

*Note:* Although Wayne White and the Space Settlement Institute disagree on how best to implement property rights in space, his paper "Real Property Rights in Outer Space", presented at the International Institute of Space Law's 40th Colloquium on the Law of Outer Space, in 1998, contains an excellent discussion of the need for a regime of real property rights in outer space and of existing space law.

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## Real Property Rights in Outer Space

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### **Abstract**

This paper begins with a discussion of the need for a regime of real property rights in outer space. The author then analyzes the non-appropriation and sovereignty language in Article II of the 1967 Outer Space Treaty . In the following sections, the author analyzes the resource appropriation regimes in the Moon Treaty , the Law of the Sea Treaty and in deep sea mining legislation. The paper then discusses the legality of real property rights within and beyond the confines of a space facility. Finally, the paper proposes a regime for real property rights in outer space. This regime would not require nations to establish territorial sovereignty, and is consistent with the provisions and principles of the Outer Space Treaty .

### **Introduction**

At some point in the future, private entities will begin to appropriate resources and in-habit outer space. Initially, such activities will be risky and expensive. Existing inter-national law provides limited legal protection and little incentive for investment in outer space. This article proposes a regime of real property rights which would provide an element of legal certainty and incentive for private ventures. The concept of real property rights is intimately tied to the sovereignty which nation states exercise over territory. The 1967 Outer Space Treaty prohibits states from establishing territorial sovereignty, but authorizes and, in some cases even requires, that states exercise jurisdiction over space objects and personnel. This author therefore proposes a form of property rights which would not require states to establish territorial sovereignty, while remaining within the jurisdictional limitations set forth in the Outer Space Treaty .

### **Why Real Property Rights are Necessary**

The 1967 Outer Space Treaty [1] does not provide a positive regime for the governance of space development. The 1979 Moon Treaty[2] provides a regime for development, but that regime prohibits real property rights. For that and other reasons, most nations have not signed or ratified the Moon Treaty .

A development regime which provides some form of property rights will become increasingly necessary as space develops. Professionals foresee an integrated system of solar power generation, lunar and asteroidal mining, orbital industrialization, and habitation in outer space. In the midst of this complexity, the right to maintain a facility in a given location relative to another space object may create conflict. Such conflicts may arise sooner than we expect, if private companies begin building subsidiary facilities around space stations. Eventually large public facilities will become the hub of private space development, and owners will want to protect the proximity value of their facility location.

It also seems likely that at some point national governments and/or private companies will clash over the right to exploit a given mineral deposit. Finally, the geosynchronous orbit is already crowded with satellites, and other orbits with unique characteristics may become scarce in the future.

The institution of real property is the most efficient method of allocating the scarce resource of location value. Space habitats, for example, will be very expensive and will probably require financing from private as well as public sources. Selling property rights for living or business space on the habitat would be one way of obtaining private financing. Private law condominiums would seem to be a particularly apt financing model -- inhabitants could hold title to their living space and pay a monthly fee for life-support services and maintenance of common areas.

Even those countries which do not have launch capability would benefit from a property regime. Private entities from the developing nations could obtain property rights by purchasing obsolete facilities from foreign entities that are more technologically advanced.

A regime of real property rights would provide legal and political certainty. Investors and settlers could predict the outcome of a conflict with greater certainty by analogizing to terrestrial property law. Settlers and developers would also be reassured, knowing that other nations would respect their right to remain at a given location.

## **The Outer Space Treaty**

### **National Appropriation**

Article II of the Outer Space Treaty governs the appropriation of space resources. Article II provides that "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." International lawyers differ in their interpretation of the term "national appropriation." Some interpret Article II narrowly to prohibit only national appropriation.[3] Many others interpret the clause broadly to prohibit all forms of appropriation, including private and international appropriation.[4] When Article II is compared to similar provisions in other documents, however, it becomes clear that the narrow interpretation is correct.

Before the Space Treaty was drafted by the U.N. Committee on the Peaceful Uses of Outer Space (COPUOS), four other international legal organizations prepared draft resolutions. All of these documents recommended non-appropriation clauses which are broader than Article II.[5] The terminology in these clauses suggests that at the time the Space Treaty was drafted, international lawyers did not consider "national appropriation" to be an all-inclusive phrase. For example, a resolution of the International Institute of Space Law specifically distinguished between national and private appropriation: "Celestial bodies or regions on them shall not be subject to national or private appropriation, by claim of sovereignty, by means of use or occupation or by any other means." [6] On the basis of a similar analysis, Professor Gorove has concluded that Article II only prohibits national and not private appropriation.[7]

## **Sovereignty**

Article II also refers to claims of sovereignty. Sovereignty is a nation's right to exert exclusive authority over people, resources and institutions. It is exercised to its fullest extent within the boundaries of a nation's territory. Countries also express their sovereignty outside national boundaries, but that authority is limited to certain specific functions, such as jurisdiction over ships, aircraft, and citizens abroad. Thus, international lawyers distinguish between the absolute territorial sovereignty which is exercised within national boundaries, and the functional aspects of sovereignty, which are exercised beyond national boundaries.

The Outer Space Treaty contains provisions other than Article II which actually require parties to exercise functional sovereignty. The most significant example is Article VIII, which requires parties to "retain jurisdiction and control over... space objects on their registry... and over any personnel thereof, while in outer space or on a celestial body." It follows that all aspects of sovereignty cannot be prohibited by Article II.

## **Possible Territorial Claims**

Prior to 1960, many authors addressed the issue of sovereignty in outer space. In the popular literature, authors had fewer reservations about the legality of territorial claims. For instance, the following quote appeared in a 1957 (U.S.) article entitled Let's Claim the Moon-- Now!: "Columbus stuck the Spanish Flag into the sands of a West Indies beach--and we or the Russians would be perfectly within the concept of international law to claim possession of the Moon by shooting our national flag there by rocket." [8]

There are signs that the space powers of that era considered the possibility of territorial claims. In September of 1959, the Soviet Union impacted the nose cone of Lunik II on the surface of the moon. The impact scattered medallions inscribed with the Soviet coat of arms. [9] In 1969 Apollo 11 left a plaque on the moon inscribed with the words "we came in peace for all mankind." However, the United States government rejected suggestions that the Apollo 11 crew leave a United Nations flag. [10] Instead Neil Armstrong saluted an American flag.

International law does not require a fixed degree of state activity to establish a valid claim of territorial sovereignty. Traditionally occupation has been the principal method of perfecting territorial claims, but the degree of occupation necessary has varied. In the past, symbolic occupation, or "discovery" was sometimes sufficient. European countries established claims by planting their national flag, and Russians buried medallions bearing their coat of arms. Later, some nations questioned the sufficiency of symbolic occupation. Eventually, it came to be regarded as an inchoate title which could only mature if reasonably prompt, "effective" occupation followed. [11]

During the twentieth century the concept of effective occupation has broadened and changed in emphasis -- from colonization and settlement, to a more political character -- the continuous and peaceful display of state authority. Two prerequisites are necessary to establish a continuous display of authority-- (1) the intention and will to act as sovereign, and (2) some actual exercise or display of such authority. [12]

The degree of control which is necessary to establish a valid claim varies with the circumstances of each claim. International case law provides us with the following guidelines: (1) the smaller, the more inaccessible and uninhabited an area is, the less control a state must display to establish a claim; [13] (2) the area claimed must be a geographical unit-- "a naturally rounded-off region"; and (3) competing

claims may either defeat an inchoate title or geographically restrict other claims based on effective occupation.[14]

On the basis of these rules, the symbolic acts of the Soviet Union (scattering medallions and naming features on the far side) would not be sufficient to establish a valid claim on the moon. Nevertheless, on the day when Lunik II landed, Premier Krushchev stated that his country had established "priority" over the Moon, and it appeared that the U.S.S.R. might eventually make a claim. But the Soviets subsequently renounced any territorial claims.[15]

There are four principal reasons why the U.S.S.R. (and later other countries) chose to reject territorial sovereignty: (1) to prevent conflict; (2) to ensure free access to all areas of outer space; (3) because it would be difficult for states to delineate boundaries in outer space; and (4) to enhance national pride, prestige and influence. The major powers were vying for the allegiance of the many new African and Asian nations. These recently independent former colonies were extremely wary of "superpower imperialism." Consequently, both the Soviet Union and the United States could expect to gain political influence and prestige should they reject territorial sovereignty and its overtones of colonialism.

However, treaty representatives could not expect states to accept responsibility for actions which they could not control. Consequently, parties to the treaty had to retain jurisdiction and control if they also wanted to provide for international liability. Thus, COPUOS delegates elected to prohibit only territorial and not functional sovereignty.

Ultimately, Article II must be interpreted narrowly. For under international law states may do whatever is not expressly forbidden. "Restrictions upon the independence of states cannot...be presumed".[16] The language in Article II "by claim of sovereignty, by means of use or occupation, or by any other means," refers to the traditional (occupation) and the broader modern (display of authority) standards for establishing territorial claims. The clause does not prohibit other exercises of sovereignty or jurisdiction.

## **The Bogota Declaration**

There is one instance in which nations have asserted territorial claims in outer space. In 1976 eight equatorial states claimed sovereignty over the geosynchronous orbit, which is located 22,300 miles above the equator. In their document, The Bogota Declaration, the countries claimed that the orbit is a physical fact arising from the nature of our planet, that its existence depends upon gravity, and that it therefore should not be considered a part of outer space. On the basis of this rationale, they argued that the orbit formed an integral part of their territory which was subject to their sovereignty.[17]

This rationale was soundly rejected by other nations. Commentators agreed that the geosynchronous orbit is a part of outer space, and that territorial claims violated Articles I and II of the Outer Space Treaty .[18] Ironically, this incident only seems to have strengthened the prohibition against national appropriation.

## **Jurisdiction**

Members of the international community sometimes complain about de facto territorial appropriation. When a nation exercises jurisdiction and control over a facility for an extended period of time, they argue, the end result is indistinguishable from territorial sovereignty.[19]

Article VIII confers "quasi-territorial" jurisdiction. It applies to the space facility, to a reasonable area around the facility (for safety purposes), and to all personnel in or near the facility, irrespective of

nationality. Space objects occupy locations on a first-come, first-served basis, and personnel have the right to conduct their activities without the harmful interference of other states. In addition, although entities may not claim ownership of mineral resources "in place," once they have been removed (i.e. mined) then they are subject to ownership.[20] Former Attorney General Nicholas Katzenbach aptly describes this new hybrid as "primary rights... in a localized facility." [21]

This jurisdiction permits the state of registry to subject its space objects and personnel to any national laws which are not in conflict with international law. So states may legislate with respect to a broad range of both public and private activities; and, in most circumstances, they exercise as much authority within the vicinity of their space facilities as they would within their territory on Earth.

Under Article VIII, jurisdiction and control is only valid insofar as it is necessary to accomplish the exploration and exploitation of outer space and celestial bodies. Jurisdiction and control is also limited in time. It ceases to exist when activity is halted-- as, for example, when a space object is abandoned or returned to Earth. Because states only control as much territory as is actually used, the Outer Space Treaty does permit free access to outer space.

### **The Moon Treaty**

The 1979 Moon Treaty contains a non-appropriation clause which is more inclusive than Article II. Although Article 11, paragraph 2 of the Moon Treaty reiterates the language of Article II of the Outer Space Treaty, Article 11, paragraph 3 further provides that "neither the surface nor the subsurface of the moon... shall become property of any state, international inter-governmental or non-governmental organization, national organization or non-governmental entity or of any natural person" (references to "the moon" in the Moon Treaty refer to all celestial bodies and areas of outer space other than Earth and Earth orbits).

The treaty also says, in Article 11, paragraph 1, that "the moon and its natural resources are the "common heritage of mankind." Opponents of the treaty note that the developing nations often interpret "common heritage" to mean "common property" of mankind. As a result, the Moon Treaty has encountered resistance from countries with free market economies. The Moon Treaty entered into force (with respect to ratifying and acceding states) when Austria became the fifth state to ratify on July 11, 1984. However, the United States and many other space-faring nations have decided not to sign the treaty.

### **The Law of the Sea Treaty**

The Law of the Sea Treaty was drafted at the same time as the Moon Treaty, and many governmental representatives participated in drafting both treaties. The Sea Treaty contains a regime to govern appropriation of ocean resources that is very similar to the Moon Treaty's regime governing space resources. Perhaps it is not surprising that the Sea Treaty encountered resistance in many nations.

In the United States, those who argued against the Sea Treaty resource regime prevailed. In 1980 the United States enacted the "Deep Seabed Hard Minerals Resources Act" -- "interim" legislation intended to govern mining until an acceptable international agreement is ratified and enters into force. This act provides for renewable permits to ensure tenure at mining sites, with respect to both U.S. and foreign nationals, a reciprocity provision for similar foreign legislation, and a specific denial of extraterritorial sovereignty.[22] Five other nations have enacted similar legislation: West Germany, the United Kingdom, France, Japan, and the Soviet Union.[23]

### **Designated Zones of Functional Jurisdiction**

Imre Csabafi's proposed "designated zones" of functional jurisdiction would permit unilateral action in outer space, just as the aforementioned statutes allow unilateral action with respect to the seabed. In his book *THE CONCEPT OF STATE JURISDICTION IN INTERNATIONAL SPACE LAW*, Csabafi suggests that an international agreement is necessary "which would define certain specific cases when a state, being able to show a 'particular and distinctive interest,' may claim the right to exercise functional jurisdiction in a designated zone of outer space or on a celestial body." States would then create "designated areas" of functional sovereignty through unilateral legislation. Csabafi analogizes to the regime on the continental shelf, and to the functional sovereignty which some nations exercise over pearl and sedentary fisheries on the seabed.[24] Unfortunately, the zones which Csabafi describes are ill-suited to the complex interactions which will occur when industry and habitation become routinized.

## **Real Property Rights**

In general, real property law would seem to provide more appropriate analogies when addressing the problems associated with permanently located space facilities and mining sites. Maritime analogies should only be applied in connection with space vehicles and satellites in unstable orbits. There has been little discussion of property rights in the literature of space law. C. Wilfred Jenks provides one of the few treatments of the subject in his book, *SPACE LAW: If property transactions should take place in space it would seem appropriate to regard them as governed by the law with which it has the most substantial connection. If anything in the nature of real property rights at a space station on a celestial body were to be recognized, the law applicable there would presumably govern them . . . . Any recognition of real property rights beyond the limits of such a station would . . . raise a major question of policy concerning the basis of authority to confer or recognize such rights.*[25] Jenks does not explain the distinction between property rights within a facility and property rights outside a facility. Why would recognition of property rights outside a facility "raise a major question of policy" while property rights within a facility would not?

## **Real Property Rights Beyond a Facility**

The relationship between property and sovereignty differs under common law and civil law systems. The common law theory of title has its roots in feudal law. Under this theory the Crown holds the ultimate title to all lands, and the proprietary rights of the subject are explained in terms of vassalage. Civil law, on the other hand, is derived from Roman law, which distinguishes between property and sovereignty. Under this theory it is possible for property to exist in the absence of sovereignty.

Article II of the Outer Space Treaty prohibits territorial sovereignty but does not prohibit private appropriation. Hence, private entities may appropriate area in outer space or on a celestial body, although states may not. Under the common law theory of property rights, however, states (lacking sovereignty), would not have any rights to confer on private entities. Conversely, under the civil law view, property rights would exist independent of sovereignty, and therefore could be recognized.

This is why "[i]n the discussions leading to the conclusion of the [Outer Space] treaty, France [a civil law country] indicated more than once that she was not altogether satisfied with the wording of Article II . . . ." France's representative was "thinking in particular of the risks of ambiguity between the principle of non-sovereignty-- which falls under public law -- and that of non-appropriation, flowing from private law." [26]

It follows that any recognition of real property rights beyond the confines of a facility would, as Jenks observed, "raise a major question of policy." Because a private entity could conceivably establish control over an area over an area of the same magnitude that a country might control, recognition of

real property rights beyond facilities would raise issues similar to those raised by territorial sovereignty.

Although proponents of space development would undoubtedly welcome the economic incentive of unlimited appropriation, such claims should not be recognized. This form of property rights could potentially preclude free access to outer space in the same manner as territorial sovereignty would preclude free access. Finally, as a point of law, recognition of real property rights beyond the confines of space facilities would be inconsistent with the common law theory of property.

### **Real Property Rights Within a Facility**

Jenks stated that property rights within a facility would be permissible under international law. Nevertheless, in light of the maxim that entities cannot transfer a greater right than they have, these property rights would be, in common law jurisdictions, necessarily more limited than traditional property rights. The common law sovereign could only confer title to the extent of its own sovereignty; thus, under the functional sovereignty conferred by Article VIII of the Outer Space Treaty, property rights would be functionally defined and limited in time.

### **Spitzbergen**

Could nations, however, confer property rights which are limited, to the extent of the sovereignty conferred under Article VIII of the Outer Space Treaty? Terrestrial governments have never actually conferred or recognized property rights predicated on functional rather than territorial sovereignty. Nevertheless, the idea is not without precedent. Functional property rights have been considered in connection with the Spitzbergen Islands, which are located off the Norwegian coast.

At the turn of the century, coal deposits were discovered on these islands. Simultaneously companies of several different nationalities began mining operations. Because the arctic climate discouraged permanent occupation, the nations which had previously used the islands never considered it worthwhile to claim them. So these islands were generally recognized as terra nullius -- a "no-man's land." Suddenly, when coal was discovered, the concerned nations found it necessary to settle conflicting claims and to protect the rights of their nationals, in the absence of territorial sovereignty.

Consequently, Robert Lansing, in his article *A Unique International Problem*, proposed that the islands be jointly governed by the various nations, on the basis of functional sovereignty, within the framework of an international agreement. Central to Lansing's proposal was the concept of limited property rights predicated on functional sovereignty. In 1912 the parties prepared a draft convention to implement the idea.<sup>27</sup> World War I intervened, however, and in the changed circumstances following the war, the parties signed a treaty granting sovereignty to Norway.

### **A Proposal**

Under a regime of functional property rights, title would arise on the basis of a principle entirely different from traditional property rights. Conferral of title would not depend upon a government's control over a specific area, but rather upon its control over the space objects and personnel at that location. Once conferred, these rights would, nevertheless, be almost identical to terrestrial property rights.

On Earth the exclusion of others from the use and enjoyment of a given area is the principal right associated with real property ownership. In space first-come, first-served occupation, and the prohibition against harmful interference with other states' activities provides states with a similar, albeit less clearly defined, right of exclusion. Property rights legislation would extend this right to a

state' s citizens. Functional property rights would be subject to the limitations of Article VIII jurisdiction. These rights would terminate if activity were halted, as for example, if a space object was abandoned or returned to Earth. Finally, rights would be limited to the area occupied by the space object, and to a reasonable safety area around the facility. Hence, orbital property rights would extend only to the moving "envelope" occupied by a facility, and not to its entire orbital path.

In other respects a real property regime could be structured at a state' s discretion. States would determine the conditions necessary to establish and maintain property rights. They could follow the example of the United States' Homesteading Acts, and require owners to maintain a facility (and/or conduct certain activities) in a fixed location, for a specified period of time (e.g. one to five years), to establish a property right. The regime would have to specify the period of inactivity or abandonment necessary to extinguish a property right, and the permissible deviation of an orbital facility from its proper location.

In outer space, requiring facility owners to maintain a fixed orbit offers several advantages. First, it will reduce the probability of collision. It seems likely that some sort of "space traffic control" will evolve to track and direct space objects; plotting titled orbital locations as constants would permit controllers to concentrate on space vehicles and satellites in less stable orbits. Facility owners would benefit from this arrangement if non-titled space objects (or space objects exceeding their parameters) were held presumptively liable in a collision. Secondly, fixed orbits discourage indiscriminate dumping of debris, because debris can be more easily tracked to plotted, fixed points of origin. Hence, courts would sometimes be able to assess liability for debris-caused damage.

Functional property rights permit free access to all areas of outer space and celestial bodies because they do not necessitate territorial sovereignty and its consequent appropriation of large areas of space. Safety zones may extend to a reasonable distance around a facility, and exist only for the security of the facility and to promote safe navigation in its vicinity.

The regime is attractive because it is so easy to implement. Nations can unilaterally enact legislation, and they can tailor that legislation to conform to their existing property laws. The regime will cost states virtually nothing to implement, yet it will encourage citizens to enter what promises to be a very lucrative field.

Participating states should additionally provide for reciprocity and/or negotiate some form of limited "mini-treaty" to coordinate national property legislation. Such a treaty would elaborate on the elements in Article VIII -- it would define the property rights conferred under Article VIII, and provide for their recordation; it would define the term "space object," with particular emphasis on the distinction between space vehicles and permanently situated space facilities; it would define the term "personnel"; and it would delineate the extent of jurisdiction and control, with particular emphasis on the physical extent of safety zones, and upon the temporal duration of jurisdiction, i.e. upon the period of abandonment necessary to extinguish jurisdiction.

## **Conclusion**

Existing international space law permits the institution of limited, functional property rights in outer space. Article II of the 1967 Outer Space Treaty prohibits national and not private appropriation of spatial resources, and in particular prohibits national claims of territorial sovereignty.

This article proposes a regime of functional property rights which would be legal under both the common law and civil law theories of property, and under Articles II and VIII of the Outer Space Treaty .

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