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PRIVATE ENTERPRISE AND THE RESOURCES OF OUTER SPACE

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ABSTRACT

The age of commercial space presents formidable challenges for space law. The transformation from government dominance to commercialization requires that the rights and obligations of the private sector in space be clearly defined. While the rules and regulations applicable to non-governmental entities are yet to be developed, the fundamental precepts on which the foundations for commercialization will be based already have been articulated in treaties and international instruments. This article identifies and examines the extant legal principles which will shape the form of future regulation of activities of private entities in space.

INTRODUCTION

The role of the private sector in the use and exploration of outer space presents one of the most important as well as one of the perplexing issues for international jurists and policymakers. Private enterprise traditionally has played an important part in the space programs and projects of states, initially as suppliers and providers of services, equipment and personnel. The emergence of space commerce, however, necessarily shifts the focus of the private sector from a supporting role to active participants seeking opportunity and profit from the use of space and space resources themselves.

Just how active the participation of the private sector will be is yet to be determined. Some proponents of space commerce assert that the private sector can claim broad traditional forms of "property rights" over areas and resources of the Moon and other celestial bodies.[1] At the other end of the spectrum is the view that the Moon is beyond the grasp of the private sector, that is, the Moon and its resources are *res extra commercium.*[2]

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1. *See, e.g.*, Benson, *Space Resources: First Come First Served*, PROCEEDINGS OF THE 41ST COLLOQUIUM ON THE LAW OF OUTER SPACE 46 (1999) White, *Real Property Rights in Outer Space*, PROCEEDINGS OF THE 40TH COLLOQUIUM ON THE LAW OF OUTER SPACE 370, 379 (1998); Wasser, *The Law That Could Make Privately Funded Space Settlement Profitable*, 5 SPACE GOVERNANCE 55 (1998).

2. Catena, *Legal Matters Relating to the 'Settlement' of 'Outposts' on the Moon*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 414, 418 (2005); Hoffman, *Recent Plans to Exploit the Moon Resources Under International Law*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 425, 427 (2005);

There can be little doubt that the private sector has and will continue to be active participants in space commerce. Commercial launch services, telecommunications, and remote sensing are important examples of the marketplace at work in space. Each of these activities has legal regulation which has been developing within the parameters of the extant *corpus juris spatialis*, and no insurmountable legal obstacles were perceived to exist or have emerged to prevent these nascent industries from taking form and effect. The legal regulation of these activities has been predominantly a matter of domestic laws and licensing regimes, in conformity with the applicable space treaties.

Current commercial space activities share the common attribute of being Earth-oriented. That is, the ambit of launch services, telecommunications, and remote sensing generally extend only as far as low Earth orbit. Perhaps one of the most intriguing developments in space commerce is the move toward space tourism, which has the potential for commercial space to break free of low Earth orbit. Mark Williamson raised the interesting prospect of the Apollo 11 landing site at Tranquility Base being designated as a destination for tourists, where individuals may view for themselves the famous footprints and other items left by the astronauts.[3] One can imagine a range of scenarios involving sedate, solemn, almost reverent displays, or more elaborate adventure and amusement parks with thrill rides and simulations of historical events.

The establishment of a lunar tourism industry will require an infrastructure consisting, at a minimum, of a transportation system to ferry passengers from the Earth to the Moon and back; a place for the space travelers to stay while at the tourist site, complete with various amenities and creature comforts; and tours, guided or otherwise, of the lunar environment and other attractions which beckoned the tourists. As a practical matter, no trip to the Moon would be complete without the obligatory souvenirs and gifts, which might be fabricated, in part, from lunar resources. The creation of a tourist destination on the Moon, such as at Tranquility Base, presents a congruence of issues regarding the commercial sector and the occupation of a specific location and use of resources.

SPACE AND PROPERTY RIGHTS

Space is unique. Therefore, it must be recognized that space requires a unique approach, one that is not burdened with the historical shackles of terran based legal regimes, but is able protect the interests of all parties concerned with the use and exploration of space. As a unique medium, space will develop its own frame of reference, and its own specialized terminology, both in physical and legal concepts. Fundamental parameters of this legal regime have been established on an international level by the extant space treaties, which will guide the course of development of the commercial space age. Additional components of the legal regime for commercial space will be provided by domestic law, which will draw from and share many characteristics in common with traditional legal structures, but will be shaped by international treaty obligations, and be unlike any legal structure on Earth. Taken together, the legal regime for space must promote the protection of both the public and the private sectors, and provide predictability, transparency and enforceability.

Kerrest, *Exploitation of the Resources of the High Seas and Antarctica: Lessons for the Moon?*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 530, 535 (2005).

3. Williamson, *Planetary Spacecraft Debris - The Case for Protecting the Space Environment*, 47 ACTA ASTRONAUTICA 719 (2000)(presented to the IAA/IISL Scientific-Legal Round Table on Protection of the Space Environment, 50th IAF Congress, Amsterdam, 1999).

The discussion of the activities of the private sector in space often is cast in terms of "property rights," which inevitably leads to linguistic and semantic complications. The utilization of concepts of terran "property rights" also imports the legal heritage and history on which the terminology is based. This terminology is inexorably linked to the physical, tangible earth, to the soil, to *terra firma* itself. The fundamental element of property rights is summarized in the *usque ad coelum* doctrine – the landowner has dominion from the depths of the Earth to the stars above.

The situation, however, is vastly different in outer space. The assertion of claims of ownership of areas of space, including the Moon, or other celestial bodies, is contrary to the non-appropriation principle of article II of the Outer Space Treaty.[4] Thus, activities in the exploration and use of space and celestial bodies must be conducted without violating article II, whether by means of claim of sovereignty, by use or occupation, or by any other means. Those who advocate the recognition of private property rights on celestial bodies unnecessarily shift the focus of the discussion to an unproductive tangent. The underlying concept is the promotion of the participation of the private sector in the exploration and use of outer space, including the Moon and other celestial bodies, not the private ownership of extraterrestrial real estate and presumed rights appurtenant thereto. The assertion of claims of fee simple ownership of areas of the Moon and other celestial bodies is irrelevant to the profitability of a venture providing products or services derived from celestial resources.[5]

The fee simple ownership of property is not an invariably necessary component to the commercial use of resources, even on Earth.[6] Numerous examples can be found where a private entity is able to legally and profitably extract and utilize resources from property which it does not own. 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 of interests therein for economic consideration.[7] The advocates of private ownership of areas and resources in place of the Moon and celestial bodies may be creating a self-imposed insurmountable burden by the inherent violation of the non-appropriation principle.[8]

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4. 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, 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"]. See also text & notes 23 – 46, *infra*.

5. *See* Sterns & Tennen, *Privateering and Profiteering on the Moon and Other Celestial Bodies: Debunking the Myth of Property Rights in Space*, PROCEEDINGS OF THE 45TH COLLOQUIUM ON THE LAW OF OUTER SPACE 56 (2003), and 31 ADV. SPACE RES. 2433 (2003).

6. *See, e.g.,* 43 U.S.C.A. §§ 315 (grazing leases); 1181a (timber harvesting); 1331 (oil drilling); *see also* Christol, *The Natural Resources of the Moon: The Management Issue*, PROCEEDINGS OF THE 41ST COLLOQUIUM ON THE LAW OF OUTER SPACE 3 (1999)(discussing the sale or lease of portions of the International Telecommunications Union allotments to third parties).

7. *See* Summary of Discussion, in PROCEEDINGS OF THE 41ST COLLOQUIUM ON THE LAW OF OUTER SPACE 289, 290 (1999) (statement of Dr. Jasentuliyana).

8. *See* Tennen, *Article II of the Outer Space Treaty, the Status of the Moon, and Resulting Issues*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 520 (2005).

Fasan correctly has framed the discussion in terms of the use of resources. In Fasan's view, the right of present use should be clearly permitted, while exclusion for later access and use clearly prohibited.[9] This approach recognizes that in accordance with article II, there is no right to exclusive occupation of an area of space or celestial bodies in perpetuity. There is a right, however, to the present use of the resources of space and celestial bodies.

The specific limits on the use of extraterrestrial resources must be left to future development, and much will be dependent upon the particular circumstances of the resources, the intended use, the relative abundance or scarcity, the location, and other factors. Thus, the regulatory considerations may vary with the locus of a mission. Moreover, no single model of regulation will be appropriate or effective for all locations on or below the surface of all celestial bodies, or the projects which may be conducted by a variety of governmental and non-governmental entities.[10]

Further elaboration and refinement of regulation of non-governmental entities in space, of course, will be necessary, and much will be influenced by future events. Nevertheless, the present absence of a fully developed, comprehensive and detailed legal regime for space commerce does not mean that there are no regulations currently applicable to the use of resources on celestial bodies.[11] Conversely, the lack of such a detailed legal regime also does not equate to a present moratorium on all commercial use of extraterrestrial materials.[12] The Outer Space Treaty expressly recognizes that states can conduct a variety of activities in the exploration and use of the Moon and other celestial bodies. Several provisions of the Outer Space Treaty promote and enhance the commercial opportunities for the private sector.[13] In addition, the extant *corpus juris*

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9. Fasan, *Dominum Lunae, Proprietas Lunae*, PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 1, 6 (1997). *See also* Christol, *supra* note 6; Gal, *Acquisition of Property in the Legal Regime of Celestial Bodies*, PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 45 (1997).

10. *See* C.W. JENKS, SPACE LAW 201 (1965); van Traa-Engelman, *Clearness Regarding Property Rights on the Moon and Other Celestial Bodies*, PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 38, 42 (1997); Tennen, *supra* note 8.

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

12. *See* Clayton-Townsend, *Property Rights and Future Space Commercialization*, 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). See also text & notes 26 – 32, *infra*.

13. *See, e.g.*, Outer Space Treaty, *supra* note 4, at art. I, paragraph 1 (activities in outer space shall be conducted for the benefit and in the interests of all mankind); art. I, paragraph 2 (states shall have free access to all areas of celestial bodies); art. II (the non-appropriation principle); art. IV (activities on the Moon and other celestial bodies shall be conducted exclusively for peaceful purposes); art. VI (states shall authorize and provide continuing supervision of the activities of their non-governmental entities in space); and art. VII (states are internationally liable for damages). *But see* Golrunia & Bahrami, *Outer Space Treaty in 21st Century: A Change of Concept*, PROCEEDINGS OF THE 40TH COLLOQUIUM ON THE LAW OF OUTER SPACE 303, 307 (1998).

spatialis contains the basic, fundamental parameters within which the framework for both domestic and international regulation of the private sector in space will be developed.

FUNDAMENTAL ELEMENTS OF THE LEGAL REGIME

The development of the *corpus juris spatialis* has primarily been directed toward the activities of states, and not the detailed regulation of the private sector. However, the law of outer space both fosters and promotes the interests of private enterprise. Primary among the specific attributes of space law is the maintenance of outer space for peaceful purposes.[14] This has produced an environment in which activities by both the public and the private sectors can be conducted without the necessity for military defenses or fortifications. The alternative to this tangible benefit of space law would be an atmosphere of insecurity, in which the cost of conducting missions would increase in direct proportion to the defensive planning, armaments and weaponry made necessary for protection of personnel and spacecraft.

The *corpus juris spatialis* fosters space commerce by establishing the basic parameters of the legal regime applicable to the private sector. The regulation of commercial space activities is expressed initially in the requirement in article VI of the Outer Space Treaty that private entities must obtain the authorization and continuing supervision of their appropriate state. The authorization and continuing supervision of the state must be exercised consistent with the obligation in article III that activities in space must be conducted in conformity with international law. Foremost among the principles of international law in this regard is the non-appropriation doctrine in article II. Additional provisions of the Outer Space Treaty which will shape the regulation of commercial space are the obligation to prevent harmful interference with the activities of other states, and the corresponding duty to participate in consultations where such interference may occur (article IX), the obligation of international disclosure of activities conducted on celestial bodies (article XI), and the right of visitation of stations and installations on the Moon and other celestial bodies (article XII). Last, but certainly not least, is the undertaking of states party to the Moon Agreement "to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the Moon. . . ."[15]

A. Authorization and Continuing Supervision

The Outer Space Treaty does not specify or mandate that any particular form of legal regime be adopted for the authorization and continuing supervision of non-governmental entities in space. Indeed, the Outer Space Treaty does not require that states implement any licensing regime whatsoever, and the number of states which have done so is relatively few.[16] The right and/or obligation of states to authorize the activities of entities subject to their jurisdiction in space permits states to determine the domestic criteria for accepting or rejecting a proposed project or mission. Accordingly, states are free to promulgate any form of administrative oversight they deem appropriate consistent

14. *See* Sterns & Tennen, *Institutional Approaches, supra* note 11, at text & note 11(*citing* statement by Eilene Galloway).

15. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *entered into force* July 11, 1984, art. 11.5, 1363 U.N.T.S. 3, *text reproduced in* UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE 27 (2002), *and* 18 I.L.M. 1434 (1979) [hereinafter referred to as the "Moon Agreement"].

16. *See generally* J. HERMIDA, LEGAL BASIS FOR A NATIONAL SPACE LEGISLATION (2004), at chapters 2, 3.

with their national interests and policies, subject to international treaty obligations.[17]

The requirement of state authorization and continuing supervision of the private sector affords a significant measure of protection for commercial space.[18] Once an activity has received authorization from a state, it would be unlikely for that state to either interfere *in situ* with a legally operated project it authorized, or to authorize another entity to engage in such interference. Should a second licensee authorized by the state engage in interference with the first licensee, either physically or by claims for infringement of intellectual property rights or unfair competition, such disputes could be resolved by domestic law. In the event harmful interference was caused or threatened by the activities of governmental or non-governmental entities of another state, international consultations could be conducted in accordance with article IX of the Outer Space Treaty. Moreover, if interference should occur which results in damages, liability could be imposed in appropriate cases pursuant to the provisions of the Outer Space Treaty, and where applicable, the Liability Convention.[19]

Domestic and international procedures for consultations and other potential dispute resolution processes would be conducted 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 courts or administrative proceedings for domestic disputes, and diplomatic or other mechanisms for controversies involving two or more states, would be employed on Earth to seek to diffuse and resolve any conflict. This is not to say that the dispute resolution mechanisms, either domestically for any individual state, or internationally, are not in need of development and detail, which clearly they are. However, the authorization and continuing supervision provision of article VI provides a significant foundation forth evolution of these processes.

B. Right of Visitation

The development of commercial space also will be shaped, in part, by the right of visitation established by article XII of the Outer Space Treaty. The right of visitation will provide an important means for representatives of states to observe first hand a facility on celestial bodies, which will help to enable these states to determine for themselves whether the operations of the facility pose a potential for harmful interference with the activities of such states on the celestial body, and to request consultations where appropriate. The Outer Space Treaty provides that the right of visitation is subject to a "basis of reciprocity," which could have some interesting implications for a tourist facility at Tranquility Base or other historically significant site.[20]

The Outer Space Treaty requires that the Secretary-General of the United Nations shall be informed, to the greatest extent feasible and practicable, of the nature, conduct, locations

17. *See generally id.*; F.G. VON DER DUNK, PRIVATE ENTERPRISE AND PUBLIC INTEREST IN THE EUROPEAN 'SPACESCAPE' (1998); PROJECT 2001 PLUS, TOWARDS A HARMONIZED APPROACH FOR NATIONAL SPACE LEGISLATION IN EUROPE (Hobe, Schmidt-Tedd & Schrogl, eds. 2004).

18. Sterns & Tennen, Debunking the Myth, *supra* note 5.

19. Convention on International Liability for Damage Caused by Space Objects, *opened for signature* March 29, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762, 961 U.N.T.S. 187, *text reproduced in* UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE 13 (2002).

20. Article 15 of the Moon Agreement, *supra* note 15, does not condition visitation on the basis of reciprocity.

and results of activities in space, including the Moon and other celestial bodies. Information concerning these matters is to disseminated to the public.[21] The right of visitation will assist states in determining whether the activities of a facility are in compliance with international law.[22]

C. Non-Appropriation

The non-appropriation principle in article II of the Outer Space Treaty may have the most important implications for the regulation of space commerce. Some commentators, such as Larson, assert that the mere occupation or use of resources approximates appropriation, as other entities necessarily are precluded from occupying or using the same location or resources.[23] Kerrest goes further and argues that only the international community can authorize the occupation of a celestial body or the use of extraterrestrial resources. Under Kerrest's view,

> Authorising the mining of consumable non-renewable goods is undisputedly a way of appropriation, therefore the [Outer Space T]reaty forbids it. If a state accepts to grant permits to mine the moon, it commits a violation of the treaty and of well accepted customary space law. . . If a mineral is mined illegally from the moon or any celestial body, this mineral and any product made from it when used on the Earth are unlawful. If they happen to come under the jurisdiction of a state refusing the appropriation, local tribunals and courts may seize it.
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> As national appropriation is forbidden there is no way for a State to authorize a mining activity on the moon. . . For the time being resources of the moon are 'res extra commercium' no appropriation is possible whether it is an appropriation of the resources as a whole through a claim of sovereignty or as a part through mining.[24]

This interpretation, it is submitted, is too restrictive, and considers only the non-appropriation provision in isolation and without regard to other salient provisions of the *corpus juris spatialis*. The Outer Space Treaty, for example, expressly recognizes in article IV the right of states to establish facilities, stations and other installations in the exploration of space and celestial bodies.[25] The Moon Agreement further recognizes, at article 6.2, the right of states to collect and remove samples, and to utilize minerals and

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21. Outer Space Treaty, *supra* note 4, at art. XI. *See also* Convention on Registration of Objects Launched Into Outer Space, *opened for signature* January 14, 1975, art. IV, 28 U.S.T. 695, T.I.A.S. No. 8480, 1023 U.N.T.S. 15, which obligates states to disclose specific but limited information concerning the location, function, and where applicable, basic orbital parameters, of objects launched into space.

22. This is not to say that the right of visitation is a carte blanche opportunity for visiting states to conduct searches of the facility or personnel, or other unreasonable intrusions on the operations of the facility. Rather, article XII of the Outer Space Treaty provides that the right of visitation is subject to reasonable advance notice, consultations, and maximum precautions taken "to assure safety and avoid interference with the normal operations" of the facility. See also Moon Agreement, *supra* note 15, at art. 15.1.

23. Larson, *Moon Mars Exploration and Use*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 370, 373 (2005).

24. Kerrest, *supra* note 2, at 534 - 35.

25. Outer Space Treaty, *supra* note 4, at art. IV; *see also id.* at art. XII.

other substances in support of missions. The exercise of rights recognized under one provision of a treaty cannot support a claim of violation of another provision of that same treaty. Thus, neither the Outer Space Treaty nor the Moon Agreement simultaneously authorize and prohibit the same activity, and the mere establishment of a facility pursuant to articles IV of the Outer Space Treaty and 6.2 of the Moon Agreement does not approximate or constitute appropriation in and of itself.

The utilization of extracted resources presents a more difficult issue. The literal language of the Outer Space Treaty recognizes the right to establish facilities in the exploration of outer space, including celestial bodies, but does not expressly extend that same right to the use of outer space, including the Moon and other celestial bodies.[26] Similarly, the language of the Moon Agreement limits the collection of samples and the use of resources in support of scientific investigations.[27] It is unlikely that commercial activities on celestial bodies would be entirely bereft of scientific endeavors, at least for the foreseeable future. The question is then presented as to whether a mixed use facility could utilize resources, or whether a mission must have a designated percentage of scientific functions to qualify for the use of extraterrestrial resources.

The Moon Agreement contains numerous provisions which are broadly termed and would include missions conducted for other than purely scientific investigations.[28] Moreover, both the Outer Space Treaty and the Moon Agreement repeat broad terms which may not have significant substantive differences in different contexts, such as "equipment or any facility necessary"[29] as compared to "equipment," "facilities," "stations" and "installations."[30] Furthermore, certain treaty provisions may contain an express reference only to "explorations" or "use" whereas the context makes it clear that the operative substance is to apply to all missions.[31] Finally, the Moon Agreement must be read *in para materia* with article 11, which relates specifically to the utilization of resources, subject, however, to a future international regime.[32] Therefore, unless it is concluded that the Moon Agreement imposes a complete moratorium on all activities by all non-governmental entities of both states party and non-party thereto pending the establishment of an international regime, the Moon Agreement does not prevent all use of extracted resources by non-governmental entities. The limits of such use, however, are yet to be established.

Some commentators have asserted that there are virtually no limits to the occupation of celestial locations and use of extraterrestrial resources, and that traditional forms of terran property rights can be superimposed on the *corpus juris spatialis*. The apparent violations

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26. *Id.* at art. IV, paragraph 2; *see also id.* at art. XII. The Moon Agreement specifies that the right to establish facilities extends and applies to exploratory missions and other uses of the Moon. Moon Agreement, *supra* note 15, at art. 3.4.

27. Moon Agreement, *supra* note 15, at art. 6.

28. *Id.* at arts. 5.3; 6; 9.1.

29. Outer Space Treaty, *supra* note 4, at art. IV; Moon Agreement, *supra* note 15, at art. 3.4.

30. Outer Space Treaty, *supra* note 4, at art. XII; Moon Agreement, *supra* note 15, at arts. 8.2; 10.2; 12.2.

31. Outer Space Treaty, *supra* note 4, at arts. IV (regarding peaceful purposes); IX (regarding harmful contamination); Moon Agreement, *supra* note 15, at arts. 3.1 (regarding peaceful purposes); 9 (regarding establishing manned and unmanned stations).

32. See text & notes 47 – 61, *infra*.

of the treaties summarily are dismissed by the utilization of nomenclature.[33] According to White, the non-appropriation principle is not violated, as it simply should be interpreted to read "Outer space, including the moon and other celestial bodies, is not subject to national **excluding private** appropriation, by claim of **territorial and not functional** sovereignty, by means of use or occupation, or by any other means."[34] Weidaw, takes a similar but somewhat different approach, and calls for nations and private entities to claim some degree of ownership of areas and resources in order to provide an economic incentive to commercial development. His solution is to modify article II to utilize an international licensing authority.[35]

Weidaw appears to recognize that authority to grant ownership rights to exclusively occupy an area or mine the subsurface will require a modification of the provisions of article II. White, on the other hand, asserts that article II, as it stands, should be interpreted to allow for private appropriation by claim of functional sovereignty, whatever that may be. White's position contains an inherent inconsistency. He expressly confirms his belief that "[n]ations can protect their citizens' and space objects' tenure at locations in outer space without exercising jurisdiction over territory,"[36] and he further that acknowledges the correctness of the IISL Board of Directors Statement[37] that no state can recognize appropriation through its national laws.[38] Yet his proposed interpretation of article II essentially mandates both state recognition of appropriation by private entities, as well as the exercise of jurisdiction by states over territory, which he denominates "functional."

White has one additional element to his analytical construct, that of enabling legislation to implement article II. He asserts that U.S. law is that "private entities in the United States cannot claim private property rights of any sort **in the absence of national legislation**. . . . (emphasis added)"[39] In other words, White argues that the Outer Space Treaty, and article II in particular, is not self-executing. This argument is internally contradictory. If states are unable to recognize appropriation through their national laws, then states are unable to adopt laws to implement article II which grant rights of private appropriation.

The contradiction in White's argument does not resolve the issue of whether or not the Outer Space Treaty is self-executing. Many

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33. Dasch, Smith & Pierce, *Conference on Space Property Rights: Next Steps*, PROCEEDINGS OF THE 42ND COLLOQUIUM ON THE LAW OF OUTER SPACE 178 (2000); White, *Interpreting Article II of the Outer Space Treaty*, PROCEEDINGS OF THE 46TH COLLOQUIUM ON THE LAW OF OUTER SPACE 171 (2004).

34. White, Interpreting Article II, *supra* note 33, at 174.

35. Weidaw, *A General Convention on Space Law: Legal Issues Encountered in Establishing Lunar and Martian Bases*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 272, 275-77 (2005).

36. White, *"Nemitz v. U.S.," The First Real Property Case in United States Courts*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 339, 345 (2005).

37. *See* Statement by the Board of Directors of the International Institute of Space Law (IISL) on Claims to Property Rights Regarding the Moon and Other Celestial Bodies (2004), <www.iafastro-iisl.com/additional%20pages/Statement_Moon.htm>.

38. W. White, *Homesteading the High Frontier*, AD ASTRA 32 (Fall 2005).

39. White, *Nemitz v. U.S., supra* note 36, at 349.

authors have written concerning national space acts and the legal regimes established thereby, and often have described such national laws as "implementing" the Outer Space Treaty.[40] With one exception, these national legal regimes have been adopted in furtherance of the obligations of states to authorize and continuously supervise the activities of their nationals in space in accordance with article VI, and do not relate to space as an area in the context of article II. The one exception is the Australian Space Act, which contains a jurisdictional definition for the lower limit of outer space of 100 km.[41]

Goh has compiled a comprehensive list of international obligations to be implemented by national space legislation.[42] It is significant to note that there is no mention of article II in the list. This is not meant as a criticism of Goh's compilation. To the contrary, it underscores that there is not widespread support for White's position among other commentators.[43] Marchisio has concluded that the Outer Space Treaty is not fully self executing, but his discussion primarily relates to matters of state liability and responsibility. Other provisions of the Treaty would appear to be fully self executing in Marchisio's view.[44]

White's conclusion that article II is not self-executing does not appear to be warranted. The non-appropriation principle is a prohibition on the acts of states and entities subject to their jurisdiction and authority. The language of article II is clear, direct, and unconditional. It is not expressly dependent upon the actions of any state to become an operative provision of space law. Furthermore, no act of a state could increase the quantitative character of article II. That is, article II says "thou shalt not do certain things," and legislation of a state which sought to implement the non-appropriation principle, in essence, merely would add the admonition "and we really mean it" and would neither make the prohibition more operative nor substantive.

What White is seeking by enabling national legislation is a grant of property rights,[45] not an implementation or enforcement of the prohibition against national appropriation. The national acts which have implemented the Outer Space Treaty have established procedures for the authorization and continuing supervision of entities subject to their jurisdiction, and concerned matters of state responsibility and liability. These enabling acts have supplied procedures and processes under local law for states to meet their international obligations as pursuant to article VI. These national acts, however, do not trigger or invoke the applicability of the

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40. *See, e.g.,* Freeland, *The Australian Regulatory Regime for Space Launch Activities: Out to Launch?*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 56 (2005); Goh, *ETHIR: Singapore as a Delta for Space Law in the Asia-Pacific,* PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 71 (2005); Mayence, *Implementing the United Nations Outer Space Treaties The Belgian Space Act in the Making*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 134 (2005).

41. Freeland, *supra* note 40.

42. Goh, *supra* note 40, at 71 - 73.

43. *See* Hobe, *ILA Resolution 1/2002 with Regard to the Common Heritage of Mankind Principle in the Moon Agreement*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 536, 542 (2005).

44. Marchisio, *Italian Space Legislation Between International Obligations and EU Law*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 106, 107 (2005).

45. White refers to the citation of the Seabed Hard Mineral Resource Act (1980) [30 U.S.C. 1401 et seq.].

state's obligations as set forth in article VI, which are binding on the states when they become party to the Treaty as a matter of international law.[46]

D. The International Regime and the Moon Agreement

The Moon Agreement obligates states parties thereto to "undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the Moon. . . ."[47] The international regime envisioned by the Moon Agreement appears to be more than just a legal framework, but rather embraces a regulatory body. As such, this body would constitute a form of international authority, presumably with the power to permit as well as prohibit activities of the private sector in the exploitation of extraterrestrial resources, which are declared to be the common heritage of mankind.[48]

The Moon Agreement identifies the "main purposes" of the international regime to include the orderly and safe development of the natural resources of the Moon; the rational management of those resources; and the expansion of opportunities in the use of those resources.[49] These purposes, in the abstract, are neither unreasonable nor controversial. Additional purposes for the international regime have been suggested, including standardization of licensing and registration, protection of the environment, adoption of traffic rules for outer space,[50] assuring that the exploration and use will serve common interests of mankind, and strengthen amicable connections between states and peoples,[51] and providing a mechanism for the adjudication of disputes.[52] The Moon Agreement provides one additional main purpose of the international regime, that of:

> An equitable sharing by all States Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration.[53]

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46. *See generally* Vienna Convention on the Law of Treaties, *text reproduced in* 8 I.L.M. 679 (1969).

47. Moon Agreement, *supra* note 15, at art. 11.5.

48. *Id.* at art. 11.1.

49. *Id.* at art. 11.7(a, b, c).

50. Wassenbergh, *The International Regulation of an Equitable Utilization of Natural Outer Space Resources*, PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 138, 140 (1997).

51. Cocca, *Property Rights on the Moon and Celestial Bodies*, PROCEEDINGS OF THE 39TH COLLOQUIUM ON THE LAW OF OUTER SPACE 9 at 11, n. 12 (1997), *citing* Szalóky, *The Way of the Further Perfection of the Legal Regulation Concerning the Moon and Other Celestial Bodies, Especially Regarding the Exploitation of Natural Resources of the Moon and Other Celestial Bodies*, PROCEEDINGS OF THE 16TH COLLOQUIUM ON THE LAW OF OUTER SPACE 196, 198 (1974).

52. *See* 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, 56 (1997).

53. Moon Agreement, *supra* note 15, at art. 11.7(d).

The provisions of article 11 of the Moon Agreement, especially concerning the common heritage of mankind and the sharing of benefits by the international regime, largely have been responsible for the absence of widespread adoption of the treaty.[54]

Recent experience with the Law of the Sea Convention[55] demonstrates that the promotion and protection of commercial interests is compatible with the common heritage of mankind principle. The LOS Convention failed to obtain widespread support as originally proposed, primarily due to concerns with the common heritage of mankind provision and the regulatory authority imposed for deep sea bed resources. In 1994, the LOS Convention was revised, and deleted any mandatory technology transfer in the development of ocean resources, in favor of a set of general principles; promoted international cooperation; preserved the *equality of opportunity*; provided for appropriate representation of states commensurate with their interests; and created a neutral juridical regimes to arbitrate disputes. The international authority of the LOS will not engage in unfair competition with private entities subject to its regulatory jurisdiction. These revisions satisfied the objections of many reticent states, and the amended LOS has received broad acceptance byte community of nations.[56] The position of the United States is that "the Agreement, by restructuring the seabed mining regime along free market lines, endorses the consistent view of the United States that the common heritage principle fully comports with private economic activity in accordance with market principles"[57]

The emphasis on opportunity was a central theme of the *Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries.*[58] This Declaration focused on the promotion and fostering of international cooperation on an equitable and mutually acceptable basis. Such cooperation should be conducted in the modes that are considered most effective and appropriate by the countries concerned.

A final example of recent trends can be found in the dispute resolution process of the World Trade Organization, which was substantially revised in 1994.[59] These revisions "reflect a

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54. Sterns & Tennen, *The Moon Treaty – Lost in Space*, 78 FOREIGN SERVICE JOURNAL 43 (2001).

55. Convention on the Law of the Sea, part XI, art. 136, *opened for signature* Dec. 10, 1982, U.N. Doc. A/CONF.62/122 (1982), *reprinted in* UNITED NATIONS, OFFICIAL TEXT OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA WITH ANNEXES AND INDEX, U.N. Sales No. E.83.V.5 (1983)[hereinafter referred to as the "LOS Convention"].

56. *See* Sterns & Tennen, Institutional Approaches, *supra* note 11.

57. U.S. Senate, 103rd Cong., 2nd Sess., UNITED NATIONS CONVENTION ON THE LAW OF THE SEA, WITH ANNEXES, AND THE AGREEMENT RELATING TO THE IMPLEMENTATION OF PART XI OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA, WITH ANNEX, Treaty Document 103-39, at 61 (1994).

58. G.A. Res. 51/122 (December 13, 1996), *text reprinted in* UNITED NATIONS TREATIES AND PRINCIPLES ON OUTER SPACE 54 (1997), http://www.un.or.at/OOSA/ga/ga51_122.html.

59. Uruguay Round's Understanding on Rules and Procedures Governing the Settlement of Disputes, *text reproduced in* GATT, The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts (1994); *see also* Final Act Embodying the Results of the Uruguay Round of Multilateral Negotiations, *opened for*

fundamental shift in the nature of international trade dispute settlement from a political, consensus-based process to a more legalistic system."[60] The accentuation of the rule of law enhances the predictability and institutional neutrality of the WTO.

The foregoing examples demonstrate that the common heritage of mankind principle does not impose an insurmountable burden to the private sector. In addition, the movement toward the rule of law as a basis of dispute resolution rather than purely political and other considerations enhances the opportunities for the private sector. The relationship between an international regime and domestic regimes must await future determination, including the extent to which the international regime will harmonize national licensing procedures and processes.[61] Nevertheless, whether an international regime is established pursuant to the Moon Agreement, or independent of that instrument, particular emphasis should be placed on the promotion of opportunity, as well as the rule of law, in the creation of any regulatory structure.

CONCLUSION

The rights and obligations of the private sector in space are in the process of evolution. Although the law of outer space does not presently contain a detailed regulatory structure for commercial activities on celestial bodies or utilizing extraterrestrial resources, the extant treaties promote and foster the role of non-governmental entities. The preservation of space for peaceful purposes is an essential element for the success of private ventures. In addition, specific treaty provisions establish the framework for the regulation of the private sector.

The requirement that states authorize and continuously supervise the activities of their non-governmental entities in space provides a substantial mechanism for the protection of the private sector. Moreover, states are able to determine the form and procedures of domestic licensing regimes pursuant to their national interests, subject to their international obligations, including the non-appropriation principle. The emphasis should be on the use of resources, rather than the exportation of terran "property rights" concepts to celestial bodies.

International regulation of the use of extraterrestrial locations and resources by the private sector may take the form of an international regime, such as is envisioned by the Moon Agreement. Whether independent of or pursuant to the Moon Agreement, an international regime is not necessarily inconsistent with the interests of the private sector. Recent experience with the LOS and the WTO demonstrates that the common heritage principle is compatible with market forces, which focuses on the expansion of opportunity. Furthermore, any regulatory body should be institutionally neutral, and should be based on legalistic systems rather than purely political considerations. The future development of commercial space has infinite possibilities within the parameters established by existing space law.

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signature April 15, 1994, *in Uruguay Round of Multilateral Trade Negotiations: Legal Instruments Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations done at Marrakesh on April 15, 1994* (1994), 33 I.L.M. 1143 (1994).

60. American Bar Association, Section of International Law and Practice, *The World Trade Organization The Multilateral Trade Framework for the 21st Century and U.S. Implementing Legislation* 585 (T.P. Stewart, ed. 1996).

61. *See* Andem, *The 1967 Outer Space Treaty (1967 OST) as the Magna Carta of Contemporary Space Law: A Brief Reflection*, PROCEEDINGS OF THE 47TH COLLOQUIUM ON THE LAW OF OUTER SPACE 292, 307 (2005); Catena, *supra* note 2, at 423.