IAC-02-IISL.1.10

PRIVATEERING AND PROFITEERING ON THE MOON AND OTHER CELESTIAL BODIES: DEBUNKING THE MYTH OF PROPERTY RIGHTS IN SPACE

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ABSTRACT

The increasing role of the private sector in space creates virtually limitless opportunities. It is axiomatic that activities in space must be conducted in compliance with the applicable requirements of the *corpus juris spatialis*. Unfortunately, in their zeal to manufacture a profit, some proponents give insufficient consideration to the implications and ramifications of their ventures *vis-a-vis* the extant law of outer space, particularly in relation to the non-appropriation principle. Still other purveyors of proposals are more disingenuous, proffering elaborate yet analytically inadequate rationales to justify either abrogating or disregarding the legal framework applicable to activities in space, especially in regard to assertions of so called "property rights" in space, on the Moon, and on other celestial bodies. This article examines the fallacies of these propositions, and demonstrates that such claims of property rights are both unnecessary and counterproductive to the development of commercial space.

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INTRODUCTION

"Got $16? Buy acre on moon" So proclaimed the headline in a recent newspaper.[1] According to this article, deeds to an acre on the lunar surface are being sold by an outfit calling itself the "Lunar Embassy." The individual behind this questionable enterprise, Dennis Hope, claims to own the moon on the basis of an alleged loophole in the Outer Space Treaty – the absence of a reference to private entities in the non-appropriation principle in article II, which provides that "outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by use or occupation, or by any other means."

The assertion that private individuals and corporations are not subject to article II is like a bad penny. It keeps reappearing in various incarnations. Whether promoted by charlatans like the Lunar Embassy with simple profit making schemes, or touted by more elaborate machinations and constructs, the contention that the private sector needs to and can claim areas of celestial bodies without violating the Outer Space Treaty is a myth. The exploration and use of space holds the promise of significantly advancing the quality of life for all mankind. Nevertheless, the promotion of unfounded and unwarranted fictions and fallacies could prove antithetical and counterproductive to the interests of commercial development of space.

PRIVATE ENTITIES AND THE *CORPUS JURIS SPATIALIS*

The Outer Space Treaty and other international conventions applicable to space were drafted during a period when governments were the major participants in space activities. The private sector initially was limited to the roles of contractors and suppliers to governments. The space treaties did not have as their primary purpose the regulation of commercial activities and the relationships among private entities or between states and private entities. In this regard, the *corpus juris spatialis* is neither expressly "pro" nor "anti" free enterprise.[2] Nevertheless, the law of outer space recognizes that the private sector will be a significant factor in the commercialization of space applications.

The absence of comprehensive and detailed regulation of space commerce does not equate to either a *laissez-faire* philosophy, where the first in time has total and unfettered control over resources on celestial bodies, nor does it equal a complete ban and prohibition of all commercial use of extraterrestrial materials.[3] There can be no serious question but that the private sector is subject to the rule of law, even while operating or conducting activities in outer space.[4] The *corpus juris spatialis*, and the Outer Space Treaty in particular, contain several provisions which recognize and promote the role of private entities in space.[5]

The Outer Space Treaty expressly provides that non-governmental entities, including private individuals, companies and organizations, have the right to conduct activities in space, including on the moon and other celestial bodies, subject to the authorization and continuing supervision of the appropriate state party.[6] Several provisions of the Outer Space Treaty may have special relevance in the context of activities by the private sector. In addition to the non-appropriation provisions of article II, the Outer Space Treaty provides that all states have a right of access to space on the basis of equality (article I); states retain jurisdiction over their personnel and objects, even when in outer space (article VIII); and states are to prevent harmful interference with the activities of other states parties (article IX). The Moon Agreement goes much further that the Outer Space Treaty in the recognition and regulation of the exploitation of lunar resources.[7] In addition, states parties to the Moon Agreement have agreed to undertake to establish an international regime to govern the exploitation of such resources.[8]

Of paramount importance to commercial activities in space is that the *corpus juris spatialis*, and the Outer Space Treaty in particular, has been instrumental in preserving space and celestial bodies for peaceful purposes, and preventing the spread of arms and military fortifications and maneuvers beyond this planet. The maintenance of outer space for peaceful purposes has fostered an environment where activities by both the public and the private sectors can be conducted, without the necessity of defensive armaments.[9] Nevertheless, this peaceful, non-militarized environment could be jeopardized if the non-appropriation principle is disregarded or abrogated.[10]

The opponents of the non-appropriation principle all too often have attempted to characterize the issue as one of "property rights." The focus on "property rights" is misplaced. While the non-appropriation principle prohibits the claim to an area of a celestial body, extraterrestrial resources may be extracted and utilized for scientific as well as commercial purposes.[11] Thus, the focus should be on the regulation of the use of extraterrestrial resources.[12]

No serious proposal has yet been made which is dependent upon the fee simple ownership of lunar or other extraterrestrial property to conduct a profit-making activity *in situ* separate and apart from the claim of property ownership. Numerous examples

exist where a private entity is able to profitably extract resources from land it does not own. Grazing leases on public lands, offshore oil platforms, and logging rights are all examples where profit is available to private enterprise despite the absence of property ownership.[13] The fee simple ownership of extraterrestrial property similarly is irrelevant to the profitability of a venture providing products or services derived from celestial resources. Ownership is relevant only where it is intended that the source of the profit is derived from the claim of ownership, and the corresponding alienation thereof for economic consideration.[14]

THE CASE AGAINST THE NON-APPROPRIATION PRINCIPLE

Several assertions have been made by the opponents of the non-appropriation principle to justify the claim that article II of the Outer Space Treaty does not apply to private entities. The Lunar Embassy, for example asserts that the Outer Space Treaty mentions only national appropriation, in other words, appropriation by states. The absence of an express reference to private entities in article II of the Outer Space Treaty is proclaimed to be a loophole.[15] This contention conveniently ignores the provisions of the Moon Agreement, which expressly mention private entities in relation to the non-appropriation of celestial bodies.[16]

To bolster his argument, Hope asserts that he "registered his claim" to the moon and all planets and other moons in the solar system with the United States, Russia, and the United Nations.[17] From the absence of an acknowledgment of receipt of this "registration," Hope wishfully concludes that his claim has received an official seal of approval. Hope's reliance on the absence of a response is misplaced. His procedure of sending notice registration of his "claim" is self-fabricated and lacking in any official countenance. Moreover, neither the U.S., Russia nor the United Nations had any obligation to respond to Hope, even assuming that the "notice," in fact, was received.[18] States do not have any obligation to respond to claims such as Hope's, or to every other crackpot scheme.

The arguments advanced to justify an exemption for private entities from the provisions of article II of the Outer Space Treaty often are similarly lacking in substance, logic and/or credibility. For example, Benson, a vociferous opponent of the non-appropriation principle, addressed the issue, as he framed it, whether the Outer Space Treaty denies private property by the non-appropriation provision, and whether the Moon Agreement forbids private property in space? His response consists of three components: first, both the Outer Space Treaty and the Moon Agreement are just "wrong"; second, the Moon Agreement should be thrown "on the garbage heap of history"; and third, the Outer Space Treaty should be changed or ratification should be rescinded.[19]

This argument is not a line of objective reasoning, but a series of subjective, redundant and conclusory *non sequiturs*. A slightly better effort, at least superficially, was made by Dasch, Smith & Pierce, who concluded that private appropriation was not prohibited by the Outer Space Treaty. They claim this conclusion was based on prior drafts of the treaty, and what they judge to have been the intent of the framers.[20] There are two problems with this argument. First, Dasch, Smith & Pierce wrongly imply that there were prior drafts to the Outer Space Treaty which contained terms that conflicted with article II in a manner which supported an exemption for private entities. Second, the "judgment" of the intent is dependent upon the presence of such non-existent prior inconsistent drafts. As such, the judgment is unsubstantiated and unwarranted.

The Outer Space Treaty was drafted by the U.N. Committee on the Peaceful Uses of Outer Space in 1966. The text of article II can be traced directly to U.N. Resolutions 1721

and 1962. Resolution 1721 was adopted by the General Assembly in 1961, and provided that:

> (a) International law, including the Charter of the United Nations, applies to outer space and celestial bodies;
>
> (b) Outer space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation.[21]

U.N. Resolution 1962, entitled "Declaration of Principles Governing the Activities of States in the Exploration and Use of Outer Space," was adopted by the General Assembly in December, 1963. Article 3 of the Declaration provided: "Outer space and celestial bodies are not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." Thus, the *res communis* nature of space was confirmed, and general agreement on the non-appropriation principle was reached by the community of nations at an early stage in the space age.[22]

In June, 1966, both the United States and the Soviet Union submitted to COPUOS drafts of an instrument that would later become the Outer Space Treaty. Article 1 of the U.S. draft reflected both Resolutions 1721 and 1962, and provided:

> Celestial bodies are free for exploration and use by all States on a basis of equality and in accordance with international law. They are not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.[23]

Article II of the Soviet draft similarly provided:

> Outer space and celestial bodies shall not be subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.[24]

The draft treaties were submitted to the Legal Sub-Committee of COPUOS, which approved the text in August, 1966, with the addition of an express reference to the Moon in the phrase "outer space, including the Moon and other celestial bodies." This entire process transpired in less than two months. There were no prior drafts which referred to "private appropriation" or created an exclusion for appropriation by private parties.

The argument that article II of the Outer Space Treaty does not apply to private entities since they are not expressly mentioned therein has been made many times, but must fail for the simple reason that private entities do not need to be expressly listed in article II to be fully subject to the non-appropriation principle. Private entities have the right to conduct activities in space and on celestial bodies, but that right is not unlimited, and is subject to the rule of law. Significantly, the private entity must be authorized to conduct an activity in space by the appropriate state of nationality.[25] But if the state is prohibited from engaging in certain conduct, then it lacks the authority to license its nationals or other entities subject to its jurisdiction to engage in that prohibited activity.[26]

If a state could license its nationals to "privately appropriate" areas of the moon and other celestial bodies, notwithstanding the prohibition against national appropriation in article II of the Outer Space Treaty, then why could a state not also authorize its nationals to conduct other activities, in their capacity as private entities, in contravention of other articles of the Treaty. What is to prevent a state, under that scenario, from licensing its nationals to place nuclear weapons or other kinds of weapons of mass destruction in Earth

orbit or on celestial bodies, notwithstanding the prohibitions contained in article IV of the Outer Space Treaty – after all, private entities are not mentioned in that article. Why stop there? Why could a state not "privatize" its nuclear testing procedures, and license a private entity to conduct nuclear weapons tests above ground, in the atmosphere, or in outer space, contrary to the provisions of the Nuclear Test Ban Treaty,[27] which also does not mention private entities. Carried to its logical conclusion, this argument would negate every bilateral or multilateral agreement ever made, since the states party thereto could engage in every activity they agreed to restrict or limit by the convenient subterfuge of conducting the activity through the guise of the private rather than the public sector.

Another line of argument made by the opponents of the non-appropriation principle is that a state could establish a form of registry for recognizing private property rights in space and on celestial bodies, purportedly consistent with the non-appropriation principle. This "consistency" is provided by the artifice of proclaiming this registration scheme "not to be appropriation." For example, Dasch, Smith & Pierce propose that a state establish a unilateral system of recognizing claims to space resources by its citizens. "In doing so, the nation could make it clear that it was *not claiming* sovereignty over such resources, but *simply recognizing the claims* of its citizens (emphasis added)."[28] This is a clear example of a distinction without a difference.

State recognition of claims to extraterrestrial property by its nationals is national appropriation "by any other means," no matter what euphemistic label is employed to mask the obvious. Recognition of claims, however, is only one side of the coin. The other side is the exclusion or rejection of any competing or conflicting claims. The application of this *de facto* exclusion of other states and their nationals by its very nature would constitute a form of national appropriation.[29] Prof. Christol observes that the *res communis* nature of outer space, including the Moon and other celestial bodies, "denies parties the right to establish exclusive rights, including exclusive property rights, in the space environment."[30]

The final line of argument by the opponents of the non-appropriation principle implicitly concedes that "private appropriation" is prohibited, and instead asserts that the policy of non-appropriation is wrong and should be renounced.[31] This may well be a case where they should be careful of what they wish for, as the abrogation of article II of the Outer Space Treaty would be counterproductive to the interests of space commercialization.[32]

The classic age of exploration was characterized by conquest. No specific, uniformly accepted means of acquiring new territories existed, but claims generally were based on discovery and physical presence. Notwithstanding the means of acquisition, however, claims were recognized and enforced on the basis of military power.[33] This historical process continued into the twentieth century, when the community of nations departed from past practice in Antarctica and in outer space. With regard to Antarctica, states had asserted conflicting and overlapping claims, but agreed to freeze such claims with the adoption of the Antarctic Treaty.[34] In outer space, the nations of the world went further and prohibited all claims of appropriation, whether by means of use, occupation, claim of sovereignty or otherwise. Sound policy considerations supported that decision.

When the Soviet Union successfully launched Sputnik I in 1957, the national and international security implications were formidable. The launch of an object into Earth orbit was a stunning demonstration of technology. Apart from whatever benefit that demonstration may have had for ideological or

propaganda purposes, the technical capability of the Soviets provided a means to acquire tremendous economic and military advantage.

The Soviet Union achieved one "first" after another in the exploration of space, including the first impact by a probe on the lunar surface in 1959, and the first man in orbit. The international community could have followed the historical precedents of exploration and conquest, but that would have resulted in conceding vast reaches of outer space, including part or even all of the Moon, to the Soviet Union. Any areas of space and celestial bodies not claimed by the Soviet Union certainly would be claimed by one or more other states. Moreover, the claims which could be asserted by the U.S.S.R. would not necessarily be immune from conflicting and overlapping claims. The enforcement of these claims ultimately would depend on military means, and the risk of exporting armed conflict into space would be significant.

An alternative approach to this inevitable conflict between claims in space was available, that of recognizing the *res communis* nature of space, and prohibiting such claims *ab initio*.[35] None of the historical precedents of claiming new lands would be accepted or apply beyond the confines of this planet. The interests of promoting and maintaining international peace and security clearly would be served by the prevention of conflict over competing and conflicting claims to areas of outer space or celestial bodies. In addition, the prohibition of claims of appropriation would serve the interests of helping to assure the right of all states to access to, and the free exploration of, outer space, and to make possible uniform preservation and conservation of celestial environments.[36] This issue was resolved in 1961, by the adoption of the non-appropriation principle in General Assembly Resolution 1721.[37]

The adoption of the non-appropriation doctrine was based on sound fundamental principles. Yet the opponents of article II of the Outer Space Treaty urge that it be renounced and abrogated. However, abrogation of the prohibition against appropriation can be justified only where the original purposes of the doctrine cease to remain applicable.[38] While neglecting to provide an acceptable rationale or justification, the opponents of the doctrine implicitly infer that the absence of the non-appropriation doctrine would benefit space commercialization. But would it really, or is that yet another myth?

The adoption of the non-appropriation doctrine, whether by G.A. Resolution 1721, or by article II of the Outer Space Treaty, unlike the Antarctic Treaty, did not freeze any claims in space, as none had been seriously asserted to that time. Should there be a "space rush" commencing the moment the non-appropriation principle ceases to be applicable, with a clean slate of celestial treasures open and available to be grabbed by the quickest or the strongest? Alternatively, and as a matter of equity, should not all of the potential claims which could have been asserted prior to the entry into force of the Outer Space Treaty be considered to have been impliedly placed on hold, to be resurrected in the event the non-appropriation doctrine is abrogated?

The Russians, under this scenario, as successors in interest to the Soviet Union, would have the historic justification for claiming vast reaches of near-Earth space based on their undeniable first in time discoveries and/or explorations by robotic or human presence. Other nations will lay claim to additional space "properties." The United States could have claims to part or all of the Moon, especially to the areas in proximity to the Apollo landing sites, but also perhaps to robotic soft or crash landing sites. The claims would not be restricted to the Moon, but would extend to Mars, Venus, asteroids, and the outer planets and their moons, with claims based on thinner and thinner explorations, possibly consisting of nothing more than

mathematical or theoretical extrapolation. The Bogota Declaration,[39] expressing claims to the geostationary orbit, could be expected to be re-asserted, but this time possibly accompanied by military enforcement measures.

It is clear that the absence of the non-appropriation doctrine would result in conflicting and overlapping claims. This state of affairs would give rise to international tensions and increase the potential for armed conflict. In addition, there would be nothing to prevent states claiming an area from imposing substantial taxes, royalties, duties, auction fees or other charges for the acquisition of rights by private entities to utilize such areas and the resources contained therein on the surface or subsurface, even where the claims thereto overlap.[40] The opponents of the non-appropriation doctrine have yet to articulate how the development of private enterprise in space would be served by the imposition of an economic tribute by various states and entities. If "private appropriation" were sanctioned, separate and apart from the claims of states, the situation would become even more murky and convoluted, and another layer of involuntary tribute potentially could be exacted from entrepreneurial ventures.

The international legal community must seek to achieve the maximum exploration and use of outer space by both the public and private sectors, while preventing the spread of armed conflict beyond this planet. It does not appear that the abandonment of the non-appropriation doctrine would serve that purpose. Indeed, the non-appropriation principle is a major reason why space has remained an arena of peaceful exploration and use. It is submitted that the maintenance of international peace and security, and the prevention of the spread of armed conflict into outer space, serves the interests of space commercialization more than would the abrogation of the non-appropriation doctrine.

CLAIM JUMPING ON CELESTIAL BODIES

Pursuant to the requirements of article VI of the Outer Space Treaty for states to authorize and supervise the activities of their private entities in space, many states have adopted domestic licensing regimes.[41] The creation of domestic licensing and regulatory regimes by states constitutes a significant avenue of protection and predictability for private enterprise in space. A private entity which is granted a license to construct a facility and/or to extract and utilize extraterrestrial resources can operate with assurance that it will not have to fortify or otherwise plan and budget for defensive armaments *in situ* on celestial bodies.

Space activities inherently are difficult, risky and expensive. A facility on a celestial body is remote and not readily accessible by just anyone at just any time. In order to visit an installation on celestial body,[42] a mission would have to be planned consisting of a launch of a crewed vehicle; the crew would need to be selected and trained; and a specific mission objective defined, articulated and funded. While these simple facts seem obvious, they often are overlooked by those who advocate "private appropriation." There is one additional fact which also is overlooked: a private entity would need to obtain the authorization of its state of nationality to launch a mission to a facility on a celestial body.

A basic framework for the protection of the private sector in space is established by the following provisions of the *corpus juris spatialis*: first, the requirement of authorization and continuing supervision of private entities by the appropriate state; second, the obligation to prevent harmful interference with the activities of other states; and third, the duty to participate in consultations where such interference may occur. The claim of private ownership to an area of a celestial body is not necessary to protect against interference by other entities.

If the state which licensed the facility desired to interfere with the operations of the licensed entity, it is very unlikely that the state would seek to achieve that goal by launching a mission to overtake the facility by physical means. It would be much more efficient, productive and cost effective, from the perspective of the state, to revoke or restrict the license, or if necessary and appropriate, to utilize the domestic civil or criminal justice system. Under proper circumstances, a state could cancel assignments of frequencies, revoke authorizations, restrict communications, issue injunctions, attach property, or utilize a number of provisional or other remedies under domestic law.

It also is unlikely that a licensee would be subject to interference by another entity granted authority to operate by the same state licensing regime. It is doubtful that a license application would be approved which expressed the clear intention to cause physical interference with the operations of a previously licensed facility. The state itself would object to such a purpose, which otherwise could constitute a violation of the peaceful purposes provisions of space law.[43] Moreover, the operator of the licensed facility, or members of the public, may have an opportunity to voice a formal objection to the second license application pursuant to domestic licensing or judicial procedures. Objections based on the potential for interference which would be caused by the second licensee would be well founded. Objections based on expressly stated intentions to cause such interference would be even more compelling.

It is possible, of course, that a second licensee could be granted a license to operate a facility near the vicinity of the first licensed facility, provided that no interference was caused thereby. If both licensees produced the same product or service utilizing extraterrestrial resources, there could be the potential for claims such as infringement of intellectual property rights, and unfair competition. But those types of claims are raised on a daily basis, and resolved on a daily basis, according to extant law. The validity or defense of these actions is wholly unrelated to a claim of ownership of areas of a celestial body.

A facility on a celestial body thus is protected from interference by both the state which licensed the facility, as well as the private entities subject to that same licensing regime. Accordingly, the only other source of terran interference is from other states or their nationals. The claim of private appropriation would not add a scintilla of credibility or substance to the rights of the licensed operator of the facility if a foreign state sought to interfere with the operations directly or through its private entities. The interference with the facility would exist independently of any claim of ownership, as a state which was intent on committing interference directly or through its private entities with a facility licensed by another state would do so in violation of the Outer Space Treaty,[44] and if applicable, the Moon Agreement.[45] Such a state would not be deterred by the assertion of a claim of private ownership of the location on the celestial body.

Whether or not a claim of private appropriation was permitted, the enforcement of the claim, and more importantly, the protection of the personnel of the facility, would occur primarily on Earth and not *in situ*. That is, short of military maneuvers on site at a facility on a celestial body, it can be expected that diplomatic or other mechanisms would be employed on Earth to seek to diffuse and resolve any dispute. Unless the interfering mission was planned in secrecy, consultations between the states would be sought in advance of the interference pursuant to article IX of the Outer Space Treaty. Moreover, if the interfering state refused to engage in the consultations, or if the interfering mission was planned in secrecy, the claim of private appropriation would be meaningless and not add any protection to the operator of the facility.

The *corpus juris spatialis* is maturing in accordance with the scientific and technical progress of human society.[46] Undoubtedly, the law will need to evolve and develop to accommodate the commercialization of space applications. Nevertheless, existing international space law, supplemented by domestic laws, provides a solid foundation for the growth of space commerce.[47] The concern has been expressed, however, that the "combinations of incongruous and contradictory results [of domestic regulation] may be very large."[48] A comprehensive international juridical regime may be preferable to a patchwork of independent and unreconciled national legislation.[49] Further, there may be certain issues which arise which are better suited to international resolution. Nevertheless, domestic legislation may be able to consider subjects not thoroughly covered by international law, and domestic authorities may be able to draft and implement legislation more rapidly than can their counterparts in international fora.[50]

If claims of private appropriation are ineffective, in contravention of the *corpus juris spatialis*, and contrary to the long term interests of space commercialization, than it must be asked what is the benefit of making such claims? There are two economic aspects which would be positively impacted by private appropriation of celestial bodies: the first is the increase in the net worth of the privateering company, artificially inflated by the optimistic valuation of the claimed space assets; and second is the pursuit of profit by the trade in "subsidiary rights" such as leasehold interests, mining rights, easements, and other traditionally alienable property rights. Neither of these economic considerations is directly related to the use of celestial resources, nor to the providing of a product or service uniquely available in the celestial environment. If the intent of the entrepreneur is to capitalize on these economic considerations, that intent should be clearly stated at the outset. Any other course would be disingenuous and deceptive.

The private ownership of unlimited rights to celestial property would add a significant element to the cost of conducting an entrepreneurial venture. That is, the ability of all states to explore and utilize areas on or below the surface of celestial bodies, as guaranteed by the *corpus juris spatialis*, no longer would be a right, but a commodity available only to the highest bidder. Monopolies and other anti-competitive practices would restrict rather than enhance space commercialization. These anti-competitive effects of private appropriation are exemplified by the activities of the Lunar Embassy itself:

> The cost for a piece of the moon has gone up astronomically. Before 2001, Hope sold 17,700-acre tracts for $16, the price he now charges for one acre.[51]

Thus, even while operating in a vacuum, the price structure of the Lunar Embassy has not been stable, but has been arbitrarily manipulated. One can only imagine the proliferation of anti-competitive practices if private appropriation were officially permitted.

CONCLUSION

The assertion that private entities are not subject to the non-appropriation principle, as expressed in article II of the Outer Space Treaty, is a myth, and lacks a cogent analytical foundation. Not only would so called private appropriation be in violation of the *corpus juris spatialis*, but the arguments which have been presented in opposition to article II lack either a legal justification, a factual predicate, or both. Moreover, the abrogation or renunciation of the non-appropriation principle would be antithetical to the interests of space commercialization. Conflicting, competing and overlapping claims would create international tensions, and potentially lead to armed conflict, both on and off this planet.

The extant law of outer space, both international and domestic, provides a basic framework for the development of regulation of space commerce. Domestic licensing regimes, together with international commitments regarding authorization and supervision of private entities in space, prevention of harmful interference, and participation in consultations concerning potentially harmful interference, grant a significant measure of protection for private ventures in space. Claims of fee simple ownership of space property are unnecessary and ineffective to protect private interests from interference. Those who advocate the renunciation and abandonment of the non-appropriation principle are either seeking to increase their own bottom line by disingenuous and deceptive constructs, or lack an appropriate appreciation and respect for international processes. Perhaps most significant in this regard is the tangible benefit the *corpus juris spatialis* has made in maintaining outer space exclusively for peaceful purposes.

Endnotes

1. *The Arizona Republic*, § D, at 1, January 21, 2002.

2. Sterns, Stine & Tennen, *Preliminary Jurisprudential Observations Concerning Property Rights on the Moon and Other Celestial Bodies in the Commercial Space Age*, in PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 50, 51 (1997).

3. Sterns & Tennen, *Institutional Approaches to Managing Space Resources*, in PROCEEDINGS OF THE 41ST COLLOQUIUM ON THE LAW OF OUTER SPACE 33 (1999).

4. Clayton-Townsend, *Property Rights and Future Space Commercialization*, in PROCEEDINGS OF THE 42ND COLLOQUIUM ON THE LAW OF OUTER SPACE 159, 166 (2000); de Seife, *Star Wars or Star Peace: The Impact of International Treaties on the Commercial Uses of Space*, in 1 AMERICAN ENTERPRISE, THE LAW AND THE COMMERCIAL USES OF SPACE 73, 97 (1986); Sterns & Tennen, *supra* note 3, at 36.

5. *But see* Golrunia & Bahrami, *Outer Space Treaty in 21st Century: A Change of Concept*, in PROCEEDINGS OF THE 40TH COLLOQUIUM ON THE LAW OF OUTER SPACE 303, 307 (1998).

6. 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* January 27, 1967, art. VI, 18 U.S.T. 2410, T.I.A.S. No. 6347, 610 U.N.T.S. 205, *text reproduced in* UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE 3 (2000) [hereinafter referred to as the "Outer Space Treaty"].

7. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *entered into force* July 11, 1984, art. 11, 1363 U.N.T.S. 3, *text reproduced in* UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE 27 (2000), *and* 18 I.L.M. 1434 (1979) [hereinafter referred to as the "Moon Agreement"].

8. *Id.* at art. 11, ¶ 5.

9. Sterns & Tennen, *supra* note 3, at 35, n. 11 (*citing* statement of Mrs. Galloway).

10. See text & notes 31-40, *infra*.

11. Gal, *Acquisition of Property in the Legal Regime of Celestial Bodies*, in PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 45 (1997).

12. *See* Christol, *The Natural Resources of the Moon: The Management Issue* in PROCEEDINGS OF THE 41ST COLLOQUIUM ON THE LAW OF OUTER SPACE 3 (1999).

13. *See, e.g.*, 43 U.S.C.A. §§ 315 (grazing); 1181a (timber); 1331 (oil); *see also* Christol, *supra* note 12, at 5 (observing that parties have sold or leased portions of the International Telecommunications Union allotments to third parties, without claiming ownership thereof in light of article 33 of the ITU Convention, which grants only the right to use an orbital position or frequency allocation for a limited period of time).

14. *See* Summary of Discussion, in PROCEEDINGS OF THE 41ST COLLOQUIUM ON THE LAW OF OUTER SPACE 289, 290 (1999) (statement of Dr. Jasentuliyana); see also text & note 51, *infra*.

15. *The Arizona Republic*, *supra* note 1, § D, at 1.

16. Moon Agreement, *supra* note 7, at art. 11, ¶ 3.

17. In an apparent concession that his "registration of claim" is legally insufficient, Hope has solicited from his purchasers affidavits of ownership, on cigarette papers, with the intention to send the affidavits to the Moon and thereby attempt to establish a physical presence on the lunar surface. *See* Pop, *The Men Who Sold the Moon: Science Fiction or Legal Nonsense*, 17 SPACE POLICY 195, 198 (2001).

18. *Id.* at 200.

19. Benson, *Space Resources: First Come First Served*, in PROCEEDINGS OF THE 41ST COLLOQUIUM ON THE LAW OF OUTER SPACE 46, 48 (1999).

20. Dasch, Smith & Pierce, *Conference on Space Property Rights: Next Steps*, in PROCEEDINGS OF THE 42ND COLLOQUIUM ON THE LAW OF OUTER SPACE 174 (2000).

21. International Co-operation in the Peaceful Uses of Outer Space, G.A. Res. 1721(XVI)A, U.N. Doc. A/4987, at ¶ 1(b) (December 20, 1961).

22. *See generally* A. HALEY, SPACE LAW AND GOVERNMENT 123-24 (1963).

23. Draft Treaty Governing the Exploration of the Moon and Other Celestial Bodies, at 4, U.N. Doc. A/AC.105/32 (June 17, 1966).

24. Draft Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, the Moon and Other Celestial Bodies, *text reprinted in* Report, Committee on the Peaceful Uses of Outer Space, at Annex I, U.N. Doc. A/AC.105/35 (September 16, 1966).

25. Outer Space Treaty, *supra* note 6, at art. IX.

26. *See* C.W. JENKS, SPACE LAW 201 (1965); van Traa-Engelman, *Clearness Regarding Property Rights on the Moon and Other Celestial Bodies*, in PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 38, 42 (1997); Sterns, Stine & Tennen, *supra* note 2, at 54.

27. Treaty Banning Nuclear Weapons Tests on the Surface of the Earth, in the Atmosphere, or in Outer Space, *entered into force* October 10, 1963, 14 U.S.T. 1313, T.I.A.S. No. 5433, 480 U.N.T.S. 43.

28. Dasch, Smith & Pierce, *supra* note 20, at 178.

29. Pop, *Appropriation in Outer Space, The Relationship Between Land Ownership and Sovereignty on the Celestial Bodies*, 16 SPACE POLICY 275, 278 (2000); Reif, *Project 2001: Conclusions and Recommendations of the Working Group on Privatization*, in PROCEEDINGS OF THE 44TH COLLOQUIUM ON THE LAW OF OUTER SPACE 3, 8 (2002).

30. Christol, *supra* note 12, at 4.

31. Benson, *supra* note 19.

32. *See* Lee, *Creating an International Regime for Property Rights Under the Moon Agreement*,

in PROCEEDINGS OF THE 42ND COLLOQUIUM ON THE LAW OF OUTER SPACE 409, 415 (2000); Sterns, Stine & Tennen, *supra* note 2, at 54.

33. *See generally* Haley, *supra* note 22, at 118-23.

34. Antarctic Treaty, *opened for signature* December 1, 1959, 12 U.S.T. 794, T.I.A.S. No. 4780, 420 U.N.T.S. 71.

35. S*ee generally* Gorove, *On the Threshold of Space: Toward a Cosmic Law. Problems of the Upward Extent of Sovereignty*, in PROCEEDINGS OF THE 1ST COLLOQUIUM ON THE LAW OF OUTER SPACE 69 (1959); Haley, *Space Age Presents Immediate Legal Problems*, in PROCEEDINGS OF THE 1ST COLLOQUIUM ON THE LAW OF OUTER SPACE 3 (1959); Hyman, *Sovereignty over Space* in PROCEEDINGS OF THE 3RD COLLOQUIUM ON THE LAW OF OUTER SPACE 26 (1961); Fasan, *Contribution*, in PROCEEDINGS OF THE 3RD COLLOQUIUM ON THE LAW OF OUTER SPACE 18 (1961).

36. Lee, *supra* note 32, at 413.

37. See text & note 21, *supra*.

38. Sterns, Stine & Tennen, *supra* note 2, at 53.

39. Declaration of the First Meeting of Equatorial Countries, Bogota, Columbia, December 3, 1976, *text reproduced in* N. JASENTULIYANA & R.S.K. LEE, II MANUAL ON SPACE LAW 383 (1979).

40. *See* Sterns & Tennen, *supra* note 3, at text & notes 43-46.

41. *See generally* F.G. VON DER DUNK, PRIVATE ENTERPRISE AND PUBLIC INTEREST IN THE EUROPEAN 'SPACESCAPE' (1998).

42. *See* Outer Space Treaty, *supra* note 6, at art. XII; Moon Agreement, *supra* note 7, at art. 15.

43. *See* Outer Space Treaty, *supra* note 6, at art. IV; Moon Agreement, *supra* note 7, at art. 3, ¶ 1.

44. Outer Space Treaty, *supra* note 6, at art. IX.

45. Moon Agreement, *supra* note 7, at arts. 8, ¶ 3; 15.

46. Kopal, *What Kind of Institutional Arrangements for Managing Space Mineral Resource Activities Should be Done in a Foreseeable Future*, in PROCEEDINGS OF THE 41ST COLLOQUIUM ON THE LAW OF OUTER SPACE 12, 15 (1999).

47. *See* Kopal, *Outer Space as a Global Common*, in PROCEEDINGS OF THE 40TH COLLOQUIUM ON THE LAW OF OUTER SPACE 108 (1998); Kolosov, *Commentary Paper, Existing U.N. Treaties: Strengths and Needs*, in PROCEEDINGS OF THE WORKSHOP ON SPACE LAW IN THE 21ST CENTURY (Unispace III) 30, 31 (2000); American Astronautical Society, FINAL REPORT, WORKSHOP ON INTERNATIONAL LEGAL REGIMES GOVERNING SPACE ACTIVITIES 1 (2001).

48. O'Donnell, *Benefit Sharing: The Municipal Model*, in PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 151, 153 (1997); *see also* von der Dunk, *The Dark Side of the Moon - The Status of the Moon: Public Concepts and Private Enterprise*, in PROCEEDINGS OF THE 40TH COLLOQUIUM ON THE LAW OF OUTER SPACE 119, 122A (1998) (arguing that national legislation can apply only to space objects).

49. von der Dunk, *supra* note 48, at 120.

50. *Id.*

51. *The Arizona Republic*, *supra* note 1, § D, at 2.

This paper is dedicated in memory of my mother, Elsie Tennen. LIT and PMS