].

[32] *See id.*; Liability Convention, *supra* note 29.

[33] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies arts. 3.4, 8.2(b), 9, 12, 15, Dec. 18, 1979, 1363 U.N.T.S. 3 [hereinafter Moon Agreement].

[34] *Id.* arts. 3.2, 8.2(a), 13.

ous 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."[35] It seems most likely that these terms were used to provide additional granularity for certain types of space objects, such as 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 regarding the definition of space object as contained in the Moon Agreement is largely moot given the small number of ratifications, which do not include any of the major space powers.[36]

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."[37] 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)[38] 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.[39]

The term space object can be abstruse and lead to misinformed interpretations.[40] 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.[41]

---

[35] CHENG, STUDIES, *supra* note 23, at 503.

[36] *See* Comm. on the Peaceful Uses of Outer Space, Rep. of the Legal Subcomm. on Its Fifty-Eighth Session, Status of International Agreements Relating to Activities in Outer Space as at 1 January 2019, U.N. Doc. A/AC.105/C.2/2019/CRP.3, at 5–10 (Apr. 1, 2019) [hereinafter COPUOS, Agreement Status].

[37] CHENG, STUDIES, *supra* note 23, at 493.

[38] *See generally* Registration Convention, *supra* note 31; Liability Convention, *supra* note 29; Outer Space Treaty, *supra* note 4.

[39] *See* CHENG, STUDIES, *supra* note 23, at 495.

[40] E.R.C. VAN BOGAERT, ASPECTS OF SPACE LAW 118 (1986).

[41] "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." 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"[42] and, in the context of the space treaties, must also be modified by and include "its component parts."[43] "Insofar as stray objects are concerned, the various treaties consistently include component parts."[44] Therefore, the term "space object" automatically includes component parts unless contextually indicated otherwise.[45] 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."[46] This explanation resolves the issue regarding 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."[47] 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."[48] He adds that inserting the phrase "or a part of it" after "object" would be in accordance with the definitions provided in the Liability Convention and Registration Convention.[49]

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."[50] Perhaps the most suitable definition of the term would combine

---

[42] Gyula Gál, *Space Objects - "While in Outer Space," in* PROCEEDINGS OF THE THIRTY-SEVENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 84 (Am. Inst. of Aeronautics & Astronautics ed., 1994).

[43] CSABAFI, *supra* note 27, at 11.

[44] CHENG, STUDIES, *supra* note 23, at 500.

[45] *Id.*

[46] *Id.* at 502.

[47] *Id.* at 463.

[48] Stephen Gorove, *Evaluating Policy Alternatives Pertaining to the Legal Definition of "Space Object," in* PROCEEDINGS OF THE THIRTY-EIGHTH COLLOQUIUM ON THE LAW OF OUTER SPACE 266, 267 (Am. Inst. of Aeronautics & Astronautics ed., 1995).

[49] *Id.*

[50] MANFRED LACHS, THE LAW OF OUTER SPACE: AN EXPERIENCE IN CONTEMPORARY LAW-MAKING 69 (1972).

both Gorove's and Lachs'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.[51] Of course, the difficulty arising from any of these definitions is the lack of a line of demarcation as to where air space ends and outer space begins, which is an issue beyond the scope of this Article.[52]

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 by [sic] in outer space is not, by itself, a sufficient justification for it to be legally qualified as a space object,"[53] 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 logical 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 embraces satellites, spacecraft, space vehicles, equipment, facilities, stations, installations and other constructions, including their components, as well as their launch vehicles and parts thereof."[54]

"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."[55] In other words, "there is no apparent time limit."[56] The status of an object as a space object "is not affected by [its] presence in outer space or on a celestial body or by [its] return to the Earth," as stated in the Outer Space Treaty.[57] At this

---

[51] *See id.*; Gorove, *supra* note 48, at 267.

[52] For discussion of this issue, see GBENGA ODUNTAN, SOVEREIGNTY AND JURISDICTION IN THE AIRSPACE AND OUTER SPACE: LEGAL CRITERIA FOR SPATIAL DELIMITATION (2012).

[53] Gál, *supra* note 42, at 85 (citing A.D. Terekhov, *Passage of Space Objects Through Foreign Airspace*, *in* PROCEEDINGS OF THE THIRTY-FIRST COLLOQUIUM ON THE LAW OF OUTER SPACE 52 (Am. Inst. of Aeronautics & Astronautics ed., 1988)).

[54] CHENG, STUDIES, *supra* note 23, at 464.

[55] *Id.* at 504–05.

[56] *Id.* at 505.

[57] Outer Space Treaty, *supra* note 4, art. VIII.

point, these provisions "may be regarded as merely declaratory of the position under general international law."[58]

D. 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 difficulty in terms of defining exactly which space objects could comprise heritage.[59] Even within 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.[60] The individual definitions in each relevant convention are discussed in more detail in Section III to determine 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,[61] it is necessary to define the concept for the purposes of this Article. 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.[62]

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.[63] There is no doubt at this stage that scientifically or historically important materials can be included within the concept of cultural heritage.[64] 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."[65] The protection of cultural heritage is an attempt to prevent "the eternal

---

[58] Cheng, Studies, *supra* note 23, at 466.

[59] *See* Janet Blake, *On Defining the Cultural Heritage*, 49 Int'l Comp. L.Q. 61, 63 (2000).

[60] Manlio Frigo, *Cultural Property v. Cultural Heritage: A "Battle of Concepts" in International Law?*, 86 Int'l Rev. Red Cross 367, 368–69, 375 (2004).

[61] Outer Space Treaty, *supra* note 4; Walsh, *supra* note 3, at 236.

[62] Blake, *On Defining the Cultural Heritage*, *supra* note 59, at 67–68.

[63] *Id.* at 72.

[64] *See* UNIDROIT Convention, *supra* note 22, art. 2; Convention for the Protection of the Architectural Heritage of Europe art. 1, Oct. 3, 1985, C.E.T.S. 121; World Heritage Convention, *supra* note 20, art. 1; Illicit Transfer Convention, *supra* note 18, art. 1; Hague Convention of 1954, *supra* note 22, art. 1.

[65] Blake, *On Defining the Cultural Heritage*, *supra* note 59, at 83–84.

silence created by the destruction of culture."[66] Thus, cultural 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.[67]

> 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.[68]

This concept of inheritance that is kept safe for future generations is the first element of any definition of the concept of cultural heritage.[69]

Cultural heritage provides a "deliberate continuity," representing the desired connection that a political society wishes to maintain and hand down.[70] 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.[71] The law serves a gatekeeping function with regard to heritage objects; by selecting, categorizing, and valuing objects, the law defines heritage and attempts to guarantee appropriate treatment.[72] "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."[73]

Cultural heritage is also "a base from which progress in cultural achievement becomes possible."[74] 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.

---

[66] Manfred Lachs, *The Defences of Culture*, 37 MUSEUM INT'L 167, 168 (1985).

[67] John Henry Merryman, *The Public Interest in Cultural Property*, 77 CALIF. L. REV. 339, 347–49 (1989).

[68] Lyndel V. Prott & Patrick J. O'Keefe, *'Cultural Heritage' or 'Cultural Property'?*, 1 INT'L J. CULTURAL PROP. 307, 311 (1992).

[69] *See* Blake, *On Defining the Cultural Heritage*, *supra* note 59, at 69, 83–84.

[70] RAYMOND WILLIAMS, THE SOCIOLOGY OF CULTURE 187 (Schocken Books 1982) (1981).

[71] *See* Blake, *On Defining the Cultural Heritage*, *supra* note 59, at 84.

[72] JOHN CARMAN, VALUING ANCIENT THINGS: ARCHAEOLOGY AND LAW 40 (1996).

[73] Prott & O'Keefe, *supra* note 68, at 309.

[74] Merryman, *The Public Interest in Cultural Property*, *supra* note 67, at 354.

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."[75] 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."[76]

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.[77] 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),[78] but this Article is concerned with the objects that 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, including the 189 individually catalogued items deposited by Apollo 15, should be preserved for their historic importance.[79] 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.[80] *In situ* preservation of space heritage objects actually in the vacuum of space should only be undertaken in circumstances where the placement and

---

[75] CHENG, STUDIES, *supra* note 23, at 505.

[76] CARMAN, *supra* note 72, at 29.

[77] Walsh, *supra* note 3, at 235.

[78] *See* Robert Z. Pearlman, *Space Shuttle Discovery Enters Smithsonian for Museum Display*, SPACE.COM (Apr. 19, 2012), https://www.space.com/15339-space-shuttle-discovery-smithsonian-museum.html [https://perma.cc/5QT7-J3JR].

[79] PROTECTING & PRESERVING APOLLO PROGRAM LUNAR LANDING SITES & ARTIFACTS, *supra* note 2, at 1–2; Gerda Horneck & Charles S. Cockell, *Planetary Parks – Suggestion for a Targeted Planetary Protection Approach*, *in* PROTECTING THE ENVIRONMENT OF CELESTIAL BODIES 45, 47 (Mahulena Hofmann et al. eds., 2010).

[80] *See, e.g.*, Horneck & Cockell, *supra* note 79, at 47.

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, they 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, since 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 that are stationary and can easily be 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. Each 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.[81]

There is extensive evidence that, generally speaking, people care about cultural objects, including: (1) the popularity of museums; (2) the existence of laws regarding preservation, conservation, and export; and (3) the dialogue about cultural heritage in both national and international law.[82] The popularity of museums displaying space heritage objects reflects that people feel a concern about this form of heritage in particular.[83]

2. Space Heritages Sites

In selecting what constitutes heritage, the law delineates 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.[84] "[T]he site comprising a vehicle or vessel (so long as it is of 'public interest')" can be classified as just such a site.[85]

There are several sites on the surface of the Moon that are of unique value due to their connection to early lunar explora-

---

[81] For further discussion of this topic, see *infra* sections II.C.4, II.C.6.
[82] *See* Merryman, *The Public Interest in Cultural Property*, *supra* note 67, at 343.
[83] Walsh, *supra* note 3, at 235.
[84] *Cf.* CARMAN, *supra* note 72, at 120.
[85] *Id.* at 187.

tion.[86] 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 as a single site."[87] There are also five additional Apollo manned landing sites that should be considered heritage sites.[88]

> Each Apollo lunar landing site retains the landing stage (base) of the lunar modules (LM), instruments packages (EASEP or ALSEP), the 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. In addition there is unneeded 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.[89]

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, than the objects located at the site. In the words of Francis Lyall, "it makes no sense to protect artefacts without protecting the site of their location."[90] 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.

II. INTERNATIONAL SPACE LAW

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 Section III of this Article), 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 law and of municipal law relating to outer space."[91] The sources of space law are the

---

[86] Horneck & Cockell, *supra* note 79, at 47.

[87] Spennemann, *Extreme Cultural Tourism*, *supra* note 14, at 909.

[88] *See id.* at 912.

[89] Dirk H.R. Spennemann, *The Ethics of Treading on Neil Armstrong's Footprints*, 20 SPACE POL'Y 279, 282 (2004).

[90] Francis Lyall, *OST Art. IX, Improvements: Cultural and Natural Heritage Elements*, 53 PROC. INT'L INST. SPACE L. 657, 661 (2010).

[91] CHENG, STUDIES, *supra* note 23, at 383.

same as those found in international law generally.[92] These sources are articulated in the first paragraph of Article 38 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.[93]

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 space treaties, is the cornerstone of space law.[94] This Treaty has been ratified by 109 states and signed by an additional 23, demonstrating its nearly universal acceptance.[95] All of the major spacefaring states have acceded to this Treaty.[96] Articles I, II, and III of the Outer Space Treaty are considered to be fundamental principles of space law.[97] 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 cooperation and understanding.[98]

---

[92] *See, e.g.*, P.P.C. Haanappel, The Law and Policy of Air Space and Outer Space: A Comparative Approach 7–9 (2003).

[93] Statute of the International Court of Justice art. 38(1), June 26, 1945, 59 Stat. 1031, 33 U.N.T.S. 993.

[94] *See* Francis Lyall & Paul B. Larsen, Space Law: A Treatise 53 (2009).

[95] COPUOS, Agreement Status, *supra* note 36, at 10.

[96] *Id.* at 5–10.

[97] *See* I.H. Ph. Diederiks-Verschoor, *Space Law as It Effects Domestic Law*, 7 J. Space L. 39, 41–42 (1979); *see also* Lyall & Larsen, *supra* note 94, at 53.

[98] Outer Space Treaty, *supra* note 4, art. III.

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 also 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 important to consider that "[t]he law relating to the conclusion, validity, effect, interpretation and discharge of treaties and other international agreements applies to treaties and agreements covering space matters."[99] Though the Vienna Convention on the Law of Treaties (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.[100] 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.[101]

The Return and Rescue Agreement, Liability Convention, and Registration Convention all elaborate specific aspects of the Outer Space Treaty. These conventions, with ninety-eight, ninety-six, and sixty-nine ratifications, respectively,[102] provide more detailed rules relating to return and rescue, liability, and registration requirements. Unlike the Outer Space Treaty, the Return and Rescue Agreement does not offer much benefit to non-spacefaring states,[103] which may account for the small disparity in ratifications between the two treaties.[104]

The Moon Agreement, the most recent and least subscribed of the outer space treaties (with a mere eighteen ratifica-

---

[99] C. WILFRED JENKS, SPACE LAW 205 (1965).

[100] *See* PANOS MERKOURIS, TREATY INTERPRETATION AND THE VIENNA CONVENTION ON THE LAW OF TREATIES: 30 YEARS ON, at 5 (Malgosia Fitzmaurice et al. eds., 2010); Steven Freeland & Ram Jakhu, *Article II*, *in* 1 COLOGNE COMMENTARY ON SPACE LAW: OUTER SPACE TREATY 44, 48 (Stephan Hobe et al. eds., 2009); *see also* Vienna Convention on the Law of Treaties arts. 31–32, May 23, 1969, 1155 U.N.T.S. 331 [hereinafter Vienna Convention].

[101] *See* Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory, Advisory Opinion, 2004 I.C.J. Rep. 136, ¶ 94 (July 9); Maritime Delimitation and Territorial Questions Between Qatar and Bahrain (Qatar v. Bahr.), Judgment, 1995 I.C.J. Rep. 6, ¶ 33 (Feb. 15); Territorial Dispute (Libyan Arab Jamahiriya/Chad), Judgment, 1994 I.C.J. Rep. 19, ¶ 41 (Feb. 3).

[102] COPUOS, Agreement Status, *supra* note 36, at 10.

[103] Roy S.K. Lee, *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space*, *in* 1 MANUAL ON SPACE LAW 53, 73 (Nandasiri Jasentuliyana & Roy S.K. Lee eds., 1979).

[104] *See* COPUOS, Agreement Status, *supra* note 36, at 10.

tions),[105] provides the least value in terms of binding rules of treaty law. The provisions contained within the Agreement bind only those eighteen parties. Somewhat misleadingly, the Moon Agreement does, in fact, apply to all celestial bodies in the solar system for which no specific international agreement has been reached.[106] Thus, for example, the Moon Agreement would apply to the proposed activities of the Netherlands, a state which is party to the Agreement,[107] on Mars.[108]

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 . . . or the general principles of law . . . ."[109] The two elements of customary international law are state practice and *opinio juris*.[110] "*Opinio 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."[111]

For the purposes of customary international law under subparagraph (b) of Article 38(1) 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.[112] In an area where few states have had the capability to demonstrate a consistent practice, the practice of those prevalent states able to demonstrate such practice is sufficient to form the basis of a rule of customary law.[113] "As regards the question who constitutes the prevalent or dominant section of any society, it may be said that this consists basically of those

---

[105] *Id.*

[106] Moon Agreement, *supra* note 33, art. 1(1).

[107] COPUOS, Agreement Status, *supra* note 36, at 8.

[108] Press Release, Mars One, Mars One Will Settle Men on Mars in 2023 (May 31, 2012), https://www.mars-one.com/news/press-releases/mars-one-will-settle-men-on-mars-in-2023 [https://perma.cc/3LKF-W6SV].

[109] Bin Cheng, *Custom: The Future of General State Practice in a Divided World*, *in* The Structure and Process of International Law: Essays in Legal Philosophy Doctrine and Theory 513, 513 (R. St.J. Macdonald & Douglas M. Johnston eds., 1983).

[110] *See, e.g.*, Kiobel v. Royal Dutch Petroleum Co., 621 F.3d 111, 131, 139 (2d Cir. 2010).

[111] Cheng, *Custom*, *supra* note 109, at 548.

[112] *See id.* at 549; *Kiobel*, 621 F.3d at 139.

[113] *See* Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. Rep. 226, ¶ 65 (July 8); Vaughn Lowe, International Law 83 (2007).

who have the intention of making their will prevail and the ability to do so."[114] According to Dr. 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."[115]

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."[116] The corollary, therefore, is also true: the less the field is covered by decided cases, the authority of commentators and jurists is greater.[117] Thus, where there is very little caselaw in the area of space, the importance of jurists' writings is greater 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."[118] 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 international law, or when such provision crystallizes, emerging as customary law.[119] 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.[120] Through direct consent provided by states in the passing of this Declaration, along with the total ab-

---

[114] Cheng, *Custom*, *supra* note 109, at 546.

[115] *Id.* at 547.

[116] The Kronprinsessan Margareta [1921] 1 AC 486, 495 (PC).

[117] VIRGILIU POP, WHO OWNS THE MOON?: EXTRATERRESTRIAL ASPECTS OF LAND AND MINERAL RESOURCES OWNERSHIP 44 (2008).

[118] Francesco Francioni, *Beyond State Sovereignty: The Protection of Cultural Heritage as a Shared Interest of Humanity*, 25 MICH. J. INT'L L. 1209, 1227 (2004).

[119] North Sea Continental Shelf (Ger./Den.; Ger./Neth.), Judgment, 1969 I.C.J. Rep. 40, ¶ 63 (Feb. 20); LOWE, *supra* note 113, at 83.

[120] LACHS, THE LAW OF OUTER SPACE, *supra* note 50, at 138; Bin Cheng, *United Nations Resolutions on Outer Space: "Instant" International Customary Law?*, 5 INDIAN J. INT'L L. 23, 28 (1965); Ram Jakhu & Maria Buzdugan, *Development of the Natural Resources of the Moon and Other Celestial Bodies: Economic and Legal Aspects*, 6 ASTROPOLITICS 201, 217 (2008); Ricky J. Lee, *Reconciling International Space Law with the Commercial Realities of the Twenty-First Century*, 4 SING. J. INT'L & COMP. L. 194, 204 (2000); Vladlen S. Vereshchetin & Gennady M. Danilenko, *Custom as a Source of International Law of Outer Space*, 13 J. SPACE L. 22, 33 (1985); Ivan A. Vlasic, *The Space Treaty: A Preliminary Evaluation*, 55 CALIF. L. REV. 507, 507–08 (1967).

sence of protest, spacefaring states have crafted binding norms of customary international law.[121]

Some standards, such as UN-COPUOS Space Debris Mitigation Guidelines, have also begun to play an important role both for cultural heritage law and space law. "While standards are not traditionally mentioned amongst the sources of international law . . . they have become more influential in shaping state conduct in regard to international relations."[122]

C. Principles of International Space Law for Heritage in Space

1. 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.[123] It has also been argued that this provision is a *jus cogens* norm, or peremptory norm, of international law.[124] 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."[125] 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."[126] Thus, the use and administration over territory in outer space will not substantiate the acquisition of that terri-

---

[121] Lachs, The Law of Outer Space, *supra* note 50, at 138.

[122] Valentina Sara Vadi, *Investing in Culture: Underwater Cultural Heritage and International Investment Law*, 42 Vand. J. Transnat'l L. 853, 866 (2009).

[123] Cheng, Studies, *supra* note 23, at 465; Lyall & Larsen, *supra* note 94, at 71; Pop, *supra* note 117, at 38; Freeland & Jakhu, *supra* note 100, at 45–46; Eilene Galloway, *Maintaining International Space Cooperation for Peaceful Uses*, 30 J. Space L. 311, 312 (2004); Ricky J. Lee & Felicity K. Eylward, *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 Forty-Eighth Colloquium on the Law of Outer Space 95, 98–99 (Am. Inst. of Aeronautics & Astronautics ed., 2005); F. Kenneth Schwetje, *Protecting Space Assets: A Legal Analysis of Keep-Out Zones*, 15 J. Space L. 131, 140–41 (1987).

[124] Csabafi, *supra* note 27, at 47; Freeland & Jakhu, *supra* note 100, at 55; Marjorie M. Whiteman, Jus Cogens *in International Law, with a Projected List*, 7 Ga. J. Int'l & Comp. L. 609, 625–26 (1977); *see also* C. Wilfred Jenks, The Prospects of International Adjudication 458 (1964); Jenks, Space Law, *supra* note 99, at 200; Cestmir Cepelka & Jamie H.C. Gilmour, *The Application of General International Law in Outer Space*, 36 J. Air L. & Com. 30, 47 (1970).

[125] Outer Space Treaty, *supra* note 4, art. II.

[126] Cepelka & Gilmour, *supra* note 124, at 32.

tory; "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 . . . ."[127]

De facto appropriation still may be a concern even in the absence of de jure appropriation. "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."[128] There are "legal complications arising from 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 . . . ."[129] 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.

While use does not constitute appropriation in violation of Article II, neither does symbolic activity.[130] 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.[131] This interpretation dovetails with Lachs's reading that Article II prohibits the creation of titles.[132] Even such extensive occupation of outer space as described above cannot constitute an appropriation or confer ownership over portions of space or celestial bodies.[133]

Article 12 of the Moon Agreement also clarifies that the placement of stations or facilities does 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 per-

---

[127] Freeland & Jakhu, *supra* note 100, at 53.

[128] S. BHATT, LEGAL CONTROLS OF OUTER SPACE: LAW, FREEDOM AND RESPONSIBILITY 155 (1973).

[129] CHENG, STUDIES, *supra* note 23, at 401.

[130] *See* MYRES S. MCDOUGAL ET AL., LAW AND PUBLIC ORDER IN SPACE 789 (1963).

[131] *See* Johanna Catena, *Legal Matters Relating to the "Settlement" of "Outposts" on the Moon*, *in* PROCEEDINGS OF THE FORTY-SEVENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 414, 418 (Am. Inst. of Aeronautics & Astronautics ed., 2004).

[132] LACHS, THE LAW OF OUTER SPACE, *supra* note 50, at 43.

[133] *See* ODUNTAN, *supra* note 52, at 189; Freeland & Jakhu, *supra* note 100, at 53–54.

missible and would not constitute an appropriation.[134] Despite the limited ratification of the Moon Agreement,[135] 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.[136] In sum, the *in situ* preservation of space heritage should not run afoul of the space law principle of non-appropriation.

2. 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.[137] It states: "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."[138] Therefore, it is impermissible for one state to interfere with another state's free access or use of outer space.[139]

In the words of Cepelka and Gilmour, "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;"[140] likewise, it must conform with other limitations imposed by international law.[141]

It is argued that exclusive rights to outer space or celestial bodies are not permitted in accordance with the right of free access.[142] While exclusivity is not permitted with regard to land, exclusivity can be exercised with regard to stations and facilities.[143] "A state cannot claim any exclusive right over a maritime

---

[134] *See* Stephen Gorove, *Property Rights in Outer Space: Focus on the Proposed Moon Treaty*, 2 J. SPACE L. 27, 29 (1974).

[135] *See* COPUOS, Agreement Status, *supra* note 36, at 10.

[136] LYALL & LARSEN, *supra* note 94, at 71.

[137] *See* Cheng, *United Nations Resolutions on Outer Space*, *supra* note 120, at 28–29.

[138] Outer Space Treaty, *supra* note 4, art. I.

[139] *See, e.g.*, Edwin W. Paxson III, *Sharing the Benefits of Outer Space Exploration: Space Law and Economic Development*, 14 MICH. J. INT'L L. 487, 492 (1993); Daniel A. Porras, Comment, *The "Common Heritage" of Outer Space: Equal Benefits for Most of Mankind*, 37 CAL. W. INT'L L.J. 143, 172 (2006).

[140] Cepelka & Gilmour, *supra* note 124, at 33.

[141] Jakhu & Buzdugan, *supra* note 120, at 216–17.

[142] Cody Tucker, *Lunar Rights: How Current International Law Addresses Rights to Use and Exploit Lunar Resources, the Practical Difficulties Attached, and Solutions for the Future*, 34 ANNALS AIR & SPACE L. 591, 601 (2009).

[143] *See* Lee & Eylward, *supra* note 123, at 100.

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 constructed on a celestial body."[144] Thus, there is no inherent right to exclusive use of a zone surrounding a facility in international law.

Safety and security of space activities and space objects must, however, be taken into consideration. While establishment of safety zones may serve a legitimate interest in protecting objectives or activities, "such claims ought to be rare and should not ignore the right of states to inclusive use."[145] 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 humankind 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.[146]

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."[147] 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.[148] Thus, a state is permitted to exercise functional jurisdiction over areas of the lunar surface as necessary for the relevant space activity, which could include preservation of space heritage.[149]

3. Reciprocal Visits

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

---

[144] Cepelka & Gilmour, *supra* note 124, at 35.
[145] BHATT, *supra* note 128, at 83.
[146] *See infra* section II.C.3.
[147] Cepelka & Gilmour, *supra* note 124, at 35.
[148] CSABAFI, *supra* note 27, at 131; ODUNTAN, *supra* note 52, at 225.
[149] *See infra* section III.C.4.

> 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.[150]

While this provision has so far been untested, the Apollo equipment and vehicles could be subject to such reciprocal visits in the future. The question would become whether the dormant nature and protection of these objects would outweigh the need for a direct visit or making contact with the objects. "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,"[151] especially when compared to its Antarctic Treaty forerunner, which opens installations and equipment to inspection at all times with no notice or reciprocity requirement.[152] Therefore, it may be possible to coordinate "visits" that would not interfere with the protection of the sites.

"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 vehicles is on a basis of reciprocity only."[153] 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-à-vis member states who do not have stations, equipment and space vehicles on the Moon and other celestial bodies, are not dealt with" in

---

[150] Outer Space Treaty, *supra* note 4, art. XII.

[151] NICOLAS M. MATTE, SPACE ACTIVITIES AND EMERGING INTERNATIONAL LAW 321 (Nicolas Mateesco Matte ed., 1984).

[152] *See* Antarctic Treaty art. VII, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71.

[153] Nicolas M. Matte, *Treaty Relating to the Moon*, *in* 1 MANUAL ON SPACE LAW, *supra* note 103, at 253, 254.

the text of the article.[154] 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.

4. Jurisdiction and Control

a. Article VIII of the Outer Space Treaty

Article VIII of the Outer Space Treaty grants jurisdiction, control, and ownership over space objects located by a state beyond its territory.[155] 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 component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth.[156]

This provision is considered by Cheng to be declaratory of customary international law that existed at the time the treaty was drafted.[157] Cheng 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.[158] 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."[159] 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 exclu-

---

[154] *Id.*

[155] Diederiks-Verschoor, *supra* note 97, at 42.

[156] Outer Space Treaty, *supra* note 4, art. VIII.

[157] *See* CHENG, STUDIES, *supra* note 23, at 466–67.

[158] *Id.* at 466.

[159] Moon Agreement, *supra* note 33, art. 12(1).

sive jurisdiction over its spacecraft, installations and personnel therein."[160]

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.'"[161] With respect to space law, "[j]urisdiction and control include the power of such State to legislate with respect to its space objects and the personnel on board thereof."[162] Jurisdiction itself can be broken down into two types of power: the power to "make laws and take decisions," known as jurisfaction; and the power "to implement and to enforce" laws, regulations and decisions, known as jurisaction.[163]

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).[164] 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."[165] This Article 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.[166]

In certain cases, "extraterritorial jurisdiction of a sovereign state may become imputable as a result of the factual or presumed exercise of control."[167]

---

[160] CSABAFI, *supra* note 27, at 47.

[161] D.W. Bowett, *Jurisdiction: Changing Patterns of Authority Over Activities and Resources*, *in* THE STRUCTURE AND PROCESS OF INTERNATIONAL LAW, *supra* note 109, at 555, 555.

[162] HAANAPPEL, *supra* note 92, at 24.

[163] CHENG, STUDIES, *supra* note 23, at 622–23.

[164] *See id.* at 622.

[165] Nottebohm (Liech. v. Guat.), Judgment, 1955 I.C.J. Rep. 4, at 23 (Apr. 6).

[166] Island of Palmas (Neth. v. U.S.), 11 R.I.A.A. 829, 838 (Perm. Ct. Arb. 1928).

[167] ODUNTAN, *supra* note 52, at 52.

The registration referred to in Article VIII can be considered a status of nationality.[168] This granting of nationality may be compared to the granting of nationality by a state over its flag vessels 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.[169] It "applies not only to the object as such, but also to all things and persons on board."[170]

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."[171] The assumption of responsibility and liability for space objects is predicated on an assumption of jurisdiction over such objects.[172] Both principles of the right to the return of a space object and of liability for a space object are discussed in greater detail in section II.C.5. as key issues for space heritage.

One important factor to note with regard to space heritage is that "the 'State of registry' . . . has a right to require other States to refrain from interfering with the direction and supervision of the object . . . ."[173] 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 enact legislation to declare cultural objects as state property to protect such objects,[174] 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.[175]

b. Abandonment

The jurisdiction, control, and ownership of space objects as established in Article VIII of the Outer Space Treaty is perma-

---

168 *See* VAN BOGAERT, *supra* note 40, at 115.

169 *See* S.S. "Lotus" (Fr. v. Turk.), Judgment, 1927 P.C.I.J. (ser. A) No. 10, at 25 (Sept. 7).

170 CHENG, STUDIES, *supra* note 23, at 467.

171 Aldo Armando Cocca, *Registration of Space Objects*, *in* 1 MANUAL ON SPACE LAW, *supra* note 103, at 173, 187–88.

172 *See* Stephen Gorove, *Criminal Jurisdiction in Outer Space*, 6 INT'L L. 313, 316 (1972).

173 LACHS, THE LAW OF OUTER SPACE, *supra* note 50, at 69.

174 *See* John Henry Merryman, *The Nation and the Object*, 3 INT'L J. CULTURAL PROP. 61, 62 (1994).

175 Outer Space Treaty, *supra* note 4, arts. VI, VIII.

nent;[176] jurisdiction and control remain with the state of registry.[177] Prior exercise of jurisdiction and control is an implied prerequisite in the wording of the text in order for the state to "retain" such jurisdiction and control.[178] "There is no suggestion that a state or other entity can divest itself of obligations in relation to space objects by their abandonment."[179] 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."[180] Several prominent jurists have stated that they believe abandonment of a space object to be both impossible and prohibited by law.[181]

Cheng, however, holds the view that states are not precluded from abandoning their space objects.[182] With regard to the possible dereliction of space objects, Clarence Jenks believes that:

> [N]either 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 dis-

---

176 N. Jasentuliyana, *Regulation of Space Salvage Operations: Possibilities for the Future*, 22 J. Space L. 5, 13 (1994).

177 Comm. on the Peaceful Uses of Outer Space, Rep. of the Sci. and Tech. Subcomm. on Its Forty-Ninth Session, U.N. Doc. A/AC.105/1001, at 31 (2012); Lachs, The Law of Outer Space, *supra* note 50, at 69; Lyall & Larsen, *supra* note 94, at 83; Oduntan, *supra* note 52, at 180; *see also* van Bogaert, *supra* note 40, at 135; Stephan Hobe, *The Legal Framework for a Lunar Base* Lex Data *and* Lex Ferenda, *in* Outlook on Space Law over the Next 30 Years: Essays Published for the 30th Anniversary of the Outer Space Treaty 138 (Gabriel Lafferranderie & Daphné Crowther eds., 1997); Ram Jakhu et al., *Space Policy, Law and Security*, *in* The Farthest Shore: A 21st Century Guide to Space 202, 213 (Joseph N. Pelton & Angelia Bukley eds., 2010); Diederiks-Verschoor, *supra* note 97, at 42; Tucker, *supra* note 142, at 601.

178 Gorove, *Criminal Jurisdiction*, *supra* note 172, at 318.

179 Lyall & Larsen, *supra* note 94, at 84.

180 *Id.*

181 *See* Howard A. Baker, Space Debris: Legal and Policy Implications 69–71 (1989); Lyall & Larsen, *supra* note 94, at 67, 84; Ram S. Jakhu, *Iridium-Cosmos Collision and Its Implications for Space Operations*, *in* Yearbook on Space Policy 2008/2009: Setting New Trends 254, 259 (Kai-Uwe Schrogl et al. eds., 2010); Jasentuliyana, *supra* note 176, at 18.

182 Cheng, Studies, *supra* note 23, at 466; *see also* Wayne N. White, *Real Property Rights in Outer Space*, *in* Proceedings of the Fortieth Colloquium on the Law of Outer Space 370, 376 (Am. Inst. of Aeronautics & Astronautics ed., 1997).

> claimed any interest in it, or has made no attempt to recover it over a long period of time.[183]

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."[184]

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 objects weakens a nation's claim to exclusive sovereignty over them does not arise in international cultural property discussions"[185] and would, in fact, be controversial in light of prior takings of terrestrial cultural heritage.

5. 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."[186] It is this clause upon which Article V of the Return and Rescue Agreement is based, which reads:

> 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,

---

[183] JENKS, SPACE LAW, *supra* note 99, at 240.

[184] *See* Comm. on the Peaceful Uses of Outer Space, Rep. of the Legal Subcomm. on Its Fifty-First Session, U.N. Doc. A/AC.105/1003, at 10 (2012).

[185] Merryman, *The Public Interest in Cultural Property*, *supra* note 67, at 362.

[186] Outer Space Treaty, *supra* note 4, art. VIII.

> 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 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.[187]

Thus, the rights and obligations created are as follows: the finding state must notify the launching authority, take such steps as practicable to recover the object, return the object or hold it at the disposal of launching authority representatives, and it may notify the launching authority if they believe the object to be hazardous; the launching authority may request the recovery and return of its space object, must take effective steps to mitigate danger caused by its 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."[188] The Registration Convention defines the "State of registry" as "a launching State

---

[187] Return and Rescue Agreement, *supra* note 28, art. 5.

[188] *Id.* art. 6.

on whose registry a space object is carried."[189] Therefore, in either case it will be a launching state that 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."[190] This definition "was broadly conceived to cover every State which has a predominant role in the launching."[191] 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 Article).

The Moon Agreement specifically applies Article 5 of the Return and Rescue Agreement to circumstances under which the Moon Agreement operates.[192] Therefore, there is a degree of protection offered for space heritage objects under either Article VIII of the Outer Space Treaty, under Article 5 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 one of either the Return and Rescue Agreement or 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.[193]

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.

Under the Outer Space Treaty, this obligation would be absolute, in that the words "shall be returned" are used.[194] Under the Return and Rescue Agreement, this obligation seems weaker, re-

---

[189] Registration Convention, *supra* note 31, art. I(c).
[190] *Id.* art. I(a); Liability Convention, *supra* note 29, art. I(c).
[191] VAN BOGAERT, *supra* note 40, at 118.
[192] Moon Agreement, *supra* note 33, art. 12(2).
[193] *See* Vienna Convention, *supra* note 100, art. 30.
[194] Outer Space Treaty, *supra* note 4, art. VIII.

quiring only that when requested, the state "take such steps as it finds practicable to recover the object."[195] 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.[196] 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."[197] Presumably if return was requested following a recovery that was not requested, such recovery would not be included in the mandatory payment, but this issue may arise in the future if recovery of space objects from space becomes more commonplace.

6. 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,[198] which has, in conjunction with the state responsibility requirements of Article VI, arguably become part of customary international law.[199] 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 space or in outer space, including the moon and other celestial bodies.[200]

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.[201] Importantly, Article VI states, in relevant part, that:

---

[195] Return and Rescue Agreement, *supra* note 28, art. 5(2).

[196] CHENG, STUDIES, *supra* note 23, at 283.

[197] *Id.* at 281.

[198] *Id.* at 636; Ram Jakhu, *Legal Issues Relating to the Global Public Interest in Outer Space* 32 J. SPACE L. 31, 52 (2006).

[199] *See* LYALL & LARSEN, *supra* note 94, at 71.

[200] Outer Space Treaty, *supra* note 4, art. VII.

[201] *See* Ricky J. Lee, *The Liability Convention and Private Space Launch Services*, 31 ANNALS AIR & SPACE L. 351, 359 (2006).

> 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.[202]

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.[203]

States are responsible for their internationally wrongful acts.[204] "[A]ny violation by a State of any obligation, of whatever origin, gives rise to State responsibility . . . ."[205] A breach of treaty obligations is a breach of a state's obligations. In accordance with the holding of the Permanent Court of International Justice in the *Chorzów Factory* case, there are three elements of liability in international law: a legal obligation owed by a state; an act by a state which breaches that obligation; and an apparent link between the wrongful act and the damage caused.[206] A "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.[207] A due diligence standard would

---

[202] Outer Space Treaty, *supra* note 4, art. VI.

[203] CARL Q. CHRISTOL, SPACE LAW: PAST, PRESENT, AND FUTURE 212 (1991).

[204] Corfu Channel (U.K./Alb.), Judgment, 1949 I.C.J. Rep. 4, at 23, 36 (Apr. 9).

[205] Rainbow Warrior (N.Z. v. Fr.), 20 R.I.A.A. 217, 251 (1990).

[206] Factory at Chorzów (Ger. v. Pol.), Judgment, 1928 P.C.I.J. (ser. A) No. 17, at 29–30 (Sept. 13).

[207] Bin Cheng, *Article VI of the 1967 Space Treaty Revisited: "International Responsibility", "National Activities", and "The Appropriate State,"* 26 J. SPACE L. 7, 13–14 (1998).

apply to breaches of treaty obligations.[208] If 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."[209]

The *Corfu Channel* case also established a standard for liability in international law, that the breaching party "knew or should have known" of the wrongful act.[210] This is the general fault standard in customary international law and is also presumably the standard that would be applied for fault-based 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.[211]

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-based liability standard can be applied here in accordance with the primary treaty interpretation rules provided by the Vienna Convention, which permits the use of "[a]ny relevant rules of international law applicable in the relations between the parties."[212]

If damage is caused to a state's space heritage under this standard, liability may arise under international law. Given that the dangers to these heritage objects are well established,[213] any damage caused by interaction with or proximity to such a site would likely satisfy the "knew or should 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.[214] In fact, the Liability Convention specifically permits the pursuit

---

[208] *Id.* at 15.

[209] *Id.*

[210] Corfu Channel (U.K./Alb.), Judgment, 1949 I.C.J. Rep. 4, at 18 (Apr. 9).

[211] Liability Convention, *supra* note 29, art. III.

[212] Vienna Convention, *supra* note 100, art. 31.2(c).

[213] *See* NASA's RECOMMENDATIONS TO SPACE-FARING ENTITIES, *supra* note 8, at 13.

[214] *See* Michael C. Mineiro, *Assessing the Risks: Tort Liability and Risk Management in the Event of a Commercial Human Space Flight Vehicle Accident*, 74 J. AIR L. & COM. 371, 389 (2009).

of claims in a launching state's courts,[215] though domestic law in a given state may preclude claims for damages in space.[216]

> Responsibility and breaches of obligation do not necessarily involve the payment of compensation, especially when no damage has been caused. . . . The 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 . . . .[217]

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 property of international intergovernmental organizations."[218] According to Eilene Galloway, this defines the full scope of damages available under the Liability Convention.[219] The definition provided does not draw a distinction between direct, indirect, or consequential damage. Carl Christol stated that the Liability Convention can apply to both direct and indirect damage,[220] while Cheng believes that the question of direct versus indirect damage is a question of "adequate causality" that did not need to be specifically addressed in the treaty language.[221] In fact, the drafters of the Liability Convention rejected draft language in which indirect damages would be articulated within the definition of damages.[222] Thus, indirect damages would certainly not be automatically included under the Liability Convention, and a case-by-case analysis would need to be performed. Indirect damages may also be otherwise recoverable under general international law.

---

[215] Liability Convention, *supra* note 29, art. XI(2).

[216] *Cf.* Paul Stephen Dempsey, *Liability for Damage Caused by Space Objects Under International and National Law*, 37 ANNALS AIR & SPACE L. 333, 347 (2012).

[217] Cheng, *Article VI*, *supra* note 207, at 9–10.

[218] Liability Convention, *supra* note 29, art. I(a).

[219] 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: THE PRESENT STATE OF THE LAW AND PERSPECTIVES FOR FURTHER DEVELOPMENT 163 (Karl-Heinz Böckstiegel ed., 1979).

[220] CHRISTOL, *supra* note 203, at 223.

[221] Bin Cheng, *Convention on International Liability for Damage Caused by Space Objects*, *in* 1 MANUAL ON SPACE LAW, *supra* note 103, at 83, 115.

[222] Comm. on the Peaceful Uses of Outer Space, Rep. of the Legal Subcomm. on Its Third Session, U.N. Doc A/AC.105/21, Annex II, IV (1964).

Under public international law, damages can be awarded provided that they are proximately caused by the wrongful act and can be reasonably estimated.[223] Economic damages that are too uncertain or remote from a wrongful act, however, are not recoverable.[224] A case-by-case examination of proximate causation would have to be made under the Liability Convention or public international law to determine whether these damages would be recoverable.

Though reparations that "wipe out all the consequences of the illegal act and reestablish the situation which would, in all probability, have existed if that act had not been committed"[225] are the standard measure of damages in international law, it is not always possible to make full restitution using reparations. In the case of the destruction of irreplaceable space heritage, restitution would be impossible. In such a case, where the "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"[226] fails to address the actual loss incurred, the state would have an entitlement to satisfaction such as a formal apology.[227]

In sum, the basic legal responsibility for a space object lies with the launching authority.[228] Thus, the launching state of any space object causing damage to space heritage would be held liable for such damage. Though damages are recoverable, however, they would not actually restore the heritage. Thus, liability acts as more of a protective deterrent than as an effective remedy for damage to space heritage, though compensation would be provided.

---

[223] *See* Clyde Eagleton, *Measure of Damages in International Law*, 39 YALE L.J. 52, 73–75 (1929).

[224] *See, e.g.*, Trail Smelter (U.S. v. Can.), 3 R.I.A.A. 1907, 1931 (Perm. Ct. Arb. 1941); JAMES CRAWFORD, INTERNATIONAL LAW COMMISSION'S ARTICLES ON STATE RESPONSIBILITY 230–31 (James Crawford ed., 2002).

[225] Factory at Chorzów (Ger v. Pol.), Judgment, 1928 P.C.I.J. (ser. A) No. 17, at 47 (Sept. 13).

[226] Gabcíkovo-Nagymaros Project (Hung./Slovk.), Judgment, 1997 I.C.J. Rep. 7, ¶ 152 (Sept. 25).

[227] *See* G.A. Res. 56/83, annex, art. 37, Articles on Responsibility of States for Internationally Wrongful Acts, (Jan. 28, 2002) [hereinafter G.A. Res. 56/83, Articles on Responsibility]; *see also* CRAWFORD, *supra* note 224, at 231.

[228] CHRISTOL, *supra* note 203, at 260.

7. 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.[229] The Moon's lack of a mechanism for environmental renewal, however, does make it highly susceptible to environmental damage and change.[230] 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.[231] It is argued that this obligation has crystallized into a rule of customary international law.[232]

Unlike the drafters of the Outer Space Treaty, the drafters of the Moon Agreement had the benefit of knowledge and an understanding of the fragility of the Moon's environment resulting from human excursions to the Moon.[233] Professor Hobe notes that even 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 thoroughly articulated as necessary to achieve the objective of lunar environmental protection.[234] The second sentence 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

---

[229] *See* Armel Kerrest, *Outer Space as International Space: Lessons from Antarctica*, *in* SCIENCE DIPLOMACY: ANTARCTICA, SCIENCE, AND THE GOVERNANCE OF INTERNATIONAL SPACES 133, 135 (Paul Arthur Berkman et al. eds., 2011).

[230] *See* Mark Williamson, *Space Ethics and Protection of the Space Environment*, 19 SPACE POL'Y 47, 47 (2003).

[231] *See* Trail Smelter (U.S. v. Can.), 3 R.I.A.A. 1907, 1963, 1965 (Perm. Ct. Arb. 1941); U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, pmbl., U.N. Doc. A/CONF.151/26/Rev.1 (Vol. I) (Aug. 12, 1992); U.N. Conference on the Human Environment, *Stockholm Declaration on the Human Environment*, princs. 21–22, U.N. Doc. A/CONF.48/14/Rev.1 (June 16, 1972).

[232] *See, e.g.*, P.W. BIRNIE & A.E. BOYLE, INTERNATIONAL LAW AND THE ENVIRONMENT 89 (2d ed. 2002); LYALL & LARSEN, *supra* note 94, at 71.

[233] *See* Paul B. Larsen, *Application of the Precautionary Principle to the Moon*, 71 J. AIR L. & COM. 295, 300 (2006).

[234] Hobe, *supra* note 177, at 141.

> 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.[235]

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 as 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,"[236] paragraph 3 is the more useful provision for the purposes of this Article. 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.[237]

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 environments.[238] Unfortunately, this provision does not set forth procedures for designation.[239]

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 Agreement regarding these provisions and the fact that the Agreement was adopted in the U.N. General Assembly without a vote.[240] 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 in-

---

[235] Outer Space Treaty, *supra* note 4, art. IX.

[236] Moon Agreement, *supra* note 33, art. 7(1).

[237] *Id.* art. 7(3).

[238] NASA'S RECOMMENDATIONS TO SPACE-FARING ENTITIES, *supra* note 8, at 19–20.

[239] Lyall, *OST Art. IX*, *supra* note 90, at 664.

[240] Francis Lyall, *Planetary Protection from a Legal Perspective – General Issues*, *in* PROTECTING THE ENVIRONMENT OF CELESTIAL BODIES, *supra* note 79, at 55, 57.

terpretation of the scope of treaties drafted before the acquisition of such knowledge.[241]

8. 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. Cheng points to the irony that "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."[242]

Article IX first provides:

> 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.[243]

"This rule is directly applicable to the exercise of State jurisdiction in outer space. Thus, States may not pass laws which would contravene the general principle of co-operation and mutual assistance,"[244] or they will incur international responsibility for such actions. Contained in this provision is an implied call for reciprocity in the conduct of space activities.

The final part 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,

---

[241] Kasikili/Sedudu Island (Bots./Namib.), Judgment, 1999 I.C.J. Rep. 1045, 1060 (Dec. 13).

[242] CHENG, STUDIES, *supra* note 23, at 402.

[243] Outer Space Treaty, *supra* note 4, art. IX.

[244] CSABAFI, *supra* note 27, at 123.

> including the moon and other celestial bodies, may request consultation concerning the activity or experiment.[245]

If a state were to declare its consideration of certain space objects as space heritage that would be damaged by direct interaction or close approach, it would provide other state parties with unquestionable reason to believe that such an activity "would cause potentially harmful interference" with such protection.[246] 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 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 final provision merely permits a state, believing its activities may be harmed, to request consultations. This provision is weaker than the first but still provides a benefit both in terms of good faith and reciprocity.

III. CULTURAL HERITAGE LAW

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.[247] 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.[248] 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 of 1954.[249] In the context of instruments of modern cultural heritage law beginning with the Hague Convention of 1954, the relative age of the heritage law with which this Article

---

[245] Outer Space Treaty, *supra* note 4, art. IX.

[246] *See id.*

[247] *See* John Moustakas, *Group Rights in Cultural Property: Justifying Strict Inalienability*, 74 Cornell L. Rev. 1179, 1179 (1989).

[248] Sharon A. Williams, The International and National Protection of Moveable Cultural Property: A Comparative Study 15–16 (1978); *see also* Francis Lieber, General Orders No. 100, Instructions for the Government of Armies of the United States in the Field (Apr. 24, 1863).

[249] *See* Craig Forrest, International Law and the Protection of Cultural Heritage 24 (2010).

is concerned is similar to that of outer space law. Given their chronological proximity, these two forms of law lend themselves well to comparison and complementary use.

A recognition that these heritage sites would need coordinated protection spurred the creation of a cooperative regime. "The impetus for the development of an international protective regime was not only the recognition that many properties in individual States had significance for humankind 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."[250] This rationale is similar to the rationale for the early development of the space law regime, which was established to promote cooperation, preserve the valuable resource that is outer space for all mankind, and avoid conflict with regard to this new arena.[251]

There are two competing philosophies with regard to cultural heritage: the national heritage school and the common heritage of mankind school.[252] While certain states certainly could maintain the policy that their heritage objects and sites in outer space are national treasures that 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."[253] 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 cultures."[254] The heritage of this common human culture exists regardless of national jurisdiction, property rights, or present location.[255]

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

---

[250] *Id.* at 227.

[251] *See* G.A. Res. 1962 (XVIII), Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, pmbl., ¶ 6 (Dec. 13, 1963).

[252] John Henry Merryman, *Two Ways of Thinking About Cultural Property*, 80 AM. J. INT'L L. 831, 831–32 (1986).

[253] *See* Outer Space Treaty, *supra* note 4, art I.

[254] FORREST, *supra* note 249, at 11.

[255] *Id.* at 13.

from the heritage can be shared with all mankind.[256] This idea is similar to the benefit of mankind concept from the U.N. Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (which was enshrined in the Outer Space Treaty),[257] though the application of the concept with regard to the environment forms a closer parallel to cultural heritage law.[258]

In general, it is possible to draw a parallel between cultural heritage law and environmental law.[259] This makes sense in the context that cultural heritage is a nonrenewable resource.[260] 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.[261] Therefore, environmental provisions with regard to outer space are relevant to cultural protection.[262]

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.

> 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

---

256 WILLIAMS, *supra* note 248, at 55.

257 *Id.* at 57–58 (first citing G.A. Res. 1962, *supra* note 251; then citing Outer Space Treaty, *supra* note 4, art. I).

258 *See id.* at 60–63.

259 DEREK GILLMAN, THE IDEA OF CULTURAL HERITAGE 48 (Cambridge Univ. Press rev. ed. 2010).

260 Blake, *On Defining the Cultural Heritage*, *supra* note 59, at 69.

261 *See* GILLMAN, *supra* note 259, at 48.

262 *See supra* section II.C.7.

> answer would be that all things are equally part of 'world heritage' and a particular national or local heritage.[263]

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.

A 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."[264] 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*."[265] In general, from an object-oriented approach, the appropriate handling of cultural heritage should be determined on the basis of three factors: (1) whether the movement or acquisition of the object is likely to cause danger to the object or the context in which the object was found; (2) whether such movement or acquisition is likely to more fully reveal the truth of the object; and (3) the relative availability of the object for research, education, and enjoyment as a result of such movement or acquisition.[266]

Given the issues of sovereignty and jurisdiction present in the space law regime,[267] 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.[268]

These ideas are in part but not wholly applicable to sites like Tranquility Base. It will be necessary to consider the unique fea-

---

[263] GILLMAN, *supra* note 259, at 15.

[264] FORREST, *supra* note 249, at 13.

[265] James A.R. Nafziger, *Cultural Heritage Law: The International Regime*, *in* THE CULTURAL HERITAGE OF MANKIND 145, 161 (James A.R. Nafziger & Tullio Scovazzi eds., 2008).

[266] Merryman, *The Nation and the Object*, *supra* note 174, at 64–65.

[267] *See supra* section II.C.

[268] GILLMAN, *supra* note 259, at 166.

tures 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.[269]

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[270] are 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.[271] A state is inherently entitled to the return of its space objects; thus, ownership at least should not present a complex problem.

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.

> 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.[272]

Generally speaking, important values from a heritage perspective include expressive, archaeological, historic, and economic values, though "symbolic, informational, aesthetic, economic, historic, scientific, cultural, archaeological, ethnic, public, recreational, educational, technical, social or legal value[s]" are often also factors.[273] 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 extent feasible.[274]

B. Treaty Law

The key body associated with the development of the protection of cultural heritage law is UNESCO, which has been re-

---

[269] *See infra* section IV.A.

[270] *See* Karen J. Warren, *A Philosophical Perspective on the Ethics and Resolution of Cultural Property Issues, in* The Ethics of Collecting Cultural Property: Whose Culture? Whose Property? 1, 1 (Phyllis Mauch Messenger ed., 1990).

[271] *See supra* section II.C.5.

[272] Forrest, *supra* note 249, at 3–4.

[273] *Id.* at 4.

[274] *See* Merryman, *The Public Interest in Cultural Property*, *supra* note 67, at 355.

sponsible for the bulk of cultural heritage law since World War II.[275] "Bilateral and multilateral agreements represent the most formal legal bases for co-operation in avoiding and resolving disputes over the status of cultural material."[276] This subsection 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 of 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.[277] The Hague Convention of 1954 is primarily an instrument designed with regard to armed conflict.[278] This Convention enshrines the concept that cultural heritage is the province of all mankind.[279] 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 time of peace."[280]

Interestingly, Article 1(a) characterizes cultural property as property of "great importance to the cultural heritage of every people" rather than the cultural heritage of a people, a nation, or a state.[281] Article 1, which defines cultural property, provides the guidelines of what may be considered cultural property under the Hague Convention of 1954.[282] Examples of such "movable or immovable property of great importance to the cultural heritage of every people" that may pertain to space heritage include objects of historical interest and scientific collections.[283]

The list provided in Article 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.[284] Article 1(b) pertains specifically to buildings intended to "preserve or exhibit" cultural property, and thus is not relevant to this discus-

---

[275] PATRICK J. O'KEEFE & LYNDEL V. PROTT, CULTURAL HERITAGE CONVENTIONS AND OTHER INSTRUMENTS: A COMPENDIUM WITH COMMENTARIES 1 (2011).

[276] Nafziger, *supra* note 265, at 198.

[277] Hague Convention of 1954, *supra* note 22, res. II, art. 8.

[278] *See id.* at pmbl.

[279] *Id.*

[280] *Id.*

[281] *Id.* art. 1(a).

[282] *Id.* art. 1.

[283] *See id.* art. 1(a).

[284] *See id.*

sion of cultural property situated in outer space,[285] 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.[286]

Articles 2 and 3 deal with protection and safeguarding of cultural property respectively,[287] with 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 an armed conflict . . . ."[288] 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.[289] Likewise, Article 4(1), which provides for respect for cultural property, applies only to cultural property located in a state's territory.[290]

Paragraphs 3 and 4 of Article 4, however, are not specifically tied to the territorial location of a piece of cultural property.[291] Paragraph 3 concerns the prohibition, prevention, and halting of theft, pillage, misappropriation and vandalism of cultural property.[292] Thus, a state that is a High Contracting Party to the Convention would be bound to avoid taking these actions or permitting their nationals to undertake these 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."[293] This would therefore indicate that if a state were engaged in a conflict with another state that is also a party to the 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.

---

[285] *See id.* art. 1(b).
[286] *Id.* art. 1.
[287] *Id.* arts. 2–3.
[288] *Id.* art. 3.
[289] *See id.*
[290] *Id.* art. 4(1).
[291] *See id.* art. 4(3)–(4).
[292] *See id.* art. 4(3).
[293] *Id.* art. 4(4).

Article 5 discusses occupation of the territory of another High Contracting Party,[294] 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,"[295] as described in Article 16 (a shield with two white triangles, a blue triangle, and a blue square forming a pentagon).[296] 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 of 1954 in case of a conflict.[297] 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 of 1954 deals with heritage under special protection on the "International Register of Cultural Property under Special Protection."[298] 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.[299] 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 Hauge 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. Footprints and rover tracks are not "property" and thus would also not fall within the protections of this particular regime.

Chapter III of the Hague Convention deals with the transportation of cultural property.[300] 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.[301] Chapter IV, which consists only of Arti-

---

[294] *See id.* art. 5.
[295] *Id.* art. 6.
[296] *See id.* art. 16.
[297] *Id.* art. 7.
[298] *Id.* art. 8(6).
[299] *See id.* art. 8(1)–(3), (6) & n.1.
[300] *Id.* arts. 12–14.
[301] *See id.* art. 12(1).

cle 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.[302] 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.[303]

Chapter VI deals with the scope of application of the Hague Convention and specifies that it is operative "in the event of 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."[304] 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 occurring within the territory of a High Contracting Party[305] 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 time of peace" are operative outside of an armed conflict.[306] 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 Article. Needless to say, such an analysis would be helpful in determining the applicability of the Hague Convention 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 of 1954.[307] As this provision only uses the term "their" and does not specify the location of "their" cultural property,[308] it is reasonable to assume that a request for assistance in protecting cultural

---

[302] *Id.* art. 15.
[303] *Id.* arts. 16–17.
[304] *Id.* art. 18(1).
[305] *Id.* art. 19(1).
[306] *See id.* art. 18(1).
[307] *Id.* art. 23(1).
[308] *See id.*

property which is located in outer space would be permissible under Article 23, particularly given that the technical aspects of protection of heritage in outer space would be especially daunting. Special agreements outside of the Hague Convention are permitted,[309] as are amendments to the Convention in accordance with the procedure set forth in Article 39,[310] clearly establishing the possibility for specific amendments or agreements dealing with space heritage.

2. Illicit Transfer Convention

The Illicit Transfer Convention 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.[311]

For the purposes of this Convention, cultural property must be specifically designated by a state; in addition, such property must meet the basic criteria of importance in one of several listed areas, including history or science, and belong 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."[312] This test is the "definitional test."[313] As Patrick O'Keefe explains, the *travaux préparatoires* 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.[314] The *travaux préparatoires* can be used as a supplementary means of treaty interpretation in accordance with the Vienna Convention.[315]

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). There-

---

[309] *Id.* art. 24(1).

[310] *Id.* art. 39(1).

[311] *See* Illicit Transfer Convention, *supra* note 18, pmbl.

[312] *Id.* art. 1.

[313] WILLIAMS, *supra* note 248, at 180.

[314] PATRICK J. O'KEEFE, COMMENTARY ON THE UNESCO 1970 CONVENTION ON ILLICIT TRAFFIC 36 (2d ed. 2007).

[315] *See* Vienna Convention, *supra* note 100, art. 32.

fore, 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 of the Illicit Transfer Convention 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.[316] This is the "connection test."[317] 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 affect 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.[318] 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.[319] With the exception of those provisions dealing with occupation or possession of territory,[320] 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 affected 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."[321] 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 provi-

---

316 Illicit Transfer Convention, *supra* note 18, art. 4(a).
317 WILLIAMS, *supra* note 248, at 181.
318 Illicit Transfer Convention, *supra* note 18, art. 3.
319 *See id.* arts. 5–17.
320 *Id.* arts. 11–12.
321 *Id.* art. 9.

sions of international cultural heritage law through their actions taken under its Convention on Cultural Property Implementation Act.[322] 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 nationalistic view of heritage.[323] 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.[324] The definition of sites most closely matches what might include Tranquility Base or its ilk as "works of man or the combined works of nature and of man," which include sites of "outstanding universal [historical] value."[325] Tranquility Base includes not only the works of man, which both enabled and provided record of man's first travel to the Moon, but also 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.[326] 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 Article. Though the definition of cultural heritage has always included mixed sites, "In 1992, the revised *Guidelines* [to the Convention] included for the first time cultural landscapes that can be 'mixed' sites, i.e. sites that

---

[322] Convention on Cultural Property Implementation Act, Pub. L. No. 97-446, tit. III, 96 Stat. 2329 (1983) (codified as amended at 19 U.S.C. §§ 2601–2613 (2012)); *see* Ann Guthrie Hingston, *U.S. Implementation of the UNESCO Cultural Property Convention*, *in* THE ETHICS OF COLLECTING CULTURAL PROPERTY, *supra* note 270, at 129, 129.

[323] World Heritage Convention, *supra* note 20, pmbl.

[324] *Id.* art. 1.

[325] *See id.*

[326] *See id.* art. 2.

are of significance from both cultural and natural standpoints."[327]

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 Party to this Convention to identify and delineate the different properties situated on its territory mentioned in Articles 1 and 2 above."[328] 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.[329] The sites discussed by this Article are, by definition, located in outer space and thus not on the territory of any state. Therefore, 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 . . . ."[330]

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 that are "situated on its territory."[331] While not applicable to outer space, it is interesting to note that this provision can be considered an obligation *erga omnes*,[332] an obligation owed to the community of state parties as a whole,[333] and is thus enforceable by any party to the Convention.[334]

Article 5 also sets forth duties for states based on the heritage situated within their territory.[335] However, some of these duties could also benefit those sites not situated in the territory of any state, such as "develop[ing] scientific and technical studies and research . . . counteracting the dangers that threaten [the State's] cultural or natural heritage" and "foster[ing] the estab-

---

[327] JANET BLAKE, COMMENTARY ON THE 2003 UNESCO CONVENTION ON THE SAFEGUARDING OF THE INTANGIBLE CULTURAL HERITAGE 5 (2006) (citing the UNESCO *Operational Guidelines* to the World Heritage Convention).

[328] *See* World Heritage Convention, *supra* note 20, art. 3.

[329] O'KEEFE & PROTT, *supra* note 275, at 78.

[330] Tullio Scovazzi, *Articles 8–11: World Heritage Committee and World Heritage List*, *in* THE 1972 WORLD HERITAGE CONVENTION: A COMMENTARY 147, 160 (Francesco Francioni ed., 2008).

[331] World Heritage Convention, *supra* note 20, art. 4.

[332] Barcelona Traction, Light and Power Company, Limited (Belg. v. Spain), Judgment, 1970 I.C.J. Rep. 3, ¶ 33 (Feb. 5); Roger O'Keefe, *World Cultural Heritage: Obligations to the International Community as a Whole?*, 53 INT'L & COMP. L.Q. 189, 190 (2004).

[333] *See* G.A. Res. 56/83, Articles on Responsibility, *supra* note 227, art. 48(1)(b).

[334] *See id.* art. 48(2).

[335] World Heritage Convention, *supra* note 20, art. 5.

lishment or development of national or regional centres for training in the protection, conservation and presentation of the cultural and natural heritage and to encourage scientific research in this field."[336] The obligation not to intentionally damage cultural or natural heritage also unfortunately only applies to heritage situated in the territories of other states.[337]

Article 7 is the first of the articles in this Convention that could be said to directly benefit non-territorial heritage. The Article establishes that "international protection of the 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.[338] Article 11(1) requires that states submit an inventory of natural and cultural heritage in their respective territory, however it also states that the inventory "shall not be considered exhaustive."[339] 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 of eligible heritage, it also makes clear that heritage not on the list can still generally qualify for protection.[340] Article 12 further elaborates this principle, providing that "[t]he fact that a 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 . . . ."[341]

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."[342] While this statement has no impact on heritage in space, it does provide an indication that amendments could be made to this Convention to encompass heritage in space, located on territory claimed by no state, within the spirit of the Convention. Cooperation between the Intergovernmental Committee for the Protection of the Cultural and Natural Heritage, which was created by Section III of the Convention,[343] and other

---

[336] *Id.* art. 5(c), (e).
[337] *Id.* art. 6(3).
[338] *Id.* art. 7.
[339] *Id.* art. 11(1).
[340] *See id.* arts. 11–12.
[341] *Id.* art. 12.
[342] *Id.* art. 11(3).
[343] *Id.* art. 8(1).

"organizations having objectives similar to those of this Convention" is provided for in Article 13(7),[344] which also gives 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" to UNESCO.[345] Such experience could include details with regard to cultural heritage in space. Revision of the Convention by UNESCO is further provided for in Article 37.[346] This set of provisions, taken together, provides opportunities for learning, improving, and revising the heritage regime, which could include heritage in outer space.

The High Court of Australia, "which is the only official judicial body to interpret the Convention,"[347] 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.[348] Unfortunately, the interpretation does not address whether cultural property not situated on the territory of a state is included, and such interpretation by a national high court is merely persuasive in international law regardless.[349]

4. UNIDROIT Convention of 1995

While the UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects (UNIDROIT Convention) is an important piece of international cultural heritage law, given its intent to close loopholes in national private law,[350] 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.[351] While objects of importance for history or science are covered by this Convention, including property relating to the history of science,[352] therefore encompassing space

---

[344] *Id.* art. 13(7).
[345] *Id.* art. 29(1).
[346] *Id.* art. 37.
[347] O'Keefe & Prott, *supra* note 275, at 79.
[348] *Richardson v Forestry Comm'n* (1988) 164 CLR 261 ¶ 20 (Austl.).
[349] *See* Statute of the International Court of Justice art. 59, June 26, 1945, 59 Stat. 1055, 33 U.N.T.S. 993.
[350] O'Keefe & Prott, *supra* note 275, at 110.
[351] *See* UNIDROIT Convention, *supra* note 22, art. 1.
[352] *Id.* art. 2, annex(b).

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. 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.[353]

C. Customary International Law

"[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."[354] 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.[355]

> [T]he 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.[356]

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 customary international cultural heritage law. Both emerged in the aftermath of the atrocities that occurred with respect to Buddhist cultural heritage in Afghanistan.[357] 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 re-

---

[353] *See* Return and Rescue Agreement, *supra* note 28, pmbl., art. 5. For further discussion of this topic, see *supra* section II.C.5.

[354] Francioni, *supra* note 118, at 1228.

[355] *See supra* section II.B.

[356] Francioni, *supra* note 118, at 1213.

[357] UNESCO General Conference, *Acts Constituting "A Crime Against the Common Heritage of Humanity*," ¶¶ 1–3, U.N. Doc. 31 C/46 (Sept. 12, 2001).

inforce certain aspects not covered by these instruments . . . ."[358] The second, adopted in 2003, is that very declaration.[359] One perambulatory statement of this declaration is as follows: "Mindful of the development of rules 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 armed conflict."[360] This "resounding affirmation of an emergent political consensus"[361] 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 caselaw. Firstly, the *S.S. 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 by usages generally accepted as expressing principles of law and established in order to regulate the relations between these co-existing independent communities or with a view to the achievement of common aims. Restrictions upon the independence of States cannot therefore be presumed.[362]

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

---

[358] *Id.* ¶ 6(c).

[359] UNESCO Res. 32C/33, Declaration Concerning the Intentional Destruction of Cultural Heritage (Oct. 17, 2003).

[360] *Id.* at annex.

[361] *Contra* O'Keefe, *supra* note 314, at 209.

[362] S.S. "Lotus" (Fr. v. Turk.), Judgment, 1927 P.C.I.J. (ser. A) No. 10, at 18 (Sept. 7).

> 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 organisation 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 own territory in such a way as to make it the point of departure in settling most questions that concern international relations.[363]

Given these early developments, it is easy to understand why cultural heritage treaties have largely focused 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 section, 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 territorial sovereignty problem distinct from the issues of territory in space law.

IV. PROTECTING SPACE HERITAGE

A. NASA Recommendations and "Keep-Out Zones"

Because there were no U.S. government guidelines for space objects operating in the vicinity of U.S. hardware on the lunar surface, a Lunar Historic Site team, including a wide array of NASA personnel, was convened to address the issue and provide guidance for the commercial community.[364] On July 20, 2011, NASA released *NASA's Recommendations to Space-Faring Entities: How to Protect and Preserve the Historic and Scientific Value of U.S. Government Lunar Artifacts* (Recommendations).[365] This docu-

---

[363] Island of Palmas (Neth. v. U.S.), 2 R.I.A.A. 829, 838 (Perm. Ct. Arb. 1928).

[364] Protecting & Preserving Apollo Program Lunar Landing Sites & Artifacts, *supra* note 2, at 2.

[365] NASA's Recommendations to Space-Faring Entities, *supra* note 8, at 1.

ment was intended to provide "interim recommendations" until a multilateral solution is found or at least until more formal U.S. government guidance is developed.[366] The Recommendations protect not only the Apollo artifacts and impact sites but also impact sites and equipment from unmanned U.S. missions;[367] an extensive catalogue of protected Apollo artifacts is included as an appendix to the document.[368]

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.[369] Importantly, the NASA Recommendations assert the continuing ownership by the U.S. government of NASA artifacts on the Moon,[370] affirming Article VIII rights under the Outer Space Treaty and implicitly rejecting any possibility of abandonment. 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."[371] This statement could be considered a call for consultations in accordance with Article IX of the Outer Space Treaty.[372] NASA is providing an unambiguous assertion of which actions will cause harmful interference with its space objects.[373] From this perspective, any state which intends to act in a way contrary to the Recommendations would be required to consult with the United States first,[374] or bear responsibility for violating the Outer Space Treaty.

For example, 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.[375] "Lunar soil particles with diameters on the order of several micrometers are adhesive to metal and glass surface," and the interaction between lunar dust

---

366 *Id.* at 5.

367 *Id.*

368 *Id.* at 43–93.

369 *Id.* at 6.

370 *Id.*

371 *Id.*

372 *See* Outer Space Treaty, *supra* note 4, art. IX.

373 *See* NASA's RECOMMENDATIONS TO SPACE-FARING ENTITIES, *supra* note 8, at 5.

374 *See id.* at 6.

375 *Id.* at 28.

and machines on the surface cause significant difficulties.[376] 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 LM [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 blown from the LM, the Surveyor spacecraft received significant sandblasting and pitting from the Apollo landing.[377]

The described mission was undertaken for the purpose of analyzing the long-term effects of exposure to the space environment on the lunar surface.[378] 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."[379] The NASA Recommendations establish a keep-out zone around lunar heritage sites ranging from 0.5 to 2.0 kilometers in radial distance.[380] The Recommendations define a keep-out zone as "the recommended boundary areas into which visiting spacecraft should not enter."[381]

Keep-out zones are also expressly referenced in a 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."[382] Critically, this provision

---

[376] B. Kent Joosten et al., *Lunar and Mars Outposts and Habitats*, *in* FUTURE AERONAUTICAL AND SPACE SYSTEMS 497, 511 (Ahmed K. Noor & Samuel L. Venneri eds., 1997).

[377] NASA'S RECOMMENDATIONS TO SPACE-FARING ENTITIES, *supra* note 8, at 13.

[378] Spennemann, *Out of this World*, *supra* note 7, at 360–61.

[379] CHENG, STUDIES, *supra* note 23, at 467.

[380] NASA'S RECOMMENDATIONS TO SPACE-FARING ENTITIES, *supra* note 8, at 7.

[381] *Id.* at 9.

[382] Federal'nyi Zakon RF o Kosmicheskoi Deyatel'nosti [Federal Law of the Russian Federation About Space Activities], Dom Sovetov Rossii [Russian House of Soviets] 2008, No. 5663-1, https://www.roscosmos.ru/media/files/docs/2016/5663-1.pdf [https://perma.cc/7NTE-6FCW] (last visited Oct. 15, 2019), *translated in* U.N. Office for Outer Space Affairs, Selected Examples of National Laws Governing Space Activities: Russian Federation, http://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/russian_federation/decree_5663-1_E.html [https://perma.cc/6X77-RHKJ] (last visited Oct. 15, 2019).

relies on "safety" as the foundation for the establishment of keep-out zones.[383] The idea that such zones would be permissible specifically for safety purposes seems most likely to succeed in international law.[384]

Adrian Bueckling has stated his belief that jurisdiction should extend to the "vital supply and operation area" around a station on a celestial body,[385] thereby permitting such zones in the context of operational requirements. 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.'"[386] Thus, "functional jurisdiction" can be exercised over areas surrounding installations and scientific experiments on the Moon.[387] According to Gennady Zhukov and Yuri Kolosov, these zones would not constitute territorial appropriations even when established for an extended period of time.[388] 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."[389]

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.[390] 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."[391] 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 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

---

[383] *Id.*

[384] *See* White, *supra* note 182, at 375.

[385] Adrian Bueckling, *The Formal Legal Status of Lunar Stations*, 1 J. SPACE L. 113, 117 (1973).

[386] CSABAFI, *supra* note 27, at 63.

[387] *Id.* at 100.

[388] GENNADY ZHUKOV & YURI KOLOSOV, INTERNATIONAL SPACE LAW 64 (Boris Belitzky trans., 1984).

[389] Jakhu & Buzdugan, *supra* note 120, at 225 (citing CSABAFI, *supra* note 27).

[390] Schwetje, *supra* note 123, at 132.

[391] *Id.* at 134.

> denied the possibility of a unilateral declaration of exclusionary zones.[392]

From this perspective, absent protest from other states, implementation of binding zones around lunar landing sites may be permissible, provided they are reasonable, both in size and duration, under the circumstances and that reciprocity is offered in the case of comparable circumstances.[393]

In putting forth non-binding recommendations, the United States 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. The Apollo Lunar Landing Sites National Historic Park Bill

On July 8, 2013, the Apollo Lunar Landing Legacy Act was introduced to the U.S. House of Representatives.[394] 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."[395]

In the language of the bill, the administration of the Historical Park created by the Act was to be conducted in accordance with "applicable international law and treaties."[396] It thus committed such administration to conform with the constraints of the Outer Space Treaty, Return and Rescue Agreement, Liability Convention, and Registration Convention, as well as any cultural heritage conventions to which the United States is a party. Unfortunately, the Act identified the sites as "nationally significant"[397] rather than classifying them as humanity's heritage, weakening the Act from the perspective of the "benefit of mankind" principle.[398]

The Apollo Lunar Landing Legacy Act was carefully crafted to avoid conflict with the non-appropriation principle, specifying that "[t]he Historical Park may only be comprised" of "the arti-

---

[392] *Id.* at 139.
[393] *See* McDougal et al., *supra* note 130, at 293.
[394] Apollo Lunar Landing Legacy Act, H.R. 2617, 113th Cong. (2013).
[395] *Id.* § 3.
[396] *Id.* § 6(a).
[397] *Id.* § 3(1).
[398] *See* Outer Space Treaty, *supra* note 4, art. I.

facts on the surface of the Moon,"[399] and it therefore does not classify any of the surface of the Moon itself as part of the park. It likewise stated that access to the sites will be managed by means including "coordination with other spacefaring nations and entities."[400] 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 had a similar effect to that of the NASA Recommendations.[401]

The Apollo Lunar Landing Legacy Act also called for monitoring of the sites,[402] which would help to protect the interests of the United States from a liability perspective in the event of damage to a site. The Act, however, had one critical flaw in that it called for the Apollo 11 landing site in particular to be submitted to UNESCO for designation as a World Heritage Site.[403] As we have seen in Section IV of this Article, such classification is impossible, as states are only welcome to submit those sites located on their territory.

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."[404] As the United States is not a party to the Moon Agreement,[405] however, the Act could not 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,[406] this Act would have had 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 it had passed, the Apollo Lunar Landing Legacy Act would, however, have bound U.S. nationals and any

---

399 H.R. 2617 § 5(b).

400 *Id.* § 7(a)(2).

401 *See supra* section IV.A.

402 H.R. 2617 § 7(a)(1).

403 *See id.* § 8.

404 Matte, *Treaty Relating to the Moon*, *supra* note 153, at 262.

405 COPUOS, Agreement Status, *supra* note 36, at 9.

406 1 OPPENHEIM'S INTERNATIONAL LAW: PEACE 376 (Robert Jennings & Arthur Watts eds., 9th ed. 1996).

entities launching from U.S. facilities, comprising a significant number of potential actors in this arena.

C. The One Small Step Act

In the last few years, efforts to protect humanity's space heritage sites have intensified, largely due to the advocacy efforts of a nonprofit organization and its founder, Michelle Hanlon.[407] These efforts have led to the creation of Senate Bill 1694, titled the "One Small Step to Protect Human Heritage in Space Act,"[408] colloquially referred to as the "One Small Step Act." The Act details why the Apollo landing sites "are of outstanding universal value to humanity"—citing their "cultural, historical, archaeological, anthropological, scientific, and engineering" significance—utilizing the language of terrestrial cultural heritage law.[409] This Act primarily relies on domestic law to enforce protection of these sites with regard to entities licensed by the United States by requiring compliance with NASA's Recommendations, to be updated as needed, and "any successor heritage preservation recommendations, guidelines, or principles relating to the protection and preservation" of such space heritage issued by NASA.[410] The Act also grants authority for U.S. licensing entities to charge penalties for violations.[411] A call to the President for initiation of diplomatic negotiations regarding this Act is also issued,[412] recognizing that a binding multilateral treaty that utilized the same parameters for protection as the U.S. licensing regime would be sufficient to protect space heritage.

This Act was carefully drafted to comply with international obligations, though it does not reference the Outer Space Treaty (or indeed any treaty). It simultaneously recognizes the limits of its scope in terms of domestic enforcement of heritage protection and endeavors to move the international discussion forward. Additionally, by utilizing the NASA Recommendations as a

---

[407] *The Organization*, For All Moonkind, https://www.forallmoonkind.org/about/the-organization/ [https://perma.cc/Q4Q5-R7RP] (last visited Oct. 15, 2019); *see* Currie Engel, *'We Need That Boot Print.' Inside the Fight to Save the Moon's Historic Sites Before It's Too Late*, Time (July 18, 2019), https://time.com/5627640/moon-historic-sites/ [https://perma.cc/ZX5Q-J4NW].

[408] One Small Step Act, S. 1694, 116th Cong. § 1 (2019).

[409] *Id.* § 2(a)(6)–(7).

[410] *Id.* §§ 2(a)(11), 3(a)–(b).

[411] *Id.* § 3(d).

[412] *See id.* § 2(b).

baseline for protection, it furthers the argument that any proposed action that would not comply with the Recommendations would require initial consultations with the United States under Article IX of the Outer Space Treaty. This Act, if passed, would be a significant positive step forward for the protection of space heritage.

D. California & New Mexico Heritage Lists

As of 2010, both California and New Mexico have added Tranquility Base to their state lists of protected sites.[413] This sort of unilateral action that only impacts the nationals of the launching state, however, does help to fill in the gap left by Article VII of the Liability Convention by upholding the general principle that international law should not regulate relations between a state and its nationals,[414] 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-

---

413 Walsh, *supra* note 3, at 236.

414 Cheng, Studies, *supra* note 23, at 308.

> 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.[415]

This action cites both the nationalist and universal qualities of the Tranquility Base historic site and thus avoids one of the pitfalls of the Apollo Lunar Landing Legacy Act. Because only movable objects are listed, it is permissible to list the space heritage located at Tranquility Base under California law.[416]

As both state's registrations only consider the objects themselves as protected, rather than the surface of the Moon itself,[417] such registration does not run afoul of the non-appropriation principle. 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.

While the NASA Recommendations, the Apollo Lunar Landing Legacy Act, the One Small Step Act, and the inclusions on state heritage lists all take important initial 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 accordance with international law. It is essential that more robust protections be developed moving forward.

---

[415] STATE OF CAL. DEP'T OF PARKS & RECREATION, OBJECTS ASSOCIATED WITH TRANQUILITY BASE 9–10 (Oct. 26, 2009), http://ohp.parks.ca.gov/pages/1067/files/tranquility%20base_draft.pdf [https://perma.cc/K66H-HWHU].

[416] *Cf.* CAL. PUB. RES. CODE § 5020.1(j) (West 2015).

[417] Walsh, *supra* note 3, at 236.

V. SOLUTIONS FOR THE PRESERVATION OF SPACE HERITAGE

A. A Binding Multilateral Solution

1. New Treaty or Annex

A multilateral treaty negotiated through either the UNCOPUOS or UNESCO would be an ideal solution, provided that it would be able to obtain sufficient ratifications among spacefaring nations to be effective. The Moon Agreement and Underwater Heritage Convention[418] 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 that 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[419] would provide a useful model for the protection of space heritage in this context, stating that "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."[420]

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.[421] Though the Moon Agreement did not provide a system for visits or inspections of moon facilities or sites, this gap could be rectified with a new agreement pertaining to space heritage.[422]

Either of these proposed multilateral treaty solutions should include: (1) a procedure for designating heritage objects and sites; (2) a statement that heritage objects are still space objects

---

[418] *See* UNESCO Res. 31C/24, Convention on the Protection of the Underwater Cultural Heritage (Nov. 2, 2001) [hereinafter Underwater Heritage Convention].

[419] *See* Protocol on Environmental Protection to the Antarctic Treaty annex V, Oct. 4, 1991, 30 I.L.M. 1455.

[420] Lyall, *OST Art. IX*, *supra* note 90, at 664.

[421] *See supra* section II.C.7.

[422] *See* Oduntan, *supra* note 52, at 179.

for the purpose of international space law; (3) the establishment of protective zones around objects or sites; (4) a procedure for the visitation of these zones; and (5) 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 and use, including historic and aesthetic values, as well as the interests of future generations" could be implemented to the benefit of space heritage.[423] 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.[424] 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.

While a multilateral treaty solution is sought by the One Small Step Act, that Act has not yet (and may never) enter into domestic law. While the Act states that a binding international agreement would satisfy the needs of protecting the "Apollo 11 landing site and other historic landing sites" and calls upon the U.S. President to initiate the process of negotiating an international agreement,[425] it is a long road from the Senate bill to a treaty. The 2018 White House Report states that "[a]mending existing multilateral agreements, such as the [Outer Space Treaty], or drafting and negotiating an additional agreement specifically relating to preservation of lunar artifacts could provide explicit and detailed international legal protections," but it acknowledges that "the difficulties and risks of negotiating and bringing such an agreement or amendments into force would likely outweigh any benefits."[426] The report further goes on to state the understanding of the Executive that "negotiating any international agreement—particularly one involving such a high-profile issue as outer space—is inherently difficult. Similar

---

[423] *See* Patricia M. Sterns & Leslie I. Tennen, *Should There Be an Environmental "Code of Conduct" for Activities in Outer Space?*, *in* PROCEEDINGS OF THE FIFTY-THIRD COLLOQUIUM ON THE LAW OF OUTER SPACE 268, 277–78 (Am. Inst. of Aeronautics & Astronautics ed., 2010).

[424] *See id.* at 269.

[425] One Small Step Act, S. 1694, 116th Cong. § 2(b)(1), (3) (2019).

[426] PROTECTING & PRESERVING APOLLO PROGRAM LUNAR LANDING SITES & ARTIFACTS, *supra* note 2, at 5.

agreements have taken up to 15 years to complete."[427] Moreover, such an effort "could lead to a backlash against any new international protections, and even undermine the existing legal protections" or U.S. positions or national interests.[428] Thus, while the White House recognizes the potential benefits of an agreement or amendment, it also provides an explanation as to why this is difficult and dangerous from a U.S. perspective. Therefore, this may call into question whether the President would sign an act calling for him to initiate these negotiations and, if so, whether the negotiations would commence or have the possibility to succeed.

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 an amendment to the Convention itself. The most critical of these amendments would be a change to Article 3.[429] The revised Article could read as follows: "It is for each State Party to this Convention 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."[430] Articles 4 and 5 would require similar amendments for the provided protections to fully apply.[431] Article 11, regarding heritage located in disputed territory, could be amended to include space heritage over which there is a jurisdictional dispute.[432]

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.[433] Even if such amendments were to succeed, difficulties would arise if some states only remain party

---

427 *Id.*

428 *Id.*

429 *See* World Heritage Convention, *supra* note 20, art. 3.

430 *See id.* (the language in italics represents the proposed change to Article 3).

431 *See id.* arts. 4–5.

432 *See id.* art. 11.

433 *See* Underwater Heritage Convention, *supra* note 418.

to the original Convention while those who ratified the amendments would fall under a different set of rules.

3. U.N. Trusteeship

Another multilateral solution is the use of the United Nations 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."[434] Article 75 of the U.N. Charter establishes the system "for the administration and supervision of such territories as may be placed thereunder by subsequent individual agreements."[435] Contrary to popular belief, the Trusteeship Council (TC) "was not abolished, it only suspended its operation (on November 1, 1994)."[436]

Placing space heritage sites into trusteeship as specified in the U.N. 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."[437] 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."[438] 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 . . . ."[439] This use would prevent conflict resulting from questions about 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

---

[434] 2 THE CHARTER OF THE UNITED NATIONS: A COMMENTARY 1099 (Bruno Simma ed., 2d ed. 2002).

[435] U.N. Charter art. 75.

[436] THE CHARTER OF THE UNITED NATIONS: A COMMENTARY, *supra* note 434, at 1129.

[437] U.N. Charter art. 77, ¶ 1(c).

[438] THE CHARTER OF THE UNITED NATIONS: A COMMENTARY, *supra* note 434, at 1115.

[439] U.N. Charter art. 76, ¶ 1(a), (d).

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 respected in any final agreement.[440] Though trusteeship agreements have generally been concluded between the administering authority of a territory and the U.N., there has not been any doubt about the treaty character of these agreements despite the fact that they were only consented to by the administering authority and the U.N.[441] Thus, participation of additional states beyond the state having jurisdiction and control over the heritage (and wishing to protect it) would not be necessary. The composition of the TC itself is flexible, allowing for a balancing of the interests of those states that are sources of space heritage and those that are not.[442]

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."[443] The administering authority can be the U.N. or one or more states.[444] As a general rule, there has historically been only a single state acting as the administering authority of the territory in trusteeship, with the notable exception to this trend being Nauru.[445] As it had never done so, there is an unresolved question as to whether the U.N. itself should become an administering authority, which it is permitted to do under the Charter.[446] This could be an ideal solution from a cooperation perspective, but it is unlikely given its wide divergence from status quo practice.

"Theories about sovereignty could not help to solve the legal questions that arose" regarding the "international personality" of trusteeship territories; in these cases, international instruments, such as mandates, the U.N. Charter, and trusteeship agreements, determined the "rights and duties" of the terri-

---

[440] *See id.* art. 79.

[441] THE CHARTER OF THE UNITED NATIONS: A COMMENTARY, *supra* note 434, at 1118–19.

[442] *See* U.N. Charter art. 86 (explaining that membership is divided between U.N. member states that do and do not administer the trust territory).

[443] *Id.* art. 81.

[444] *Id.*

[445] THE CHARTER OF THE UNITED NATIONS: A COMMENTARY, *supra* note 434, at 1122.

[446] *See id.*

tory.[447] The concept of sovereignty is alien to trusteeship cases,[448] thereby providing a useful mechanism for outer space. Given that trusteeship does not confer sovereignty to an administering state, no conflict with the non-appropriation principle of space law would exist. Administration by the U.N. itself could not reasonably be construed as "national appropriation" and thus would provide a stable, reliable solution.

The U.N. 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;[449] thus, participation in the trusteeship system would otherwise not impact states' rights in international space law or cultural heritage law.

As the TC's Rules of Procedure were amended so "the TC could be convened 'where occasion may require,'"[450] it would be possible to reconvene the Council to administer space heritage. When the U.N. 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.'"[451] A subsequent proposal by the Secretary-General stated:

> Member States appear to have decided to retain the [TC]. 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 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.[452]

The use of the TC advised by this Article fits within the ambit of the Secretary-General's proposal.

Visits to the trust territories are provided for by the U.N. Charter,[453] and there are, in fact, specific rules spelling out the

---

[447] *Id.* at 1103.

[448] International Status of South West Africa, Advisory Opinion, 1950 I.C.J. Rep. 128, 150 (July 11).

[449] U.N. Charter art. 80, ¶ 1.

[450] THE CHARTER OF THE UNITED NATIONS: A COMMENTARY, *supra* note 434, at 1129.

[451] *Id.*

[452] U.N. Secretary-General, *Renewing the United Nations: A Programme for Reform*, ¶ 85, U.N. Doc. A/51/950 (July 14, 1997).

[453] U.N. Charter art. 87, ¶ 1(c).

procedure for such visits.[454] Such visits would be a more effective solution for heritage than visits taking place under Article XII of the Outer Space Treaty.[455]

In accordance with the U.N. Charter, the TC is mandated, as appropriate, to "avail itself of the assistance" from specialized U.N. agencies.[456] This provision provides a clear option for collaboration between the TC, UNESCO, and COPUOS. In fact, UNESCO has previously provided help and support to the TC,[457] so a partnership between the two bodies for the administration of space heritage sites would not be unusual.

B. A "Soft Law" Solution

As discussed in more detail above, "[t]he international treaty-making process can be slow and, at times, may not even result in agreement."[458] Thus, soft law alternatives have recently been pursued as a substitute for binding multilateral agreements. "In general, we may say that the era of 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."[459]

The type of soft law solution contemplated here is a "pledge"—this category encompasses documents such as non-binding U.N. agreements.[460] A soft law pledge is more flexible, more preliminary (and thus is not as precedential or public as a treaty), and it does not necessitate a complex ratification process.[461] 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 depend on an effective enforcement

---

[454] The Charter of the United Nations: A Commentary, *supra* note 434, at 1132–34.

[455] *Compare* U.N. Charter art. 87(1)(c), *with* Outer Space Treaty, *supra* note 4, art. XII.

[456] U.N. Charter art. 91.

[457] The Charter of the United Nations: A Commentary, *supra* note 434, at 1138.

[458] Steven A. Mirmina, *Reducing the Proliferation of Orbital Debris: Alternatives to a Legally Binding Instrument*, 99 Am. J. Int'l L. 649, 652 (2005).

[459] Jonathan F. Galloway, *Revolution and Evolution in the Law of Outer Space*, 87 Neb. L. Rev. 516, 518 (2008).

[460] *See* Kal Raustiala, *Form and Substance in International Agreements*, 99 Am. J. Int'l L. 581, 587 (2005).

[461] *Id.* at 591.

mechanism in order to hold legal weight.[462] 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.[463] In the most successful case, the Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space led to the formation of both customary law and treaty law, thus becoming binding norms.[464] A soft law solution should be used as a step towards achieving a long-term space heritage solution. "Working outside the concepts of territorial sovereignty, but remaining within those of the jurisdiction of licensing states, any arrangements need to provide sufficient room for states voluntarily to assume obligations and to avoid any implication that these are imposed."[465] Any such solution would need to address the same issues as a multilateral treaty, as discussed above, but it would be a positive step in setting norms of behavior for heritage in outer space.

The discussions of space cultural heritage at the 2019 COPUOS Legal Subcommittee indicate that the matter is under consideration at the international level.[466] The presence of For All Moonkind as an observer has brought the issue into open discussion in this international forum.[467] Additionally, the U.S. delegate recognized the importance of mankind's heritage in space in comments to the body.[468] These signs point to the possibility that the subject of cultural heritage in space may move along the same trajectory through COPUOS as other issues have done. In this author's view, the initial discussions leading to a soft law solution by COPUOS could lead to binding long-term protection for humanity's heritage in space.

---

[462] Galloway, *supra* note 459, at 519.

[463] *See, e.g.*, G.A. Res. 47/68, Principles Relevant to the Use of Nuclear Power Sources in Outer Space (Dec. 14, 1992); G.A. Res. 41/65, Principles Relating to Remote Sensing of the Earth from Outer Space (Dec. 3, 1986); G.A. Res. 37/92, Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (Dec. 10, 1982).

[464] *See supra* note 120 and accompanying text.

[465] Lyall, *OST Art. IX*, *supra* note 90, at 664.

[466] *See* Comm. on the Peaceful Uses of Outer Space, Rep. of the Legal Subcomm. on Its Fifty-Eighth Session, U.N. Doc. A/AC.105/1203, at 10–12 (Apr. 18, 2019).

[467] *See id.* at 10–11.

[468] *See, e.g.*, *id.* at 11.

C. Bilateral Agreements

Bilateral agreements could be used either alone or in conjunction with a soft law solution 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.[469] "[B]ilateral agreements fulfil an important role in international cooperation for space activities."[470] They have been, and will be in the future, a significant vehicle for cooperation in space.[471] Such agreements have been used by the United States, the Soviet Union, and a number of other spacefaring nations.[472] Bilateral agreements can take the form of: (1) a classical convention; (2) executive agreements; (3) memoranda of understanding; or (4) exchange of letters.[473] These agreements are useful both for spacefaring states and non-spacefaring states who wish to cooperate and share benefits.[474] "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."[475] Bilateral agreements have also been used from an underwater cultural heritage perspective to protect particular wrecks on the high seas.[476] Such agreements could be general in subject matter, or pertain to a specific site or series of sites, similar to the Titanic Agreement.[477]

D. Unilateral Action

Unilateral actions, such as unilateral declarations and national legislation, are another avenue open to address the subject of space heritage. "The legality of such unilateral action ultimately depends on whether the exercise of jurisdiction is within reasonable limits."[478] Good faith and reasonableness are essential in the exercise of appropriate functional jurisdiction in

---

[469] *See* S. Neil Hosenball, *Bilateral Agreements*, *in* 1 Manual on Space Law, *supra* note 103, at 347, 350.

[470] van Bogaert, *supra* note 40, at 281.

[471] Hosenball, *supra* note 469, at 356.

[472] *See* van Bogaert, *supra* note 40, at 276–81.

[473] *Id.* at 276.

[474] Hosenball, *supra* note 469, at 356.

[475] Jenks, Space Law, *supra* note 99, at 82.

[476] Sarah Dromgoole, *The International Agreement for the Protection of the* Titanic*: Problems and Prospects*, 37 Ocean Dev. & Int'l L. 1, 2 (2006).

[477] *See id.*

[478] *Cf.* Csabafi, *supra* note 27, at 66.

outer space.[479] Good faith is a fundamental principle of international law from which rules concerning reasonableness and fairness derive.[480]

It may be said that

> [T]he 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.[481]

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 must make clear what actions will cause potentially harmful interference with its preservation of space heritage.[482] There are a number of possibilities available for this purpose. "Security can be achieved on the basis of reciprocal tolerance and accommodation."[483] Article IX lays the foundation of such reciprocity and cooperation.[484]

One option available is a procedure of updates to the U.N. space object registry. Whether the mission of a space object is at its end, the object is out of control, out of orbit, or even if it has been shattered into many pieces, such information can be added to the U.N. registry in accordance with a broad interpretation of the relevant provisions of the Registration Convention.[485] 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.[486] Thus, states can update the registry of space objects to indicate that these objects are now considered space heritage and to catalogue artifacts associated with the object and provide location information.

---

[479] *Id.* at 100.
[480] J.F. O'CONNOR, GOOD FAITH IN INTERNATIONAL LAW 124 (1991).
[481] CSABAFI, *supra* note 27, at 99–100.
[482] *See* discussion *supra* section II.C.8.
[483] BHATT, *supra* note 128, at 84.
[484] *See* Outer Space Treaty, *supra* note 4, art. IX.
[485] VAN BOGAERT, *supra* note 40, at 121.
[486] G.A. Res. 62/101, ¶ 2(a)(iv), (b)(ii) (Jan. 10, 2008).

A state may also issue unilateral statements, such as the NASA Recommendations, to unambiguously provide concrete information as to what actions will interfere with its 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 although a consultation may be requested, it is possible within the bounds of the Outer Space Treaty that such consultation may not occur.[487] The subjective premise of Article IX poses difficulty for its viability as a serious solution to this problem.[488] National legislation is also recommended in order to protect sites from nationals of that state, a feat that cannot be achieved under international law, as discussed above. This action would serve as a corollary 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.[489] 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.[490] 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 multilateral discussions, 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.

VI. CONCLUSION

As commercial space technology continues to develop in the future, "[m]any people will want to visit the place where their

---

[487] *See* CHENG, STUDIES, *supra* note 23, at 257.
[488] *See id.* at 258.
[489] *See* Outer Space Treaty, *supra* note 4, art. IV.
[490] *Cf.* CSABAFI, *supra* note 27, at 100.

ancestors first reached the Moon's surface and opened up the first non-Earth place for human residence and activities."[491] 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."[492] 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[493] and Moon Express,[494] and the Google Lunar X prize is offering boons to participants for approaching lunar heritage sites.[495] Future interaction with these sites is inevitable. If "the point of history is to learn from the past,"[496] 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 for sustainability?' "[497] 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.

---

491 T.F. Rogers, *Safeguarding Tranquility Base: Why the Earth's Moon Base Should Become a World Heritage Site*, 20 SPACE POL'Y 5, 5 (2004).

492 Vadi, *supra* note 122, at 899.

493 Joel Achenbach, *Golden Spike Space-Tourism Company: 'To the Moon!,'* WASH. POST (Dec. 6, 2012), https://www.washingtonpost.com/national/health-science/golden-spike-space-tourism-company-to-the-moon/2012/12/06/52eedcc8-3fc3-11e2-ae43-cf491b837f7b_story.html [https://perma.cc/A6NB-EKT4].

494 Coburn Palmer, *Moon Express: $10,000 Lunar Flights Available by 2026, Space Tourism Takes Off*, INQUISITR (Dec. 3, 2016), https://www.inquisitr.com/3765015/moon-express-10000-lunar-flights-available-by-2026-space-tourism-takes-off/ [https://perma.cc/3W5J-K8LF].

495 Doug Messier, *Google Increases Financial Commitment to Google Lunar X Prize*, PARABOLIC ARC (Jan. 27, 2015), http://www.parabolicarc.com/2015/01/27/google-increases-commitment-google-lunar-prize/ [https://perma.cc/4CLZ-LQGG].

496 Michael S. Goodman, *Making Space for History*, 17 SPACE POL'Y 229, 230 (2001).

497 Hilary du Cros, *A New Model to Assist in Planning for Sustainable Cultural Heritage Tourism*, 3 INT'L J. TOURISM RES. 165, 166 (2001).

"In short, the force of technological change must be tempered by the rule of law."[498]

This Article 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 cooperation 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—the former establishes jurisdiction, ownership, and control over space objects and the latter mandates 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.

> 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/artefact on the lunar or any other planetary surface (apart from Earth) while not actually damaging it.[499]

It is possible in international law that keep-out zones can be established 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 a celestial body would only provide marginal additional hindrance to other states wishing to explore space but would be a great boon in the protection of humanity's heritage in space, the principle that "a socially im-

---

[498] Galloway, *supra* note 459, at 520.

[499] Spennemann, *Out of this World*, *supra* note 7, at 363.

portant interest shall not perish for the sake of respect for an objectively minor right"[500] should apply in this instance.

The most viable and effective means for the protection of space heritage is a multistep 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 U.N. declaration, preferably through COPUOS, though UNESCO is also a 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 U.N. 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.'"[501] In the space heritage arena, this is apparent in NASA's Recommendations, which seek a cooperative solution to the problem of protecting lunar sites and artifacts. In international law, NASA's Recommendations can work in conjunction with 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 of which recommended solutions are applied or if some entirely different solution prevails. "To do nothing is to fail, individually and collectively, to shoulder this responsibility."[502] 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.

---

[500] BIN CHENG, GENERAL PRINCIPLES OF LAW AS APPLIED BY INTERNATIONAL COURTS AND TRIBUNALS 74 (1953).

[501] Jakhu, *Legal Issues*, *supra* note 198, at 41.

[502] Patrick J. O'Keefe & James A.R. Nafziger, *The Draft Convention on the Protection of the Underwater Cultural Heritage*, 25 OCEAN DEV. & INT'L L. 391, 391 (1994).