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PERSISTENT OPTIMISM: THE INHERENCY OF SECURITY
WITHIN INTERNATIONAL SPACE LAW

*Timothy M. Bass**

“Peace will guide the planets and love will steer the stars.”¹

Abstract

When thinking about security in the realm of outer space, it is tempting to focus on areas like militarization, defense from attacks, hacking systems, and espionage; however, in doing so, we overlook the fundamental principles that attempt to ensure security in space law from its inception. By taking a moment to reflect on the guiding principles and goals of space exploration as laid out in treaty and domestic law from a broader perspective, it becomes clear that space is overwhelmingly hopeful in continuing the reign of peace.

INTRODUCTION

Space is one of those rare instances where the law, driven by a romanticized ideal of humanity’s capabilities and hopes, proffers a bright future on the horizon. Rather than give way to the fears that arose from the use of space, states chose to fully embrace the optimism of the benefits that space could offer to all of humanity.² The keystones of space law, both international and domestic, are principles like peace, responsibility, transparency, and cooperation. And it is those principles that lay the foundation for past, present, and future spaceflight and exploration. Prior to attempting to fix an issue, one would do well to remember the bases of space law and ensure that any attempt to mitigate a problem furthers these principles.

Before discussing the legal background, it is prudent to discuss outer space’s seemingly innate ability to create harmony amongst various groups of people. This is evinced in both domestic and international arenas. For instance, from a U.S. domestic perspective, then-Senator Lyndon B. Johnson stated:

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1. ORIGINAL BROADWAY CAST, *Aquarius*, on HAIR: AN AMERICAN TRIBAL LOVE-ROCK MUSICAL, ORIGINAL BROADWAY CAST RECORDING (RCA Victor, 1968), lyrics by James Rado and Jerome Ragni.

2. See G.A. Res. 1348 (XIII) (Dec. 13, 1958); G.A. Res. 1472 (XIV) (Dec. 12, 1959) (establishing the United Nations Committee on the Peaceful Uses of Outer Space).

The executive position in the [US] is held by the Republican Party through the mandate of the people. I am here as a member of one house of the legislative branch, in which the majority position is held, also at the mandate of the people, by the Democratic Party, of which I am a member.

These are distinctions. They are not, on this resolution, differences. On the goal of dedicating outer space to peaceful purposes for the benefit of all mankind, there are no differences within our Government, between our parties, or among our people. . . . United we stand.³

Just as space was a way to bring U.S. citizens together, it also provided an arena for harmony among the nations of the world. The U.S. led the way in paving a path to peace in outer space worldwide. After the success of the International Geophysical Year, the U.S. saw the birth of space exploration as “a good time to attempt to establish plans for peaceful exploration of outer space, before there is intense competition along military lines.”⁴

Along the same lines, President Dwight Eisenhower told the U.N.:

The emergence of this new world poses a vital issue: will outer space be preserved for peaceful use and developed for the benefit of all mankind? Or will it become another focus for the arms race—and thus an area of dangerous and sterile competition?

The choice is urgent. And it is ours to make.⁵

This sentiment was echoed by the Japanese delegate to the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) in 1963. Discussing the Legal Subcommittee’s proposed paper on legal principles of the use of outer space, Mr. Matsui stressed the need to “establish certain basic principles which would regulate the activities of mankind in outer space and ensure that such activities would be conducted peacefully and openly and in an orderly manner for the benefit of all mankind.”⁶ He goes on to state:

3. Dept. of State Bulletin, Dec. 15, 1958, p. 977–79 (full text available at Final Report of the Special Committee on Space and Astronautics of the United States Senate Pursuant to S. Res. 256 of the 85th Congress (S. Rep. No. 100, 86th Cong., 1st Sess., pp. 58–62).

4. Dr. Joseph Kaplan, professor of physics, University of California at Los Angeles, and Chairman, United States National Committee for the International Geophysical Year, May 1, 1958, H. Doc. No. 87, Staff Rept. On Hearings before the Select Comm. on Astronautics and Space Exploration on H.R. 11881, at p. 35, 86th Congress (1959).

5. President Dwight Eisenhower, Address Before the 15th General Assembly of the United Nations (Sept. 22, 1960).

6. U.N. GAOR, 18th Sess., Agenda Item 28 at p. 20, U.N. Doc. A/5549 (1963).

[O]uter space is a fairly new area of human activity in which, fortunately, no nation as yet has established vested interests. . . . Accordingly, before undesirable *faits accomplis* can accumulate, we must take the fullest possible advantage of the present situation and strive hard to ensure that the exploration and use of outer space will take place in accordance with law and order and under a peaceful regime, so that the welfare of man would be the prime objective of all outer space activities.⁷

From the outset, as one of two “space powers” of the time, the U.S. saw itself as a leader and role model in the development and peaceful use of space.⁸ President Eisenhower was hopeful of space being a new arena of peace, he did not want the U.S. to fall victim to the military-industrial complex, and saw a path to leading the world through action via the nation’s space activities.

I have reached this conclusion [that aeronautic and space activities sponsored by the U.S. be conducted by a civilian agency] because space exploration holds promise of adding importantly to our knowledge of the earth, the solar system, and the universe, and because it is of great importance to have the fullest cooperation of the scientific community at home and abroad in moving forward in the fields of space science and technology. Moreover, a civilian setting for the administration of space function will emphasize the concern of our Nation that outer space be devoted to peaceful and scientific purposes.⁹

The US military agreed:

if we are ever to have peace in this tortured world of ours, we must make a beginning—we must get away from the purely military applications of space. We must recognize that the marriage of the military and science is proceeding too fully and too strongly; we must attempt to stop this tendency and instead emphasize the peaceful applications of science.¹⁰

7. *Id.*

8. 51 U.S.C. § 20102(d)(5) (“The aeronautical and space activities of the United States shall be conducted so as to contribute materially to . . . [t]he preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere.”).

9. Public Papers of the Presidents of the United States, Dwight D. Eisenhower at 269–73 (Washington, D.C., Gov’t Printing Office, 1958).

10. Hearings before the Select Committee on Astronautics and Space Exploration on H.R. 11881, at p. 223, 85th Congress, Statement of Admiral Hyman George Rickover, Assistant Chief, Bureau of Ships, for Nuclear Propulsion, Dep’t. of the Navy (Apr. 18, 1958).

The U.S. has long held that its space activities, through its civilian administration, not only strengthen its domestic leadership, “economy, pride, and sense of well-being,” but also contribute significantly to its “world prestige and leadership.”¹¹ From the perspective of astronauts, this makes sense. Looking down at Earth, there are no artificial borders; there are no visible conflicts; they simply see “how beautiful our planet is”¹² and are “aware of only one Earth.”¹³

Although, as made clear from Mr. Matsui’s statement above that the fear of war spreading was in the minds of the space law pioneers, it is from the principles of unity and peace that space law, as a corpus, was born. A glowing illustration of this is seen in President Kennedy’s Address to the United Nations General Assembly in 1961:

As we extend the rule of law on earth, so must we also extend it to man’s new domain—outer space.

All of us salute the brave cosmonauts of the Soviet Union. The new horizons of outer space must not be driven by the old bitter concepts of imperialism and sovereign claims. The cold reaches of the universe must not become the new arena of an even colder war.

To this end, we shall urge proposals extending the United Nations Charter to the limits of man’s exploration in the universe, reserving outer space for peaceful use. . . .

But I come here today to look across this world of threats to a world of peace.¹⁴

The Cold War was increasing tension on Earth, but through the peaceful use of outer space, that friction was placed aside. Premier Khrushchev congratulated the U.S. after its first manned orbital flight. The Premier explained that hopefully,

the genius of man, penetrating the depth of the universe, will be able to find ways of lasting peace and ensure the prosperity of all peoples on our planet Earth which, in the space age, though it does not seem so large, is still dear to all

11. National Aeronautics and Space Administration Authorization Act, Fiscal Year 1989, Pub. L. 100-685, Sec. 101(13) (Nov. 16, 1988).

12. Yuri Gagarin (U.S.S.R.), the first human in space, is quoted as having written this in 1962: “Orbiting Earth in the spaceship, I saw how beautiful our planet is. People, let us preserve and increase this beauty, not destroy it!”

13. Astronaut Sultan bin Salman bin Abdulaziz Al Saud, aboard the STS-51G Space Shuttle Mission in 1985, made this statement referring to the international crew, “The first day or so, we all pointed to our countries. The third or fourth day, we were pointing to our continents. By the fifth day, we were aware of only one Earth.”

14. President John F. Kennedy, Address to the UN General Assembly (Sep. 26, 1961).

of its inhabitants.

If our countries pooled their efforts—scientific, technical, and material—to master the universe, this would be very beneficial for the advance of science and would be joyfully acclaimed by all peoples who would like to see scientific achievements benefit man and not be used for “cold war” purposes and the arms race.¹⁵

After receiving this message, President Kennedy responded with a statement expressing hope of the U.S. and USSR cooperating in space and leading the way for broad international cooperation throughout the world in space exploration.¹⁶ Beginning with the principles of unity and peace, the “spirit of practical cooperation” among the nations of the world had begun.¹⁷ This initial desire for cooperation led to a groundbreaking Apollo-Soyuz rendezvous mission. The two superpowers at war with each other on Earth had put their conflicts aside to cooperate in space. On July 17, 1975, the Apollo spacecraft docked with the Soyuz, and the U.S. and USSR crews came together. The two commanders shook hands above the French city of Metz, beside a sign reading, “Welcome aboard Soyuz.”¹⁸ That tradition continued, and upon completion of the first assembly mission of the International Space Station (ISS), Cosmonaut Sergei Krikalev and Astronaut Robert Cabana opened the hatch and entered the ISS together, ensuring that humanity received the credit instead of either one of the states.¹⁹ This cooperation required a certain degree of transparency, and that transparency begat trust. These demonstrations manifested true new hope for peace.

What makes space law such an intriguing field is that the above anecdotal evidence is not the end of the story. In fact, all of it is encapsulated by the various treaties and domestic laws related to the use of outer space. Eisenhower’s dreams of a peaceful, globally beneficial outer space²⁰ were placed in domestic laws first, then U.N. resolutions,

15. Nikita Sergeevich Khrushchev to John F. Kennedy, 21 Feb. 1962, as printed in U.S. Congress, Senate, Committee on Aeronautical and Space Sciences, Documents on International Aspects of the Exploration and Use of Outer Space, 1954-1962, 88th Cong., 1st sess., 1963, p. 232.

16. Kennedy to Khrushchev, 21 Feb. 1962, as printed in Committee on Aeronautical and Space Sciences, Documents on International Aspects of Space, p. 233.

17. *Id.*

18. Edward Clinton Ezell and Linda Neuman Ezell, *The Partnership: A History of the Apollo-Soyuz Test Project*, NASA SP-4209 at 326–30 (1978).

19. STS-88 Mission Control Center Status Report # 17 (Dec. 11, 1998), available at <https://www.nasa.gov/centers/johnson/news/shuttle/sts-88/STS-88-17.html>.

20. Eisenhower, *supra* note 5.

We must not lose the chance we still have to control the future of outer space.
I propose that:

and ultimately culminating in multilateral treaties.

In order to understand what the principles are and how they are meant to achieve space security, it is necessary to look to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty).²¹ Even though the U.S., and other countries, had already passed some laws pertaining to outer space activities, this was the first treaty that laid the foundation for Earth's outer space activities.

The Outer Space Treaty is a special instrument, not only in principles but in numbers. As of the latest Treaty Status Report from the U.N., 109 states have ratified the treaty, and an additional twenty-three have signed the treaty.²² All spacefaring states have accepted the Outer Space Treaty.²³ Although there have been some less than ideal utilizations of outer space, for the most part, this treaty has led to greater peaceful exploration and expansion of human knowledge.

While it is not the intent to simply restate the text of the treaty, the full

1. We agree that celestial bodies are not subject to national appropriation by any claims of sovereignty.

2. We agree that the nations of the world shall not engage in warlike activities on these bodies.

3. We agree, subject to appropriate verification, that no nation will put into orbit or station in outer space weapons of mass destruction. All launchings of space craft should be verified in advance by the United Nations.

4. We press forward with a program of international cooperation for constructive peaceful uses of outer space under the United Nations. Better weather forecasting improved world-wide communications, and more effective exploration not only of outer space but of our own earth—these are but a few of the benefits of such cooperation.

Agreement on these proposals would enable future generations to find peaceful and scientific progress, not another fearful dimension to the arms race, as they explore the universe.

21. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, *opened for signature* Jan. 27, 1967, *adopted* Oct. 10, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty or OST]. The formulation of an international legal regime for space activities began with the adoption of two U.N. General Assembly resolutions: the Resolution on International Co-operation in the Peaceful Uses of Outer Space, G.A. Res. 1721 (XVI) (Dec. 20, 1961), and the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, G.A. Res. 1962 (XVIII) (Dec. 13, 1963). The general principles of both were ultimately incorporated into the Outer Space Treaty.

22. UN Committee on the Peaceful Uses of Outer Space, *Status of International Agreements Relating to Activities in Outer Space as at 1 January 2019*, U.N. Doc. No. A/AC.105/C.2/2019/CRP.3 (Apr. 1, 2019). It is worth noting that there are 193 state members of the U.N., and an overwhelming majority, 132, are state parties to the Outer Space Treaty.

23. *Id.*

implications of this treaty on space security can be better understood with a brief overview of some of the text.

Article I of the Outer Space Treaty builds the foundation on which space activities are conducted. It states that “exploration and use” of outer space and celestial bodies “shall be carried out for the benefit and in the interests of all countries.”²⁴ This article also introduces the principle that lesser developed countries deserve the benefits offered by space. Further, outer space and all celestial bodies are defined as the “province of all mankind.”²⁵ This is just the first sentence. Article I further states that, on a non-discriminatory basis, there shall be free and open access to and exploration of space and celestial bodies.²⁶ The Article concludes with guaranteeing freedom of scientific investigation in space and encouraging states to cooperate with one another.²⁷ Many of these themes will be repeated throughout the text of the treaty. What a powerful and hopeful beginning to a treaty aimed at preserving peace!

Article II is one sentence long and births the non-appropriation principle.²⁸ It clearly articulates that space and celestial bodies are not subject to appropriation by any means.

Article III states that activities in space shall be carried out in accordance with international law in an “interest of maintaining international peace and security and promoting international cooperation and understanding.”²⁹

Article IV provides that the use of space and celestial bodies shall be “exclusively for peaceful purposes.”³⁰ It further contains an outright prohibition on nuclear weapons and weapons of mass destruction in space or on celestial bodies and forbids the establishment of military bases, installations and fortifications, the testing of any type of weapons, and the conduct of military maneuvers on celestial bodies.³¹ However, it does allow for the use of military personnel and necessary equipment in the advancement of peaceful exploration.³²

24. Outer Space Treaty, *supra* note 21, at art. I.

25. *Id.*

26. *Id.*

27. *Id.*

28. *Id.* at art. II.

29. *Id.* at art. III.

30. *Id.* at art. IV.

31. *Id.*

32. *Id.*

Article V designates astronauts as “envoys of mankind”³³ and provides for their overall safety and protection.³⁴ Astronauts are required to “render all possible assistance” to one another, regardless of the state they represent. In the event of an emergency landing, all possible assistance will be made to return the astronaut to the state of the registry promptly and safely.³⁵

Article VI introduces the liability regime around space objects and space activities and also mandates “authorization and continuing supervision” of space activities by the appropriate state.³⁶ States “bear international responsibility” for their space activities, including activities of their private enterprises.³⁷ Here, note the word “responsibility” vice the word “liability,” indicating perhaps a broader interpretation of this article. Article VII serves to make a launching state “internationally liable for damage to another State . . . or to its natural or juridical persons” by space objects.³⁸

Article VIII states that the State of Registration maintains “jurisdiction and control” and ownership over its space objects and components thereof.³⁹ This means there is no abandonment in space or on celestial bodies. Also, states may request the return of space objects that are located outside of its borders.

Article IX begins with a call for harmony requiring that use and exploration of space “shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the moon and other celestial bodies, with due regard to the

33. *Id.* at art. V. There are various interpretations of what an “astronaut” actually means, as well as what rights, duties, or immunities an “envoy of mankind” receives; *See generally* Horst Bittlinger, *Hoheitsgewalt und Kontrolle Im Weltraum* 102 (1988); Horst Bittlinger, *Menschen im Weltall*, in *Handbuch Des Weltraumrechts* 205, 216 (Karl-Heinz Böckstiegel ed., 1991); Gabriella Catalano Sgrosso, *Legal Status of the Crew in the International Space Station*, *PROC. OF THE FORTY-SECOND COLLOQUIUM ON THE L. OF OUTER SPACE* 35, 37 (1999); Marcus Schladebach, *Einführung in das Weltraumrecht*, 48 *JURISTISCHE SCHULUNG* 217 (2008). It is universally agreed that at least personnel in space performing a peaceful, scientific Government function are astronauts. Some have suggested that every spacefaring person is an astronaut. However, note the use of the word “personnel” in Article VIII of the Outer Space Treaty in lieu of “astronaut.” Outer Space Treaty, *supra* note 21, at art. VIII.

34. Outer Space Treaty, *supra* note 21, at art. V.

35. *Id.*

36. *Id.* at art. VI.

37. *Id.*

38. *Id.* For more about liability with regard to space activities, *see* Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 13810 [hereinafter *Liability Convention*]. An overly broad simplification is that liability of the launching state for damage to another state’s property in space is fault based, while damage arising from one state’s space activities to another states property on earth, in the sea, or in the air (or to a citizen of the non-launching state who is not involved or invited to the launch) is absolute.

39. Outer Space Treaty, *supra* note 21, at art. VIII.

corresponding interests of all other States.”⁴⁰ In perhaps the most astounding presentiment, the article also prohibits “harmful contamination” of space and celestial bodies.⁴¹ Although orbital debris has long been considered an issue,⁴² there has been a recent surge in interest in orbital debris, space traffic management, and space situational awareness.⁴³ It also requires that states avoid “adverse changes” to the earth’s biosphere upon returning from space.⁴⁴ In line with the free and open use and exploration of space, this Article states that if one state’s space activities could cause “potentially harmful interference” with another state’s space activities, there should be consultations among the states involved.⁴⁵ This is a demonstration of the two earlier principles, freedom of use and exploration (Art. I) and international cooperation (Art. III), coming together and providing a concrete example of the interplay of principles.

Article X is an example of an increased transparency measure. In furtherance of promoting international cooperation, non-launching states may request to be “afforded an opportunity to observe the flight of space objects,” and launching states must consider such requests on a “basis of equality.”⁴⁶ This opens communications among states and increases trust by allowing viewing opportunities. It also encourages agreements between the states concerned to define the nature and conditions of the observation, increasing the potential for cooperation. Perhaps working out a fairly simple viewing agreement may lead to further collaboration in the future.

Article XI adds to the transparency building by mandating that the details of a state’s space activities be disseminated to the greatest extent feasible and practical.⁴⁷ Specifically, states must inform the public, the international scientific community, and the United Nations (for

40. *Id.* at art. IX.

41. *Id.*

42. The first mention in the United States was Ronald Reagan in 1988. NSDD 293, Presidential Directive on National Space Policy (Feb. 11, 1988), <https://fas.org/spp/military/docops/national/policy88.htm> (“... all space sectors will seek to minimize the creation of space debris. Design and operations of space tests, experiments and systems will strive to minimize or reduce accumulation of space debris consistent with mission requirements and cost effectiveness.”).

43. For an example, see Policy Directive–3, National Space Traffic Management Policy, 83 Fed. Reg. 28969, (June 18, 2018). In June 2019, the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space were adopted. U.N. GAOR, 74th Sess., Supp. No. 20, ¶ 163 and Annex II, U.N. Doc. A/74/20.

44. Outer Space Treaty, *supra* note 21, at art. IX.

45. *Id.*

46. *Id.* at art. X.

47. *Id.* at art. XI.

distribution) of the nature, conduct, locations, and results of their space activities.⁴⁸

Article XII combines the transparency measures (Arts. X and XII), international cooperation (Arts. III and IX), and somewhat astronaut responsibilities (Art. V) by requiring a state to open its stations, installations, equipment and space vehicles on celestial bodies to representatives of other states on the basis of reciprocity, when doing so is safe and does not interfere with operations.⁴⁹ The reciprocity-based approach encourages openness as well as efficiency. For instance, states may choose to focus on a variety of studies to gather more breadth of science if they know they can utilize each other's facilities. While this certainly builds transparency and cooperation, it also encourages more efficient exploration with opportunities to decrease duplication of efforts.

These lofty principles reflect an idealism for humankind's expansion into space guided by an altruistic corpus of law. By focusing on these principles, the argument is not that there need be no other laws or regulations, but that the first step in creating new laws and regulations should be strong consideration of these principles and ensuring that the principles form the basis. In other words, do not merely see a problem or issue and attempt to correct it in a bubble. Instead, when a problem is found, seek the principle which provides guidance related to that problem, then build on that principle. Domestic laws and regulations reflect these principles.

For instance, the Japanese Basic Plan on Space Policy⁵⁰ contains language such as "Space science for the wisdom of all people, and manned space activities/exploration for enlarging the scope of human activities in future are and will remain important"⁵¹ and "large-scale space exploration should be based on international collaboration"⁵² Further, the plan clearly defines six pillars of Japanese space exploration: (1) Peaceful use of space; (2) Improvement of people's lives; (3) Development of industry; (4) Prosperity of human society; (5) Promotion of international cooperation; and (6) Consideration for the environment.⁵³ Japanese space activities are directed to comply with these pillars. These pillars, in turn, reflect many of the international law principles laid out in the Outer Space Treaty.

48. *Id.*

49. *Id.* at art. XII.

50. STRATEGIC HEADQUARTERS FOR SPACE POL'Y, GOV'T OF JAPAN, BASIC PLAN ON SPACE POLICY (2013), <https://www8.cao.go.jp/space/plan/plan-eng.pdf>.

51. *Id.* at § 2.3.

52. *Id.*

53. *Id.* at § 2.4. Here, the text calls out for protection of both the earth and space environment ("In promoting the development and utilization of space, such activities themselves should be environment-friendly and also friendly to that of outer space.").

Russia's foundational space law also reflects the principles stating that space activities shall be implemented in accordance with the following principles: "the promotion of peace and international security; ensuring the safety of space activity and protecting the environment; international responsibility; equal and mutually beneficial international cooperation; [not breaching international law]; and dissemination of information."⁵⁴

Germany's space strategy contains similar thinking. Germany recognizes that "[a]n unrestricted peaceful use of space is, for future generations, an essential prerequisite to freedom and prosperity."⁵⁵ With regard to international cooperation and ensuring sustainability of the space environment, Germany "intends to further expand international cooperation through coordination with its partners as a means of avoiding unnecessary duplication of effort and overcapacity while also improving space sector efficiency."⁵⁶ As to transparency, "[a] globalized media landscape opens the way to transparency within political systems and prevents national isolation. Space-based infrastructures . . . prove themselves to be an effective instrument for the dissemination and exploitation of knowledge."⁵⁷

Through its licensing regime, the United Kingdom requires space activities to be conducted in a manner to "(i) prevent the contamination of outer space or adverse changes in the environment of the earth, (ii) avoid interference with the activities of others in the peaceful exploration and use of outer space, [and] (iii) avoid any breach of the United Kingdom's international obligations."⁵⁸ The results of the licensee's activities are reported to the Secretary of State to align with international obligations.⁵⁹

The U.S. was an early adapter of space law and passed the comprehensive National Aeronautics and Space Act of 1958 (Space Act) within a year after the Sputnik launch and years before the Outer Space Treaty was created.⁶⁰ The Space Act began with the declaration that "it is the policy of the US that activities in space should be devoted to peaceful purposes for the benefit of all mankind."⁶¹ The Space Act also requires that its space activities "contribute materially to one or more" specific

54. Rossiskaya Federatsiya Zakon O Kosmicheskoy Deyatel'nosti [Law of the Russian Federation on Space Activities], FAOLEX Aug. 20, 1993, LEX-FAOC068717, <http://www.fao.org/faolex/results/details/en/c/LEX-FAOC068717>.

55. FEDERAL MINISTRY OF ECONOMICS AND TECHNOLOGY, MAKING GERMANY'S SPACE SECTOR FIT FOR THE FUTURE: THE SPACE STRATEGY OF THE GERMAN FEDERAL GOVERNMENT 31 (2010), https://www.dlr.de/rd/en/Portaldata/28/Resources/dokumente/Raumfahrtstrategie_en.pdf.

56. *Id.* at 10.

57. *Id.* at 7.

58. Outer Space Act 1986, c. 38, § 5 (Eng.).

59. *Id.*

60. Nat'l Aeronautics and Space Act of 1958, Pub. L. No. 85-568, 72 Stat. 426.

61. *Id.* at § 102(a).

objectives such as the expansion of human knowledge of phenomena in the atmosphere and space; the improvement of aeronautical and space vehicles; studying the potential benefits to be gained from, the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes; international cooperation and sharing the results of space activities.⁶² The Space Act also established the National Aeronautics and Space Administration (NASA) and provided it functions in carrying out the U.S. space objectives through “the widest practicable and appropriate dissemination of information concerning its activities and the results thereof”; “arrang[ing] for participation by the scientific community in planning scientific measurements and observations to be made through use of aeronautical and space vehicles”; and generally carrying out U.S. space activities through a flexible framework.⁶³ NASA was also given direction to cooperate internationally for the peaceful application of aeronautics and space research.⁶⁴

As the USSR continued to excel in outer space, the U.S. began to feel a sense of urgency for international regulation of space activities.⁶⁵ In response to the Soviet moon shot, Lunik II, in September of 1959, the U.S. proposed that:

(a) exploration and activities in connection with celestial bodies shall not lead to claims of sovereignty by any nation; [and] (b) that such bodies in outer space shall be considered as open to all on a non-exclusive basis so long as a particular planned activity would not interfere with some other project already undertaken...

to promote scientific progress and international harmony.⁶⁶ The U.S. explained that “the full implications of a principle of freedom of outer space, in contrast with a principle of national sovereignty over outer space, remain to be fully assessed;”⁶⁷ however, “[i]t is clear that serious problems would arise if a state claimed, on one ground or another, exclusive rights over all or part of a celestial body.”⁶⁸ Ultimately, the spacefaring nations became comfortable with the non-appropriation

62. *Id.* at § 102(c).

63. *Id.* at § 203.

64. *Id.* at § 205.

65. See Telegram from the Mission at the United Nations to the Department of State (Sept. 18, 1959) in *Foreign Relations of the United States* vol. II, U.S. Dep’t of State 57 (1991).

66. *Id.*

67. NAT’L AERONAUTICS AND SPACE COUNCIL, REP. BY THE NAT’L AERONAUTICS AND SPACE COUNCIL § 24 (Jan. 26, 1960).

68. *Id.* at 27.

principle, and it ultimately became part of the U.N. resolution.⁶⁹ Since then, the non-appropriation principle has been repeated into U.S. policy⁷⁰ and law.⁷¹

These principles have led to some of humanity's greatest accomplishments and directly increased global harmony. The frontier spirit of discovery and exploration commonality that serves to unite the Earth, regardless of belief or national origin.⁷² Space provides an opportunity to put aside earthly conflict and distrust and increase the connection across all of humanity, and to aid in that end, space law was created. "The primary goals of space law are to ensure a rational, responsible approach to the exploration and use of outer space for the benefit and in the interests of all humankind."⁷³

With that in mind, why not take a note from the engineers and scientists that space lawyers work alongside? When they encounter a problem, they often seek the root cause. It is likely that all issues and problems arising from space activities can be determined to have their root causes in a breach of the overarching principles of space law. By understanding the principles, tying space activities directly to them, and taking accountability based on those principles, it forces us to reconcile our activities to them and recognize them as the polestar of our activities. The following are brief examples of how this could be applied.

Currently, space debris and related space traffic management are hot topics. Rather than looking at the problem as debris itself, and what a state can do to protect its activities from debris, we can pierce the issue to find the root cause based on the principles. Permitting debris freely for years has led to interference with free access and use of space by spacefaring nations. According to space law, states bear responsibility for

69. Int'l Cooperation in the Peaceful Uses of Outer Space, G.A. Res. 1721 (XVI), U.N. Doc. A/4987, (Dec. 20, 1961).

70. OFF. OF SPACE COM., 2010 NAT'L SPACE POL'Y OF THE US, 3 (June 28, 2010). "As established in international law, there shall be no national claims of sovereignty over outer space or any celestial bodies. The United States considers the space systems of all nations to have the rights of passage through, and conduct of operations in, space without interference. Purposeful interference with space systems, including supporting infrastructure, will be considered an infringement of a nation's rights."

71. The U.S. Commercial Space Launch Competitiveness Act expressly articulates that "[i]t is the sense of Congress that the United States does not, by enactment of this Act, assert sovereignty or sovereign or exclusive rights or jurisdiction over, or ownership of, any celestial body." U.S. Com. Space Launch Competitiveness Act, Pub. L. No. 114-90, § 403.

72. In speaking about the moon landing and NASA's plans to return with the first woman on the moon, Sen. Cruz said, "This is a moment to celebrate American leadership, but this is a moment, even more fundamentally, to celebrate what mankind can do—the frontier spirit of discovery and exploration. It is a spirit that should unite us all." CONG. REC. S4936 (daily ed. July 18, 2019) (statement of Sen. Cruz).

73. UN OFF. OF OUTER SPACE AFF., WHY DO WE NEED LAW ABOUT OUTER SPACE?, <https://www.unoosa.org/oosa/en/informationfor/faqs.html>.

their activities in space. Debris also constitutes harmful contamination of space. With this in mind, recognizing and publicly declaring that the problem arose by failing to fully live up to these principles is a good first step in mitigating or solving the issue and demonstrating leadership for the newly spacefaring nations. The stare response may be the same (increased armor, increased maneuverability, more strict controls of debris creation, etc.), but by tying it to these principles, it increases the likelihood that more states will follow. Obviously, this is a very abbreviated example, but it serves to demonstrate that the root cause of debris is a failure by launching states to fully abide by the space law principles.

The same is true for other issues like anti-satellite systems tests, colonization, responsible resource utilization, terraforming, and any number of questions arising from space activities. Whether the principles found in the Outer Space Treaty are, or are not, considered customary international law, affirmatively tying successes, problems, response, and all space activities directly to those principles makes communal state practice more likely.

While many states pursue leadership in space activities, the U.S. explicitly mandates space leadership through its laws.⁷⁴ A large part of being a respected leader is understanding the values of the entity you are leading. Leadership requires looking at hard and fast data but also taking into consideration things like moral values, quality, influence, and higher purpose.⁷⁵ Industrialist Henry Ford is quoted as saying, “For a long time people believed that the only purpose of the industry was to make a profit. They are wrong. Its purpose is to serve the general welfare.”⁷⁶ Space offers the world an opportunity to take heed of this, and in fact, one of the principles is that the “benefit of all mankind” is the purpose of space activities. “The single most important factor in ethical decision making

74. Some examples include: “United States civil space activities should contribute significantly to enhancing the Nation’s scientific and technological leadership, economy, pride, and sense of well-being, as well as United States world prestige and leadership.” Nat’l Aeronautics and Space Cap. Dev. Program, Pub. L. 100-685, Title I, § 101(13), 102 Stat. 4083 (Nov. 17, 1988); “. . . [NASA] should pursue leadership in science through an aggressive set of major and moderate missions while maintaining a robust series of cost effective missions that can provide frequent flight opportunities to the scientific community.” *Id.* at § 101(6); “The aeronautical and space activities of the United States shall be conducted so as to contribute materially to . . . [t]he preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere.” 51 U.S.C. § 20102(d)(5); “. . . it is in the national interest that the United States should assume a leadership role in a cooperative international exploration initiative.” Nat’l Aeronautics and Space Admin. Authorization Act of 2008, Pub. L. 110-422, § 2(7), 122 Stat. 4781 (Oct. 15, 2008).

75. Richard Daft, *The Leadership Experience*, 167 (Thomas Learning, Inc., Cengage Learning, 2008).

76. *Id.*

in organizations is whether leaders show a commitment to ethics in their talks and especially their behavior.”⁷⁷

This is even more important on an international level, where state practice is such a cornerstone of its application.⁷⁸ In order for a state to truly build prestige and leadership in space, it must devote itself to the principles found in the outer space treaty at every step. From mission design, launch, on-orbit activity, reentry, partnerships, and issue mitigation, these principles should be the first step in every single space-related activity. The more the principles become interwoven with the activities, the more other states will follow the lead.

Focusing on the principles will not, alone, solve existing issues in space. However, it will provide better insight into problem-solving, and certainly decrease the likelihood of creating future issues. The principles are intended to be broad and general.⁷⁹ The treaty itself intended that there would be more agreements between state actors,⁸⁰ as well as more treaties.⁸¹ Through its broadness is the ability to reach agreement on the guiding principles that each state, private entity, or intergovernmental organization must abide by in order to preserve space for use and exploration for everyone.

Simply put, the following principles should be strongly considered and should be the foundation of each space activity or issue mitigation proposal: benefit of all mankind; free and open access to, use of, and exploration of space; non-appropriation of space and celestial bodies; exclusively for peaceful purposes; assistance; responsibility and accountability; non-interference, harmful contamination of space avoidance, and adverse changes to Earth avoidance; transparency; and dissemination of results. Even these fold down into more general principles by which all spacefaring nations should live by.

Perhaps President Eisenhower said it best during his farewell address:

America’s leadership and prestige depend, not merely upon our unmatched material progress, riches and military strength, but on how we use our power in the interests of world peace and human betterment. . . . Our basic purposes have been to keep the peace, to foster progress in human achievement, and to enhance liberty, dignity, and integrity

77. *Id.*

78. See generally William Thomas Worster, *The Inductive and Deductive Methods in Customary International Law Analysis: Traditional and Modern Approaches*, 45 GEO. J. INT’L L. 445 (2014).

79. See David Johnson, *Limits on the Giant Leap for Mankind: Legal Ambiguities of Extraterrestrial Resource Extraction*, 26 AM. U. INT’L L. REV. 1477, 1508 (2011); see also Kevin MacWhorter, *Sustainable Mining: Incentivizing Asteroid Mining in the Name of Environmentalism*, 40 WM. & MARY ENVTL. L. & POL’Y REV. 645, 660–61 (2016).

80. See Outer Space Treaty, *supra* note 21, at art. X.

81. *Id.* at preamble.

among peoples and among nations. . . . We, you and I, and our Government must avoid the impulse to live only for today, plundering, for our own ease and convenience, the precious resources of tomorrow. We cannot mortgage the material assets of our grandchildren without risking the loss also of their political and spiritual heritage. . . . All nations, under God, will reach the goals of peace and justice.⁸²

While simply stating these principles will not cure all of what ails space, it will force space participants to proactively consider what they do and why they do in terms of these principles. Space exploration and use are filled with endless possibilities for hope, friendship, and global betterment. By remaining true to and respecting these proud principles, space security will be inherent to any activities. It is only when states fall short of the principles that lead us to question the security or cleaning up past messes. Let us not be short-sighted in our missions or in attempting to solve issues in space. Let us always pay great attention to the Outer Space Treaty principles and let them be the guiding light for everything we do, or plan to do, in space as one humankind.

*Harmony and understanding
Sympathy and trust abounding
No more falsehoods or derisions*⁸³

82. President Eisenhower's Farewell Address, Jan. 16, 1961.

83. *Aquarius*, *supra* note 1.

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