

## TIDYING UP THE MOON TREATY PRIOR TO CONSTRUCTION

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### ABSTRACT

As nations and corporations actualize plans to travel to, establish operations and build bases on the Moon, the low level of international acceptance of the Moon Treaty is likely to become the subject of concern. This paper will analyze and discuss key points likely to arise in formulating rules relating to acceptable use of the Moon and its natural resources. Historical models demonstrate that competing desires for the precious natural resources and preferred strategic locations can be the source of intense international conflict. The paper will critically analyze whether recent developments regarding space law have had any impact on clarifying where key actors stand regarding the Moon Treaty. International law regarding the Moon must be cleaned up and clarified before Moon activities begin. This paper will collect, evaluate, survey, retrieve and report on opinions and views held by various members of the IISL for answers to tough questions regarding the lack of agreement on various Moon Treaty provisions such as the Common Heritage of Mankind concept. These combined insights will be organized and structured to serve as an aid to understanding necessary key features for the future design, adoption and implementation of an international regime to govern the freedom of use and how rules can be created to ensure activities on the Moon benefit all humankind. The paper will also discuss key issues regarding protection of the environment, sustainability and how to take early measures and to instill norms for the long-term preservation and protections of the Moon environment and other parts of outer space.

### 1. INTRODUCTION

Perhaps in recognition of Arthur C. Clarke's view that "The moon is the first milestone on the road to the stars", most spacefaring powers, including China, the European Union, India, Japan, the Russian Federation and the United States, has articulated a plan to perform activities on the Moon.<sup>i</sup> For many decades, research and development projects have been investigating the existence, nature and quantity of resources on the Moon.<sup>ii</sup> Soon a wealth of information will confirm whether the risk is worth the investment in pursuing those resources.

Going to the Moon, whether to establish a settlement for living, mining, studying, or launching to other parts of the cosmos, will entail scrutiny of the legal framework. This structure must be in place before those missions are actualized not only to provide the security and clarity necessary for prospective investment in commercial endeavors to come to fruition in the first place, but to establish the basic

system of rights, claims, obligations and liabilities to govern use of the Moon and its resources once we get there. None of these fundamental provisions currently exist as a matter of general international law.

The Outer Space Treaty, the basis of space law, has only generally applicable provisions that were never intended to establish the legal basis of property rights and responsibilities on the Moon. The Moon Treaty, which does have provisions specific to the Moon, has been preempted of any true authority due to disagreements in ideology and a lack of clarity in certain key provisions. Yet, despite its faults, the Moon Treaty is the most logical starting point to develop this framework – either as a new treaty, an amendment of the existing treaty, or a new non-UN negotiated treaty.

International space law has evolved since the era during which the Moon Treaty was first tested, when a belief that a common heritage doctrine was absolutely

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necessary to protect developing states. The intervening thirty years has seen both (or all) sides of the common heritage doctrine compromise and evolve in ways we never thought possible. Now, the *spirit* of the common heritage doctrine is given more effect than insistence on ideological consistency. We have the benefit of three decades of intimate, thorough analysis of its key provisions and hindsight in refashioning them to suit our current political and economic climate. The key emphasis now is on *usage* of space for the benefit of all and this evolution provides us with the opportunity we need to refashion the Moon Treaty into a document that actually has a chance to earn the allegiance of a preponderance weight of states.

## **2. GENERAL ISSUES ATTENDING SETTLEMENT ON THE MOON**

### **2.1 Private Property Ownership**

No one disputes that the Outer Space Treaty<sup>iii</sup> prohibits any nation from owning territory on the Moon. But there are two schools of thought whether *private* parties (non-sovereign individuals or entities) can own celestial real estate.

One school contends that the bar against owning extraterrestrial territory applies only to sovereign nations because Article II of the Outer Space Treaty prohibits specifically and only *national* appropriation.<sup>iv</sup> By virtue of its absence, proponents of this position argue that *private* appropriation is not forbidden.<sup>v</sup>

The other school argues that the Outer Space Treaty forbids *all* claims of ownership, noting that Article VI makes each nation internationally responsible for the activities of its nationals in outer space.<sup>vi</sup> Thus, activities of private parties are national activities, so a bar to national appropriation by Article II includes private appropriation, since that would be a national activity.<sup>vii</sup> Since there is no territorial jurisdiction in outer space, there can be no private ownership, as this would presuppose the existence of a territorial sovereign competent to confer a title.<sup>viii</sup>

The view of private ownership as permissible is “generally less accepted”<sup>ix</sup> and most scholars agree the bar to appropriation by States extends to private nationals.<sup>x</sup> Nevertheless, a legal foundation regulating property rights must make clear what is forbidden. If for no other reason, private parties should be prohibited from appropriating celestial real property to prevent rogue States from circumventing treaty obligations by delegating their authority.<sup>xi</sup>

### **2.2 Exploiting Natural Resources**

Exploiting natural lunar resources, including “helium-3”,<sup>xii</sup> is another potential reason to go to the Moon. One space entrepreneur, Jim Benson, whose company is responsible for designing the hybrid rocket motors that won the \$10 million dollar X Prize in 2004, was known for keeping an asteroid chunk of iron-nickel on his desk which had a “very rough street value” of \$80 trillion.<sup>xiii</sup> But the exploitation of lunar resources encompasses more than mined minerals, sent back to Earth for consumption; it includes the use of lunar substances to support manned and unmanned activities on the lunar surface and to facilitate their return to Earth or beyond.<sup>xiv</sup>

Apart from the economic and engineering problems of transportation, extraction and processing which must be overcome before exploitation becomes a reality, the question of legal property rights attaching to the resources, technology and products resulting therefrom must be clarified.

### **2.3 Environmental and Public Health Concerns**

The development of outer space is likely to create new environmental damage, including the known hazards of space debris, radioactive and electromagnetic wastes, contamination caused by toxic substances,<sup>xv</sup> “forward” contamination (microorganisms from Earth carried to other celestial bodies, distorting their natural condition) and “back” contamination (microorganisms brought to the Earth or its atmosphere from outer space).<sup>xvi</sup>

Man has increased the level of attention paid to protecting the environment, promotion of sustainable development and human health risks on Earth.<sup>xvii</sup> However, current space law fails to offer satisfactory protection to the space environment.<sup>xviii</sup> The Outer Space Treaty does not effectively address environmental issues;<sup>xix</sup> its Article IX provision is limited to general and vague terms with no legal teeth – “pursue studies”, “conduct exploration” of the Moon “so as to avoid its harmful contamination”.<sup>xx</sup> But those concerns are addressed in the Moon Treaty, Article 7, paragraph 1, which states:

In exploring and using the Moon, States Parties shall take measures to prevent the disruption of the existing balance of its environment, whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra-environmental matter or otherwise. States Parties shall

also take measures to avoid harmfully affecting the environment of the Earth through the introduction of extraterrestrial matter or otherwise.

Paragraph 2 of that provision requires, *inter alia*, notice to the UN Secretary-General of all “placements by them of radioactive materials on the Moon and of the purposes of such placements.” Nothing like these protections is offered in the Outer Space Treaty.

The widespread international practice of articulating concerns and establishing norms for environmental protection on Earth should be extrapolated into discussions regarding outer space.<sup>xxi</sup> The principles and policies adopted in the Rio Convention and other declarations could, in conjunction with the language of Article 7 of the Moon Treaty, provide a starting point for establishing environmental protection guidelines for developing the Moon.

### **3. IS THE MOON TREATY GENERAL INTERNATIONAL LAW?**

#### **3.1 Current Status of the Moon Treaty**

International space law is grounded upon five treaties enacted under the auspices of the United Nations (hereafter, UN).<sup>xxii</sup> The Outer Space Treaty (the “Magna Charta” of space law<sup>xxiii</sup>) has garnered 100 ratifications and the Rescue Agreement and Liability Convention are nearly as successful, with 91 and 88, respectively.<sup>xxiv</sup> Although the Registration Convention lags behind with only 53 ratifications, it and the other treaties are international hits in comparison to the meager 13 ratifications attracted by the Moon Treaty, none of which is spacefaring.<sup>xxv</sup> Four countries (including France and India) have signed, but not ratified, the treaty and are not bound by its provisions. They have merely an obligation to refrain from acts that would defeat the object of the treaty until its provisions have attained the force of customary international law.<sup>xxvi</sup>

#### **3.2 Treaty Provisions can become General International Law**

Treaties are sources of international law but, as contracts, bind only the parties that sign them. Thus, none of the five outer space treaties are general international law, *per se*, in the sense that they confer rights or impose obligations on all (non-party) subjects of a legal system.<sup>xxvii</sup> However, nothing precludes a rule set forth in a treaty from becoming binding upon non-party states as a customary rule of international

law (or “general international law.”)<sup>xxviii</sup>

In order to become general international law, what is required is a concurrence of parallel opinions of states in sufficient (not unanimous) numbers to constitute a general concurrence on what the law is, not only as among themselves, but in respect of all subjects of the international legal system.<sup>xxix</sup> The important thing to remember, in the context of the Moon Treaty, is that

In reality, in the making of rules of general international law, ... it is always the will of the dominant section that prevails. ... Basically, the dominant section consists of those who have the *capability*, the *intention*, and the *determination* of making their will prevail.<sup>xxx</sup>

Although a treaty is binding only on the parties to it, some provisions can metamorphose into a general rule of law. Thus, for example, the nonappropriation provision in Article II of the Outer Space Treaty requires not only States that are disposed to observe Article II, but especially States which are able, willing, and determined enough to challenge anyone who attempts to appropriate any portion of the Moon.

#### **3.3 Some Outer Space Treaty Provisions May Be Achieved the Status of General International Law**

Though both the Outer Space and Moon Treaties were approved by UN consensus and both came into force, the Outer Space Treaty provisions are more likely to become general international law because they required the ratifications of the Soviet Union, the United Kingdom and the United States – all from the “dominant” section (in the context of outer space). Thus, using the above example, the nonappropriation provision could credibly become a rule of general international law once the treaty was ratified by those three states simultaneously, not because there were 17 parties to it instead of only 5 for the Moon Treaty, but because acceptance by the US and the Soviet Union is critical. In contrast, the Moon Treaty did not require the ratification of any specific State (and never received a ratification from the “dominant” section) so, even though it legally “entered into force”, its provisions did not transform into general international law.

#### **3.4 Moon Treaty Provisions are not General International Law**

Given the status of the two treaties that are relevant to dictating rights on the Moon, in particular, it is

probably fair to say that the only recognized law governing resources on the Moon is the Outer Space Treaty.<sup>xxxii</sup> The Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space implicitly recognized the Moon Treaty's general irrelevance in today's space law jurisprudence when it formed a Working Group to explore, among other things, its meager ratification.<sup>xxxiii</sup> As a result in 2008, seven of the ratifying States submitted a joint statement enumerating five provisions that gave the Moon Treaty "added value" over the Outer Space Treaty, none of which included its *raison d'être*<sup>xxxiii</sup> – the exploitation of natural resources in Article 11.

Instead of addressing the single largest issue inhibiting broad acceptance of the treaty, the "common heritage of mankind" concept in Article 11,<sup>xxxiv</sup> the joint statement defended Article 11 on grounds that it gave permission to exploit the Moon's natural resources *as long as the exploitation is "subject to respect for article II of the Outer Space Treaty."*<sup>xxxv</sup> The failure to articulate exactly what that means is the essence of why the provision has made spacefaring countries reluctant to sign on to it: Its sponsors will not explicate the extent to which it does (or does not) effect a redistribution of profits or proprietary resource extraction technology.

The nebulous concept of "common heritage" and its association with community property ideology contributed to suspicions that ratification would result in an obligation to establish a future regime inimical to spacefaring interests that invested the money and took the risks to reap the rewards of space.<sup>xxxvi</sup> As a result, none of the states likely to be on the "giving" end of the distribution ratified the Treaty. Nevertheless, the Moon Treaty – unlike the Outer Space Treaty – has many provisions that specifically relate to rights on the Moon and if we can come to terms with the underlying bases for dissatisfaction with provisions that foreclosed its general acceptance, we may be able to elaborate more broadly agreeable provisions going forward.

#### **4. THE MOON TREATY'S PROBLEMATIC PROVISIONS**

The core provision of the Moon Treaty is Article 11 which provides that the Moon and its natural resources are the "common heritage of mankind" and, in accordance, States "undertake" to establish an international regime to govern the exploitation of the Moon's natural resources "as such exploitation is about to become feasible." The main purposes of the future regime include "an equitable sharing in the benefits

derived from the resources, whereby the interests and needs of the developing countries as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the Moon shall be given special consideration."

Ambiguities abound. Numerous terms are undefined, including the namesake concept, "common heritage of mankind" (hereafter, common heritage); which are "developing countries;" how is "equitable sharing" defined and when does "benefit sharing" commence? These terms require definitional clarity to bring about the certainty required for commercial outer space activity.<sup>xxxvii</sup>

##### **4.1 The Common Heritage Concept**

The first draft of the Moon Treaty submitted in 1970 by Argentina was supported by Egypt, India and the United States. It declared the Moon's natural resources "the common heritage of mankind, the benefits of which should be made available to all peoples, taking into account the need to promote the attainment of higher standards of living and conditions of economic and social progress and development."<sup>xxxviii</sup> Although negotiators ultimately succeeded in 1979 in obtaining consensus by limiting the "common heritage" concept to "expression in the provisions of this Agreement" (i.e., excluding Law of the Sea negotiations), not much of substance changed ideologically from its inception.

Developed nations suspect that the common heritage doctrine inhibits commercial development of outer space,<sup>xxxix</sup> particularly in view of its "socialist" common property elements and implicit aura of wealth redistribution accompanying the phrase, "sharing in the benefits."<sup>xl</sup> They generally prefer a less direct interpretation of "sharing," along lines that allow appropriation and exploitation as long as mankind benefits in some way.<sup>xli</sup> The benefits of the heritage to be shared lay in the access to the resources, not necessarily the funding or the technology to exploit them. Developing nations favor an interpretation of common heritage to embrace equitable distribution not based on contribution or effort, but with management by a trustworthy group possessing rights to distribute those resources in a way that will account for societal interests and needs.<sup>xlii</sup>

##### **4.2 Equity and Benefit Sharing**

Equity and benefit sharing has, in the space law context, often received a bad rap. The truth is that virtually every commercial activity in every country is taxed. Almost every country taxes individuals and

businesses on earned income, on land ownership, on inheritance, on mining rights, on certain personal property products (cars, boats, cigarettes, etc.) and on natural resources. These taxes are used to fund social security, public school, fire, police, infrastructure and social services that better our society. There is a good argument that investors in space enterprise should not expect to have everything without sharing anything.<sup>xliii</sup>

In recent years, developed nations have, on their own volition and without injury or complaint, shared directly or as by-products, research and access to new developments with the international community. Through these means developing countries benefit from weather monitoring and disaster prevention technologies; exhibition and donation of lunar images and materials; satellite telecommunications and Earth observation data; and distribution of public outreach and educational material.<sup>xliiv</sup> The International Telecommunications Union (ITU) 1988 equitable distribution of orbital slot privileges has helped to promote international cooperation and trust.

The point is that sharing of benefits should not be a litmus test for unacceptability of any regime, provision or protocol as it relates to prospective commercial development, but should (in the spirit with which it has been carried out in the past couple of decades) be considered part of each country's contribution to the international community.

#### 4.3 The International Regime

There is a common, "knee-jerk" prejudice against the Moon Treaty's prospective international regime.<sup>xliv</sup> This is largely due to an assumption that the term, "undertake" means nations would be obligated (not just attempt) to establish a regime to carry out the purposes of the common heritage doctrine.<sup>xlvi</sup> The fear is that it creates a moratorium on any commercial activity that is not purely experimental to be triggered once exploitation becomes feasible.<sup>xlvii</sup> That is, when an activity becomes profitable, all work must stop until we agree on an international regime so that developed countries will be under pressure to agree to benefit sharing provisions they oppose.

The fact is this provision is simply "an agreement to agree."<sup>xlviii</sup> Paragraph 5 obligates the parties to "undertake to establish an international regime", but there is nothing that prohibits any developed nation (or developing nation, for that matter) from holding out until it gets a regime that serves its own purposes.<sup>xlix</sup> Until then, the basic principle of international law

applies: That which is not prohibited is permitted. Nowhere in the treaty is the exploitation of natural resources prohibited in advance of establishment of a governing regime.<sup>1</sup>

In any event, an international regime makes sense and it has generally been used with success in carrying out policies, procedures and claims governing the ITU, Antarctica, the deep seabed (see *infra*), the International Monetary Fund and others. As a practical matter, commercial interests would be more secure if a regime provided predictability to protect their rights, spell out their obligations and establish administration of claims they wish to make for natural resources. In addition, the regime could be a regulatory agency for environmental and public health concerns that are likely to arise due to space activities in the Moon environment.

### 5. PROCEDURAL OPTIONS

The bedrock of space law is the Outer Space Treaty, which does not specifically address the use or exploitation of the Moon's resources. Neither do the other space treaties. If we agree that an appropriate legal foundation governing activities on the Moon will be necessary and that current law is insufficient or too ambiguous, there are several procedural options available.

#### 5.1 Do nothing, and rely on the Outer Space Treaty

Not much is prohibited except ownership and warfare. Article I of the Outer Space Treaty provides free access to the Moon so some might view extraction of lunar resources as available on a first come, first served basis. However, unlike the Moon Treaty, there is no language that distinguishes natural resources from the real estate that contains them. Since there is arguably a treaty agreement not to take ownership of such materials, any entity with the wherewithal to develop them may deduce that the uncertainties of the outcome do not justify the investment. Thus, spacefaring nations have an interest in developing a more concrete legal framework.

#### 5.2 Amend the Moon Treaty

Article 18 of the Moon Treaty provides for a procedure whereby one-third of member states (in this case, five) may request a review conference, along with agreement of at least a majority (in this case, three additional states.) Thus, the original Moon Treaty may be altered, either by amendment or by adoption of a protocol.

#### 5.3 Negotiate a new treaty

Starting over with a clean slate may seem appealing but the increased number of countries with practical interests in space also increases the difficulty in reaching consensus.<sup>li</sup> International space treaties are particularly time consuming because they involve unforeseeable changes in scientific and technological development and the increasing globalization, privatization and commercialization of space activities add to the complexity.<sup>lii</sup>

#### 5.4 Negotiate a non-UN Multilateral Agreement

Such an agreement may be easier to negotiate if there is an alignment of interests. For example, although the 1998 Intergovernmental Agreement governing the International Space Station (ISS) took ten years to negotiate, it resulted in agreement among fifteen governments, demonstrating that divergent state interests can be coalesced into a common legal regime.<sup>liii</sup>

### 6. THE MOON TREATY IS A GOOD STARTING POINT

The Moon Treaty has passed through three decades of atrophied neglect in a climate more interested in near Earth orbital concerns (telecommunications, ISS, remote sensing, direct broadcasting, etc.) that generally exclude the Moon and its prospects for commercial exploitation. Though the Moon Treaty is not universal space law authority that does not mean it is without significant value; its provisions are universally known and their strengths and weaknesses fully explored and debated at length, politically and academically. When the prospect of returning to the moon becomes a reality, it makes more sense to establish a legal framework without re-inventing the wheel.

Political realities have changed since 1979. The collapse of the Soviet Union, globalization of business and widespread dissemination of information via the Internet have evoked changes in attitude. An appreciation of commercialization is the trend, as a result of the increasing profitability of space activities in the satellite communications industry and the high profile success of commercial space travel enterprises.<sup>liv</sup> It is a propitious time to tidy up the legal foundation of space law to establish certainty, predictability and a rational basis for risk-management necessary to justify the substantial financial investment required to make settling, mining or using the Moon's resources a reality and the Moon Treaty is a logical starting place.

### 7. THE REGIME SHOULD NOT FOCUS ON

#### “COMMON HERITAGE”

Although Article 11 of the Moon Treaty appropriately left the nuts and bolts of the governing regime to be developed when the time was ripe, it was drafted in a way that implied acquiescence might obligate states to implement benefit-sharing provisions consistent with common heritage concepts. Rightly or wrongly, continued insistence on that language will end in a stalemate. If there is no other lesson learned from international treaty making, it is that without agreement of the principally affected parties (those with the wherewithal to effect travel to, mine and use of the Moon), there will be no treaty.<sup>lv</sup> To negotiate an agreement that has a chance of being authoritative international law, common property concepts must be minimized.<sup>lvi</sup>

The widely accepted “province of all mankind” principles in the Outer Space Treaty provide an opportunity to reframe the Moon Treaty provisions in a more universally acceptable light. There is also the added benefit of consistency in its substitution. As the man who was instrumental in negotiating the Moon Treaty in 1979 put it:

While the notion of the ‘province of all mankind’ seems to echo the principle of the common heritage of mankind it can also be said that its usage in the Outer Space Treaty denies rather than confirms any perceived status of outer space as ‘common heritage of mankind’.<sup>lvii</sup>

#### 7.1 Now is a Propitious Time for Change

Today, enormous advances in technology have brought the countries of the world into contact socially, economically and politically. Unfounded were fears that developed countries might unfairly leverage their economic and technological advantages to create wealth to the exclusion of the rest of the world. Instead, even the remotest parts of Africa and South America have access to cell phones, global positioning satellite technology and remote sensing data that enable all to lead more fulfilling lives. Many have their own space programs. It is perhaps because of this new appreciation of commercialism that the formerly tight grip on third world precepts governing commercial activities has relaxed in recent decades.

Globalization, widespread acceptance of commercialization of satellite telecommunications industries, cell phones the Internet and other goods and services, and the international community's general

appreciation of the equitable nature of the ITU's 1988 orbital slot allocation process, along with rising GDP statistics, make it reasonable to assume that today's international community may be more inclined to agree than they were in 1979.

### 7.2 December 1996 Resolution

Developing countries in today's geopolitical climate have lessened reliance on the common heritage concept. A prime example of this is the 1996 UN resolution, "Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit of and in the Interest of All States, Taking Into Particular Account the Needs of Developing Countries." Common heritage language is conspicuously absent. And even though there is benefit sharing language, it is aspirational, not compulsory (spacefaring countries *should* contribute to promoting and fostering international cooperation on an equitable and mutually acceptable basis; *attention should be given to the benefit and the interests of developing countries...*)<sup>lxviii</sup> The drafters seemingly accept the present situation in which each nation (and its nationals) decides for itself the meaning and parameters of "benefit of all mankind."<sup>lxix</sup>

### 7.3 UNCLOS

Another sign that the world is in a better mood to disengage from its previously polar positions is the metamorphosis of the UN Convention on the Law of the Sea (UNCLOS)<sup>lx</sup> which, as a result of significant renegotiations in 1994, resulted in a compromise that recognized political and economic reality by securing the rights of private and intellectual property over redistribution and changing the rules of exploration and exploitation to remove obligations to share information or technology.<sup>lxi</sup> Common heritage concepts are present, but recessed to allow profit interests to flourish.

In 1980, the primary rationale for non-ratification of the Moon Treaty was that the future regime would be dictated by the common heritage concepts in UNCLOS. That has all changed and we now have wide agreement, including by the United States (though it has not yet ratified it), on a detailed process, managed by an internationally directed group, by which an entity is granted limited access to resources that can easily be adapted to the needs of outer space.

### 7.4 Emphasize Province of Mankind over Common Heritage Concepts

The principle of benefit sharing is still, as it has been for decades, part of UN diplomacy. What has changed is that there is no longer an insistence that it be stated in language that can be interpreted as mandating a redistribution of material wealth.<sup>lxii</sup> Perhaps the fears predicated on the evils of capitalism have been shown to be illusory over the past thirty years or perhaps it has simply become clear that wealth redistribution is a deal-breaker for spacefaring nations.

In the past nations without ability to bring resources to market preferred an interpretation of equitable distribution not dependent on financial or technological contribution.<sup>lxiii</sup> Perhaps now a modified concept of "sharing" – where mankind benefits by virtue of commercial interests bringing resources to the world which reduces dependence on fossil fuels, reduces greenhouse gasses, makes energy more widely available for the rest of the world – might be accepted now.

Well-respected legal scholars have opined that the general nature of positive benefits conferred by commercial space activities is sufficient to satisfy the requirement of benefit sharing.<sup>lxiv</sup> As eventually conceded in UNCLOS, the entity which takes on a risky enterprise receives the financial benefit, but the world stands to benefit because space resources will conserve the Earth's natural resources, further scientific discovery, and boost the world economy.

The focus away from common heritage language does not imply that free market interests should reign supreme. Various models of resource development based on first-possession principles (where claim validity is based on who gets there first) have been lobbied for years. While some proposals are well drawn to encourage early development, pointing out that virtually every nation has patent laws establishing rights based on the same rationale,<sup>lxv</sup> they are unlikely to gain broad acceptance among developing countries. An unabashed free market may be perceived as an abandonment of "province of all mankind" principles universally accepted as necessary for continued comity among nations. The challenge is to develop rules consistent with those principles that provide enough incentive to make investment in commercial ventures attractive.

## 8. CONCLUSION

The international space law arena is a changed one from the era dominated by a belief that a common heritage doctrine was necessary to protect developing

states, distrustful that developed countries would “do the right thing” on their own. Times have changed. Now, the *spirit* of the common heritage doctrine is given more effect than insistence on ideological consistency. Last year the International Institute of Space Law and the European Centre for Space Law held a retrospective symposium on the 30th Anniversary of the Moon Treaty. Invited to speak were space law luminaries, including one expert who summarized four essential elements

. . . which at this very moment clarify the idea of Common Heritage of Mankind. These are: no State could appropriate any of those “spaces”; the necessary elaboration and application of a control and regulation international regime; the pacific usage, which means that no State should use any of these “spaces” for war purposes, be it collectively or individually; and the usage of them for the benefit and advantage of mankind.<sup>lvii</sup>

Absent is any language about “equitable sharing”. What has replaced it is *usage* of those spaces for the benefit and advantage of all. An amendment, new treaty or multilateral agreement that endows mankind with the benefits of our genius in the *use* of space, as opposed to the material wealth to be derived therefrom, may have a chance of earn the preponderance of weight of states.

<sup>i</sup> Day, S. (2009) at “Everyone’s Going to the Moon” [http://www.nasa.gov/pdf/368984main\\_Every\\_ones\\_going\\_to\\_the\\_Moon.pdf](http://www.nasa.gov/pdf/368984main_Every_ones_going_to_the_Moon.pdf). (All websites cited hereafter were last accessed as of 8 September 2010, unless otherwise indicated.) Also see Slyuta, E. N., Abdrakhimov, A. M. and Galimov, E. M. (2007) “The Estimation Of Helium-3 Probable Reserves In Lunar Regolith” *Vol. XXXVIII Lunar and Planetary Sciences* <http://www.lpi.usra.edu/meetings/lpsc2007/pdf/2175.pdf>; <http://english.pravda.ru/science/tech/17-03-2006/77404-moon-0/>; [http://fti.ncep.wisc.edu/gallery/pdf/space\\_com063000.pdf](http://fti.ncep.wisc.edu/gallery/pdf/space_com063000.pdf); <http://www.wired.com/science/space/news/2006/12/72276>.

<sup>ii</sup> Day, S. (2009) at “Everyone’s Going to the Moon” [http://www.nasa.gov/pdf/368984main\\_Every\\_ones\\_going\\_to\\_the\\_Moon.pdf](http://www.nasa.gov/pdf/368984main_Every_ones_going_to_the_Moon.pdf).

<sup>iii</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 18 U.S.T. 2410, 610 U.N.T.S 205 (adopted 12/19/66, entered into force 10/10/67) (hereafter, Outer Space Treaty).

<sup>iv</sup> Article II provides: “Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”

<sup>v</sup> See, e.g., Gorove, S., *Interpreting Article II of the Outer Space Treaty*, 37 Fordham L. Rev. 349, 351 (1969) and Reynolds, G. *The Moon Treaty: Prospects for the Future. Space Policy*, 11(2) (May 1995), at 115.

<sup>vi</sup> Article VI provides, in part: “States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, . . . The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. . . .”

<sup>vii</sup> See the first Statement by the Board of Directors of the International Institute of Space Law On Claims to Property Rights Regarding The Moon and Other Celestial Bodies (2004), retrieved from [http://www.iislweb.org/docs/IISL\\_Outer\\_Space\\_Treaty\\_Statement.pdf](http://www.iislweb.org/docs/IISL_Outer_Space_Treaty_Statement.pdf).

<sup>viii</sup> See Clarifying Statement by the Board of Directors of the International Institute of Space Law On Claims to Property Rights Regarding The Moon and Other Celestial Bodies (May 2009).

<sup>ix</sup> Christol, C.Q. (1984), “Article 2 of the 1967 Principles Treaty Revisited”, *Vol. 9 Annals of Air and Space Law* 217, at 243.

<sup>x</sup> See Gabrynowicz, J. (2006), “Comments on Stephan Hobe’s Discussion Paper, Adequacy of the Current Legal and Regulatory Framework Relating to the Extraction and Appropriation of Natural Resources” at 233-239. See [http://www.mcgill.ca/files/iasl/Moon-Proceedings-Part\\_4\\_2006.pdf](http://www.mcgill.ca/files/iasl/Moon-Proceedings-Part_4_2006.pdf). *infra* at n. 30.

<sup>xi</sup> *Id.*, quoting Kelly, R. (2004) “Case Note: *Nemitz v. United States*, A Case of First Impression: Appropriation, Private Property Rights and Space Law before the Federal Courts of the United States” *Vol. 30 Journal of Space Law* (Fall 2004), No. 2, pg. 297.

<sup>xii</sup> “Each year three space shuttle missions could bring enough fuel for all human beings across the world.” Statement by Ouyang Ziyuan, chief scientist of China’s

satellite-based lunar exploration program, at the 36th Scientific Assembly of Committee on Space Research. Reported in “He asked for the moon-and got it,” ChinaDaily.com, 26 July 2006. Retrieved from [http://www.chinadaily.com.cn/cndy/2006-07/26/content\\_649325.htm](http://www.chinadaily.com.cn/cndy/2006-07/26/content_649325.htm).

<sup>xiii</sup> Berinstein, P. (2002) *Making Space Happen*, 271.

<sup>xiv</sup> For an overview of potential lunar resources, see Lewis, J.S. & Lewis, C.F. (2005) “Proposed International Legal Regime for the Era of Private Commercial Utilization of Space”, *Vol. 37 George Washington Law Review* 745.

<sup>xv</sup> Manson, H. C. (1991) “The Impact of International Outer Space Commerce on the Environment”, *Vol. 26 Texas International Law Journal* 541. Available online at [www.westlaw.com](http://www.westlaw.com)) see pg. 547. Two examples include the Cosmos 954 accident involving a Soviet satellite that failed and crashed onto Canadian territory, causing radioactive back pollution of Uranium-235, and the TRANSIT 5BN-3 involving a US satellite powered by a nuclear source which burned up on re-entry, hit the Indian Ocean, and cause plutonium 238 to disperse across the global atmosphere.

<sup>xvi</sup> Ahuja, V.K. (1997) “Space Debris and Protection of Environment and Ahuja, V.K., “Space activities and Environmental Pollution: A Critical Legal Study” in *Recent Trends in International Space Law and Policy* by V.S. Mani, S. Bhatt and V. Balakista Reddy, pgs. 461-470. Also see generally *Recent Trends in International Space Law and Policy*.

<sup>xvii</sup> *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992* (United Nations Publication, Sales No. E.93.I.8 ), vol. I: Resolutions Adopted by the Conference, Resolution I, Annex II (hereafter, Rio Convention). Retrieved from <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> and <http://habitat.igc.org/agenda21/>.

<sup>xviii</sup> Bhutia, Wangchen Rigzin (March 17, 2010) “Protection of the Outer Space Environment” at <http://jurisonline.in/2010/03/protection-of-the-outer-space-environment/>. Retrieved May 30, 2010.

See also, Hofmann, Mahulena (2007), “Is There Any Legal Regime for the Protection of the Moon’s Environment?”, *Proceedings of the 50<sup>th</sup> Colloquium on the Law of Outer Space*, 2007, pg. 302. The main argument here is that Article IX of the Outer Space Treaty is limited to very general and vague terms with no legal teeth that are merely hortatory in nature. More detail is needed.

<sup>xix</sup> Chearbhail, “A Place for the Moon Agreement in the General Convention on Space Law, *Proceedings of the 47<sup>th</sup> Colloquium on the Law of Outer Space*, 2004, pg. 288

<sup>xx</sup> See Hofmann, *supra* n. 17 at pg. 302.

<sup>xxi</sup> Tan, David (2000), “Towards a New Regime for the Protection of the Outer Space as “Province of All Mankind”, *Vol. 25 Yale Journal of International Law* 145 at 173. The generalized concern for the protection of the space environment by the international community has been recognized in by several international bodies and declarations, including the Sixty-Sixth Conference of the ILA, which adopted the Buenos Aires International Instrument on the Protection of the Environment From Damage Caused by Space Debris, and in the Scientific and Technology Subcommittee of COPUOS”. Id. See also Maureen Williams (2008), “Safeguarding Outer Space: On the Road to Debris Mitigation at

<http://www.unidir.org/pdf/articles/pdf-art2818.pdf> Security in Space: The Next Generation—Conference Report, 31 March–1 April 2008, United Nations Institute for Disarmament Research (UNIDIR).

<sup>xxii</sup> Outer Space Treaty, *supra*, n. 1; Agreement on the Rescue of Astronauts, the Return of Astronauts and Return of Objects Launched into Outer Space (adopted 12/19/67, entered 12/3/68) (hereafter, Rescue Agreement); Convention on International Liability for Damage Caused by Space Objects (adopted 29 November 1971, entered into force 9/1/72) (hereafter, Liability Convention); Convention on Registration of Objects Launched into Outer Space (adopted 11/12/74, entered 9/15/76) (hereafter, Registration Convention); Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (adopted 5 December 1979, entered into force 11 July 1984) (hereafter, Moon Treaty).

<sup>xxiii</sup> Von der Dunk, F. (2006) “The Acceptability of the Moon Agreement and the Road Ahead, International and Interdisciplinary Workshop on Policy and Law Relating to Outer Space Resources: Examples of the Moon, Mars, and Other Celestial Bodies”, June 28-30, Montreal, *Proceedings of the Policy and Law Relating to Outer Space Resources: Examples of the Moon, Mars, and Other Celestial Bodies Workshop*, McGill Institute of Air and Space Law, retrieved from [http://www.mcgill.ca/files/iasl/Moon-Proceedings-Part\\_5\\_2006.pdf](http://www.mcgill.ca/files/iasl/Moon-Proceedings-Part_5_2006.pdf) (herein referred to as “von der Dunk Discussion Paper”).

<sup>xxiv</sup> United Nations Office for Outer Space Affairs, Status of International Agreements relating to

Activities in Outer Space retrieved from [http://www.oosa.unvienna.org/pdf/publications/ST\\_SP\\_ACE\\_11\\_Rev2\\_Add3E.pdf](http://www.oosa.unvienna.org/pdf/publications/ST_SP_ACE_11_Rev2_Add3E.pdf).

<sup>xxxv</sup> The Moon Treaty has been ratified by Australia, Austria, the Netherlands, Uruguay, Pakistan, Peru, Philippines, Kazakhstan, Lebanon, Mexico, Morocco, Belgium and Chile. United Nations Office for Outer Space Affairs, Status of International Agreements relating to Activities in Outer Space retrieved from [http://www.oosa.unvienna.org/pdf/publications/ST\\_SP\\_ACE\\_11\\_Rev2\\_Add3E.pdf](http://www.oosa.unvienna.org/pdf/publications/ST_SP_ACE_11_Rev2_Add3E.pdf).

<sup>xxxvi</sup> See Article 26 Vienna Convention on the Law of Treaties (1969).

<sup>xxxvii</sup> See Cheng, B., *Studies in International Space Law*, 1997, at 174-175, citing Article 34, 1969 Vienna Convention on the Law of Treaties (“A treaty does not create either obligations or rights for a third State without its consent.”)

<sup>xxxviii</sup> *Id.*, at 175, citing Article 38 of the Vienna Convention on the Law of Treaties.

<sup>xxxix</sup> *Id.* at 182-183.

<sup>xxx</sup> *Id.* at 183-184.

<sup>xxxi</sup> Hobe, S., Discussion Paper, “Adequacy of the Current Legal and Regulatory Framework Relating to the Extraction and Appropriation of Natural Resources”, *Summary Report of the IASL-IISL International and Interdisciplinary Workshop Session 4*, June 28-30, 2006.

<sup>xxxii</sup> *Joint Statement Re Agreement Governing the Activities of States on the Moon and Other Celestial Bodies by States Parties*, Appendix, Report of Legal Subcommittee Forty-Seventh Session, 3 April 2008, A/AC.105/C.2/L.272 (herein referred to as, “Joint Statement”).

<sup>xxxiii</sup> See Cocca, A. (1970) “Legal Status of the Resources of the Moon and Other Celestial Bodies”, *Proceedings of the Thirteenth Colloquium on the Law of Outer Space, IISL*, October 4-10, 1970, at 146. Cf. Cheng, B. *Studies in International Space Law* (1997) at 365.

<sup>xxxiv</sup> Article 11, paragraph 1, provides: “The Moon and its natural resources are the common heritage of mankind, which finds its expression in the provisions of this Agreement, in particular in paragraph 5 of this article.”

<sup>xxxv</sup> *Joint Statement*, *supra* n.31, at 5.

<sup>xxxvi</sup> *Hearings Before the Subcommittee on Science, Technology and Space of the Committee on Commerce, Science, and Transportation, 96<sup>th</sup> Congress, Second Session, on Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, July 29*

*and 31, 1980* (herein referred to as, Congressional Hearings)(Testimony of Leigh Ratiner, at 110-111). See also, Dula, A., “Free Enterprise and the Proposed Moon Treaty”, *Vol. 2 Houston Journal of International Law* 3 (1979.)

<sup>xxxvii</sup> See Martinez, P. and White, J., “A Developing Country Perspective”, Comments on Discussion Paper by Hobe, S., *supra* at n. 30, at 218-219.

<sup>xxxviii</sup> Tuerk, H. (2009), “The Negotiation of the “Moon Agreement”, at p. 3, *Space Law Symposium on “30th Anniversary of the “Moon Agreement”: Retrospect and Prospects”*, sponsored by the International Institute of Space Law and the European Centre for Space Law, held on 23 March 2009, retrieved from <http://www.unoosa.org/oosa/en/COPUOS/Legal/2009/symposium.html>.

<sup>xxxix</sup> Twibell, T. “Space Law: Legal Restraints on Commercialization and Development of Outer Space.” *65 University of Missouri at Kansas City Law Review*. 589 (1997); Twibell, T., “Circumnavigating International Space Law” Volume 4 *ILSA Journal of International and Comparative Law*, 259 (1997).

<sup>xl</sup> Lynn M. Fountain, Note, *Creating Momentum in Space: Ending the Paralysis Produced by the “Common Heritage of Mankind” Doctrine*, 35 *Connecticut Law Review* 1753, 1759 (2003).

<sup>xli</sup> See, e.g., Brittingham, B. (2010) “Does the World Really Need New Space Law?” *Vol. 12 Oregon Review of International Law* 31, pg. 39.

<sup>xlii</sup> Buxton, C. (2004) “Property in Outer Space: The Common Heritage of Mankind Principle vs. the ‘First in Time, First in Right’ Rule of Property Law” *Vol. 69 Journal of Air Law & Commerce* 689, pg. 692 citing Schwind, M. (1986) “Open Stars: An Examination of the United States Push to Privatize International Telecommunications Satellites”, *Vol. 10 Suffolk Transnational Law Review* 93, pg. 94.

<sup>xliii</sup> Congressional Hearings, *supra* n. 35 (Testimony of R. Frosch, at 42)

<sup>xliv</sup> See Martinez, P. and White, J., “A Developing Country Perspective”, Comments on Discussion Paper by Hobe, S., *supra* at n. 30, at 221.

<sup>xlv</sup> Moon Treaty, Article 11, paragraphs 5 and 7.

<sup>xlvi</sup> See, e.g., A. Dula, “Free Enterprise and the Proposed Moon Treaty,” *supra* n. 35 at 8-9, n. 25.

<sup>xlvii</sup> Dula points out that US tax and patent laws carefully differentiate between those terms, so there will be no such thing as calling it “experimentation” if the operation consistently returns a profit. *Id.* at 14-15.

<sup>xlviii</sup> See, e.g., Cheng, B., *Studies in International Space Law*, *supra* n. 26 at 377.

<sup>xlix</sup> See Gangale, T. (2009) *The Development of Outer Space: Sovereignty and Property Rights in International Space Law* pg. 108.

<sup>l</sup> The Understandings attached to the Moon Treaty and the negotiating history also make it clear that consensus approval of the Moon Treaty provisions, including those of Article 11, was expressly conditioned on the agreement among all States that no moratorium would attach to commercial activities on the moon. See, e.g. Congressional Hearings, *supra* n. 35)(Testimony of N. Hosenball at 48-49.)

<sup>li</sup> Jasentuliyana, N. (1992) "The Lawmaking Process in the UN" in *Space Law: Development and Scope* by N. Jasentuliyana at pp. 33 and 42.

<sup>lii</sup> Viikari, L. (Feb 2005) "Time is of the Essence: Making Space Law More Effective", *Vol. 21 Space Policy* (Feb. 2005) 1, at pg. 2.

<sup>liii</sup> See *Space Politics and Policy: An Evolutionary Perspective* by E. Sadeh (ed.) (herein referred to, "Space Politics and Policy") *Space Politics and Policy*, pgs. 177-179.

<sup>liv</sup> White, W. (2002) The Legal Regime For Private Activities In Outer Space, *Space: The Free-Market Frontier* by Hudgins, E.L. (ed.) pgs. 83-111.

<sup>lv</sup> Cheng, B. (1997) *Studies in International Space Law*, at pgs. 190 & 687.

<sup>lvi</sup> See, e.g., the convincing proposal put forward by Frans von der Dunk, *supra* n. 22, at 266-269. (The author, for discussion purposes only, proposes "the more radical approach" of carving out the common heritage of mankind-principle from the Moon Treaty in order to get to get past the sticking point and get to the rules required to establish properly balanced public and private interests.)

<sup>lvii</sup> Tuerk, H., *supra* n. 37, at 3. Cf. e.g. Christol, C.Q. (1982) *The Modern International Law of Outer Space* at pg. 252.

<sup>lviii</sup> See *Space Politics and Policy*, *supra*, at n. 52, at 174.

<sup>lix</sup> Goldman, N.C. (2002) "Space Law", *Space Politics and Policy* at 172-173

<sup>lx</sup> United Nations Convention on the Law of the Sea, 1833 U.N.T.S. 397 (December 10, 1982).

<sup>lxi</sup> See also Concluding Comment No. 7 by Hobe, S., *supra* n. 30.

<sup>lxii</sup> *Id.* at 175.

<sup>lxiii</sup> See Fountain, L. M., *supra* n. 39 at 1759.

<sup>lxiv</sup> See Lee, R. Comment on von der Dunk Discussion Paper, *supra*, n. 22, at 14, citing Gorove, S., "Implications of International Space Law for Private

Enterprise" (1982) *Vol. 7 Annals Air & Space Law* 319 at 321.

<sup>lxv</sup> See, e.g., Gruner, B.C. (2005) "A New Hope For International Space Law: Incorporating Nineteenth Century First Possession Principles Into The 1967 Space Treaty For The Colonization Of Outer Space In The Twenty-First Century", *Vol. 35 Seton Hall Law Review* pg. 299 and Reynolds, G. (May 1995) "The Moon Treaty: Prospects for the Future", *Vol. 11 Space Policy*, 115-120.

<sup>lxvi</sup> Faramiñán, Juan Manuel, (2009) "The Common Heritage of Mankind Principle: The Moon and Lunar Resources", Office for Outer Space Affairs Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, *Forty-Eighth Session (23 March-3 April 2009)*, *IISL/ECSL Symposium on "30th Anniversary of the "Moon Agreement": Retrospect and Prospects"*.

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