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OF GARDENS AND STREETS: A DIFFERENTIATED MODEL OF PROPERTY IN INTERNATIONAL AND NATIONAL SPACE LAW

*Kali N. Murray**

INTRODUCTION

Often, when I visit cities, I go to gardens. A visit to a garden works on many levels. You can walk on the trails and paths that the landscape architect has deftly laid out. As you walk, you can admire the beauty of the various things that make up gardens such as the flowers, the trees, the vines, and other flora. And once you leave the garden, you can recall its beauty with pictures of the garden or a diary account of the particular property. A key aspect, then, of the "garden" is your ability to experience the pleasure of walking along the path, the pleasure of viewing flowers, and the pleasure of recalling both of these experiences. Your supposedly singular experience, then, is really one of many discrete and overlapping experiences. While you, a casual visitor, may be content to simply "visit" the garden, within a legal context, this choice may flatten important distinctions between categories. Indeed, an important task of a legal regime is the ability to differentiate between these diverse "things" which may underlie a singular subject.

I begin with gardens, not space, the subject of this conference for two reasons. Initially, the metaphor of a garden serves to "normalize" the treatment of space within the law. Often, analyses of space law treat this subject as a separate area, in-

* Kali N. Murray, Assistant Professor of Law, the University of Mississippi School of Law. I dedicate this Essay to my sister Alana D. Murray for all her love and support. I thank the National Center for Remote Sensing, Air, and Space Law for the opportunity to speak at the Conference as well as providing summer support for this project. I would like to thank Joanne Irene Gabrynowicz and Jacqueline Etil Serrao for reviewing early drafts of this Essay. Valuable research assistance has been provided by Misty Parks, Loren Henagan and Chance Pearson.

dependent of standard debates in other disciplines such as property and intellectual property. For example, the recent innovative scholarship as to "the commons" that has taken place in both intellectual property and property discussions is largely absent from the treatment of property in national and international space law. I think of this conference and resulting Essay as the opportunity to begin a fruitful dialogue between space law and a number of the more traditional disciplines.

The metaphor of the garden serves another narrower purpose. The garden reflects the way in which property law creates a differentiated legal framework, which I argue below, would be useful in describing how property should be treated within the space law regime. The metaphor of a garden very nicely reflects the different categories used to describe those "objects" in which claims of property ownership are made. The garden I have described roughly corresponds to the categories we assign to regulated "things" in property. The garden itself is land or real property;¹ the items contained in the garden such as flowers and trees are chattels;² and the subsequent accounts could be copy-righted and are thus, fall within the category of intangible or intellectual property.³ This differing treatment is furthered by the process of dividing the rights of users into a separate series of categories, such as the right to exclude, the right to use and the right to transfer.⁴ This so-called "bundle of rights" can have

¹ Real property is commonly defined as land and generally whatever is erected or growing upon or affixed to the land. BLACK'S LAW DICTIONARY 1218 (6th ed. 1990); see also J.E. PENNER, *THE IDEA OF PROPERTY IN LAW* 105-111 (1997) (reviewing the distinctions between the types of different objects of property).

² A chattel is commonly defined as an article of personal property that is personal and movable in nature. Two types of categories of chattel exist: (1) personal chattel, which have no connection with real estate; and (2) real chattels, which are those interests annexed to the real estate. BLACK'S, *supra* note 1 at 236. Arguably, some ambiguity exists as to whether the flowers, flora, other trees, would be classified as things annexed to real property or to real chattel. For purposes of this discussion, I refer to these things as real chattel.

³ Intangible property is commonly defined as property that is a "right" such as patent, copyright, trademark or one that is lacking a tangible existence. *Id.* at 809.

⁴ While I will not discuss extensively in this paper, another way to differentiate the treatment property is to distinguish between private and public spaces. The space itself can be further divided by the "public" or "private" qualities of a thing. A space or thing that is somehow is subject to multiple users can be defined as a "public"; a space or thing that is available only to a singular owner or that whose use is controlled by that owner

varying amounts of strength when applied to any particular object as Justice Stanley Mosk, in dissent, noted in *Moore v. University of California Regents*⁵:

But the same bundle of rights does not attach to all forms of property. For a variety of policy reasons, the law limits or even forbids the exercise of certain rights over certain forms of property. For example, both law and contract may limit the right of an owner of real property to use his parcel as he sees fit. Owners of various forms of personal property may likewise be subject to restrictions on the time, place, and manner of their use. Limitations on the disposition of real property, while less common, may also be imposed. Finally, some types of personal property may be sold but not given away, while others may be given away but not sold and still others may neither be given away nor sold.⁶

What characterizes these property rights, then, is the ability to have mutable, differential relationships, depending on both the characteristics of the property itself as well as the right at stake.

is defined as "private". Of course, such boundaries are complicated all the time. A "private" space may accommodate public purposes; a "public" space may yield to private uses. Here, I return to gardens, and one set of gardens, in particular, the formal gardens of Versailles. The formal gardens of Versailles demonstrate these potential dualities. While the formal gardens of Versailles were nominally constructed as a "private" space for the King Louis XIV, he often designed elaborate garden tours for tourists and visiting dignitaries that reinforced and re-iterated his "public" power as the King. So, the "private" roles of Versailles became intrinsically linked to "public" roles, thus demonstrating the potential ambiguities in how we conceive of and subsequently attach rights to, different types of spaces. Chandra Mukerji states that:

The importance of the gardens to Louis XIV's reign was underscored by the itineraries written to direct visits to the gardens of Versailles. Some of the few pieces written in Louis XIV's own hand were itineraries for promenades that he penned for his own use on diplomatic occasions; the king wrote these guides himself apparently because he placed great weight on the ritual tours of the park. The promenades were formal affairs, at which distinguished visitors were feted and entertained as they followed the prescribed paths through gardens. What they did and saw in these circuits was somehow meant to inform their assessments of the king and his court.

Id. CHANDRA MUKERJI, TERRITORIAL AMBITIONS AND THE GARDEN OF VERSAILLES 9 (1997).

⁵ *Moore v. University of California Regents*, 51 Cal. 3d 120, 166-65 (1990).

⁶ *Id.* at 166.

This Essay is divided into two sections. As I view this as an exercise in normalizing “space”, Section I explores how the different treaties that comprise the international space regime treat two key analytical categories—things and rights. By analyzing these objects in within space law regime, I hope to explore how a differentiated model of property illuminates tensions over property allocation within the current international legal regime. Section II examines how a differentiated model of property law in space will help us to “re-think” two key areas in space: (1) the appropriateness of a de-contextualized treatment of property; and (2) the usefulness of an overarching “commons” principle in limiting potential broad claims of property in various objects. While a number of radical reforms have been proposed that involve wholesale privatization of space objects, arguably, recognizing the “differentiated” aspects of property within space law would achieve a more nuanced perspective on reform that takes into account the overall historical goals of the international space regime.

I. A DIFFERENTIATED MODEL OF PROPERTY IN SPACE

After briefly analyzing the pre-occupation with territorial claims of ownership (or the lack thereof) in the international space regime, I first outline the basic framework of differentiated model, which places more importance on a wider range of “property” categories than currently understood. I then examine two key categories—types of objects and types of rights—which form the bases of a differentiated framework of property in space. Finally, I examine how these categories could work together to create a contextual understanding of rights that conform to pre-existing norms in property law.

A. Territorial Property in Space

The basic framework of international space consists of five treaties⁷, which constitute binding law and over seventy associ-

⁷ The five treaties are: (1) the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, Jan. 27, 1967, T.I.A.S. 6347, 610 U.N.T.S. 205 [hereinafter Outer Space

ated principles and declarations, which offer guidance as to the content of national legislation.⁸ Analyses of property in space have usually focused on its most unique characteristic: its use of a communal regime to allocate access to the territory of space. Article II of the Outer Space Treaty provides that “[o]uter space, including the moon and other celestial bodies, is not subject to national appropriation by the claim of sovereignty, by means of use or occupation, or by any other means.”⁹ This statement, commonly referred to as the “province of mankind” principle is based on the theory of *res communis*. The theory of *res communis* provides that since the character of some common resources is open to all by their very nature, exclusive appropriation is

Treaty]; (2) the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, Apr. 22, 1968, U.N. GAOR, 22nd Sess., Supp. No. 16, at 5, U.N. Doc. A/6716 (1968), 19 U.S.T. 7570, 1968 U.S.T. LEXIS 584 [hereinafter Rescue Agreement]; (3) the Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 961 UNTS 187 [hereinafter Liability Convention]; (4) the Convention on the Registration of Objects Launched into Outer Space, Jan., 14, 1975, art. II, U.N. GAOR, 29th Sess., Supp. No. 31, at 16, U.N. Doc. A/9631 (1975), 28 U.S.T. 695, 1975 U.S.T. LEXIS 552 [hereinafter Registration Convention]; and (5) the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 18, 1979, U.N. GAOR, 34th Sess., Supp. No. 46, at 77, U.N. Doc. A/34/46 (1980), 18 I.L.M. 1434 [hereinafter Moon Treaty]. Widespread acceptance, of the Moon Treaty, however, is limited. See Brian M. Hoffstadt, Comment, *Moving The Heavens: Lunar Mining and the “Common Heritage of Mankind” in The Moon Treaty*, 42 UCLA L. REV. 575, 583-592 (1994) (examining the limited international acceptance of the Moon Treaty).

⁸ Over seventy sets of declaration and principles exist related to space-related activities. For the purposes of this paper, the most relevant principles and declarations are: (1) Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space, GA Res. 1962 (XIII), U.N. GAOR, 18th Sess., Supp. No. 15, at 15, U.N. Doc. A/5515 (1964); (2) Principles Governing the Use by States of Artificial Earth Satellites For International Direct Television Broadcasting, GA Res. 37/92, UN GAOR, 37th Sess., Supp. No. 51, at 98, UN Doc. A/37/51 (1982) [hereinafter Artificial Earth Satellite Principles]; (3) Principles Relating To Remote Sensing of the Earth From Outer Space, U.N. GAOR, 41st Sess., Supp. No. 53, at 115, U.N. Doc. A/41/53 (1986) (hereinafter Remote Sensing Principles); (4) Principles to Use of Nuclear Power Sources in Outer Space, GA Res. 47/68 (Dec. 14, 1992); and (5) Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in Interest of All States, Taking In Particular Accounts the Needs of Developing Countries, Ga. Res. 51/122, U.N. Doc. A/AC.105/572/Rev. 1 (1996). Other sources of space law include: (1) bilateral agreements between individual nations; (2) domestic space regulation, such as statutes and regulation; and (3) case law, interpreting the scope of international and domestic treaties. See Ty S. Twibell, Note, *Space Law: Legal Restraints on Commercialization and Development of Outer Space*, 65 U.M.K.C. L. REV. 589, 591-609 (1998).

⁹ See Outer Space Treaty, *supra* note 7 at art.11.

difficult, and therefore, use and access is open to all.¹⁰ The “province of mankind” of Article II of the Outer Space Treaty is often contrasted to the broader “common heritage” doctrine of contained in Article 11 of the Moon Treaty. Article 11 provides that: (1) the moon and natural resources are the common heritage of mankind; (2) the moon is not subject to national appropriation by use, occupation, or other means; (3) the surface or sub-surface of the moon cannot be become the property of any state, international intergovernmental or non-government organization, national organization, non-governmental entity or natural person; (3) equal non-discriminatory rights exist as to exploration and use of the moon; and (4) an international regime must regulate the common territory.¹¹ The “common heritage” embodied by the Moon Treaty differs significantly from the “province of mankind” principle contained in Outer Space Treaty for two key reasons. First, unlike the province of mankind framework, the “common heritage” principle outlines a basic framework for extracting the resources.¹² Second, the “common heritage” principle dictates that any resource allocation must be conducted on an equitable basis by an international governing regime.¹³ The “common heritage” principle, thus, goes

¹⁰ Carol M. Rose, *Romans, Roads, and Romantic Creations*, 66 SPG LAW & CONTEMP. PROBS. 89, 91 (2003); Gerald Torres, *Who Owns The Sky*, 19 PACE ENVTL. L. REV. 515, 528, 529-532 (2002) (examining the development of the *res communis* principle).

¹¹ See The Moon Treaty, *supra* note 7 at art. 2 (1-6).

¹² Joanne Irene Gabrynowicz and Jacqueline Etil Serrao, *An Introduction to Space Law For Decision Makers*, 30 J. OF SPACE L. 227, 229 (2004); see also Ellen S. Tenenbaum, *A World Park in Antarctica: The Common Heritage of Mankind*, 10 VA. ENVTL L.J. 109, 113-115 (1990); Joanne Gabrynowicz, *Crisis of the Commons: A Turning Point*, PROCEEDINGS OF THE THIRTY-FIRST COLLOQUIUM OF THE LAW OF OUTER SPACE 31 (1988); B. Mairorski, *A Few Reflections on the Meaning and Interrelation of Province of Mankind and the Common Heritage*, PROCEEDINGS OF THE 29TH COLLOQUIUM OF THE LAW OF OUTER SPACE 58-61 (1986).

¹³ The strong principles of equitable treatment between developing and non-developing nations, which are the core of the “common heritage” principles serves as a useful counter-example to recent trends in international intellectual property, which have typically neglected the issues of equity within the development context. Margaret Chon has argued that the international intellectual property should take into account into equitable considerations, by utilizing a principle of substantive equality. Under a principle of substantive equality, the “the decision maker should accord much less deference and exercise much more skepticism towards the proposed government action (in this case, the regulatory intervention by the state in the form of the grant of intellectual

much further than the neutral "province of mankind" principle by providing for a more defined account of resources that may result from exploring the territory of space, and moreover, providing for a governance model for determining how those resources will be allocated.

Use of each of these models has proven to be controversial. According to critics, the failure of the two principles lies primarily in their perceived inability to secure private property rights in territory to various commercial and non-governmental actors. Legal uncertainty exists as to the scope of private territorial rights because of the ambiguities contained in the "no sovereignty" language of Article II. Article II could be interpreted to either allow a state to recognize extraterrestrial claims by asserting jurisdiction over its citizen's actions or to preclude all private claims in territory, whether the claim comes from nation-states, natural persons, or juridical persons.¹⁴ As a result of this ambiguity, territorial claims of private property are not accommodated and the subsequent failure to accommodate private claims in territory distorts incentives to develop a range of resources from commercialized space travel to lunar mining. A number of solutions have been suggested to resolve this perceived inability, among them: (1) amending Article II of the Outer Space Treaty to eliminate the "no-sovereignty" clause¹⁵; (2) allowing governmental entities to issue land grants or other similar grants of interests in territorial space¹⁶; (3) creating a system to register and license territorial claims¹⁷; (4) adopting a free market approach undertaken limited by a defined regula-

property protection) in the context of the provision of a basic human development capability, such as basic education or health care." Margaret Chon, *Intellectual Property and the Development Divide*, 27 CARDOZO L. REV. 2821, 2837 (2006).

¹⁴ Brandon C. Gruner, Comment, *A New Hope for International Space Law: Incorporating Nineteenth Century First Possession Principles Into The 1967 Space Treaty For Colonization of Outer Space in The Twentieth-First Century*, 35 SETON HALL L. REV. 299, 333 (2004) (citing Glenn H. Reynolds & Robert P. Merges, OUTER SPACE: PROBLEMS OF LAW AND POLICY 27 (1989)).

¹⁵ Twibell, *supra* note 8, at 638.

¹⁶ Glenn H. Reynolds, *Symposium, Environmental Rights and International Peace: Outer Space: Some Thoughts on Structures and Relations*, 59 TENN. L. REV. 729, 733 (1992).

¹⁷ Kevin Cook, *The Discovery of Lunar Water: An Opportunity to Develop a Workable Moon Treaty*, 11 GEO. INT. ENVTL. L. REV. 647, 698 (1999).

tory umbrella¹⁸; and (5) adopting common-law possessory concepts.¹⁹

These proposals all share one common premise, namely, by extending the ability of non-governmental (whether they be public or private) actors to claim territory, claims as to other objects of property—land, chattels, and intangible property—will be strengthened. This premise, however, conflates the territorial approach embodied by the “province of mankind” and “common heritage” principles to *all* types of potential objects of property claims. According to this view, if territory is assumed to be opened, all other objects in that territory are presumed to be open. This premise is flawed. This premise presumes that the principles as to territory to extend to *all* other objects in which property can be claimed. Communal access to territory, however, does not preclude all other claims of private property in that territory. A more appropriate metaphor may be one suggested by Carol Rose, who has proposed that a proper way to conceive of this mixed regime is that of a street. In a street, “there is public access but private property too. People stop to chat with one another and with the street vendors. They laugh at the pet monkey’s antics, drop into a shop and buy something, or have a seat and watch the other’s pass by.”²⁰ Rose’s account of a “street” landscape suggests that communal treatment of territory in space does not necessarily preclude that all other claims of ownership. Any analysis of the property law of space, then, does not end with the communal nature of territorial claims. Indeed, the treatment of property in international and national space law proves to be quite diverse if we look beyond *territory* as the only object of property claims in space.

¹⁸ Lynn M. Fountain, Note, *Creating Momentum in Space: Ending the Paralysis Produced by the “Common Heritage of Mankind” Doctrine*, 35 CONN. L. REV. 1735, 1772-1781 (2003).

¹⁹ Gruner, *supra* note 14, at 345-354; Ezra J. Reinstein, *Owning Outer Space*, 20 NW. J. INT’L L. & BUS. 59, 98 (Fall 1999) (suggesting that space law must embrace the principle of private property).

²⁰ Carol M. Rose, *Symposium, Introduction: Property and Language, or the Ghost of the Fifth Panel*, 18 YALE J.L. & HUMAN. 1, 18 (2006).

B. Chattels and Intangible Property in Space

Both the core treaties and subsidiary principles offer avenues for claiming property in chattel-type claims as well as intangible property claims. The importance of Article VIII for this framework cannot be underestimated. This clause identifies a range of potential property objects and more importantly, establishes a framework for establishing jurisdiction over a wide variety of objects. This jurisdictional element has allowed states to recognize a broader range of property rights, such as intangible property through domestic laws. In a differentiated model of property in space, Article VIII assumes an importance equal to that of Article II in terms of defining the scope of property rights.²¹

1. Chattels As Objects of Property in Space

The Outer Space Treaty refers twice to objects that can be classified as personal chattel (since these items are movable in nature). Article VII refers to the "launching of objects" into outer space.²² Article VIII outlines a method of registering those objects.²³ Article VIII identifies three types of potential objects: (1) an object launched into space; (2) objects landed or constructed on a celestial body; and (3) the component parts of each of these objects.²⁴ Later treaties have expanded upon these initial definitions. For instance, the Liability Convention and the Registration Convention define the term "space object" as "in-

²¹ A number of recent articles have emphasized the importance of Article VIII for establishing property rights in non-territorial objects. See, e.g., Henry R. Hertzfeld and Frans G. Von der Turk, *Bringing Space Law Into the Commercial World Without Sovereignty*, 6 CHI. J. INT'L L. 81, 83 (2006); Kelley M. Zullo, Note, *The Need To Clarify The Status of Property Rights in International Space Law*, 90 GEO. L.J. 2143, 2430 (2002).

²² Article VII refers to the liability assessed to one state party if the launching of a registered space object causes damage to another state party or the natural or juridical actors of that state. See Outer Space Treaty, *supra* note 7, art. VII. An earlier version of this clause was included in Section 8 of Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space. See Declaration of Legal Principles Governing the Activities of States, *supra* note 8, § 8.

²³ Article VIII refers to the ability of a state to obtain jurisdiction over a space object placed upon the relevant state registry. See Outer Space Treaty, *supra* note 7, at art. VIII.

²⁴ *Id.*

cluding component parts of a space object as well as its launch vehicle and parts."²⁵ A number of national laws have incorporated the same definition of "space object" into their domestic laws.²⁶ A number of countries have adopted equivalent definitions that protect a broader range of objects.²⁷

The Outer Space Treaty also contains references to items that can be classified as real chattel since these items can be potentially annexed or attached to the land of a celestial body. Article XII of the Outer Space Treaty refers to "all stations, installations, equipment and space vehicles on the moon and other celestial bodies."²⁸ This type of chattel is less frequently referenced in subsequent treaties. Only Article 8(2)(b) of the Moon Treaty refers directly to this type of annexed property.²⁹ The infrequency of reference to this type of property may be explained by the current difficulty of actually annexing items to space territory.

2. Intangible Property As Objects of Property in Space

Three types of potential intellectual property rights can potentially apply to space activities: (1) patents that protect scientific and technical information; (2) copyrights that protect satellite broadcasts and remote sensing data; and (3) trademarks

²⁵ See Liability Convention, *supra* note 7, at art. 1(d); Registration Convention, *supra* note 7, at art. 1(c). Article 8 (2)(a) of the Moon Treaty also refers to the abilities of space parties to land on and launch space objects from the moon. See Moon Treaty, *supra* note 7, at art. 8(2)(a).

²⁶ A number of nations have adopted the same language for their domestic statutes. See, e.g., The Outer Space Act, 1986, c.38, §13 (England) (the term space object includes "component parts of a space object; its launch vehicle, and the components of that."); 605A Royal Decree 278/1995, Establishing in the Kingdom of Spain of the Registry Foreseen In the Convention Adopted by the United Nations General Assembly on 2nd November 1974 (February 24, 1995) (Spain) (the term space object is "deemed to include both component parts thereof and the launch vehicle and parts thereof").

²⁷ A number of equivalent definitions exist in other domestic statutes. See, e.g., The National Aeronautics and Space Act of 1958, 42 U.S.C. § 2452 (2006) (the term "aeronautical and space vehicles" means "aircraft, missiles, satellites, and other space vehicles, manned and unmanned, together with related equipment, devices, components, and parts."); Space Affairs Act, Trade Industry No. 84 of 1993, s. 1 (South Africa) (the term launch vehicle means "any device manufactured or adapted to land a space-craft").

²⁸ See Outer Space Treaty, *supra* note 7, at article XI.

²⁹ See Moon Treaty, *supra* note 7, at art. 8(2)(b).

that may protect the naming of space projects and satellites.³⁰ Notably, however, these intangible objects of property are not directly referenced in the text of the Outer Space Treaty or the subsequent treaties. Of the relevant treaties, the Convention Relating To Distribution of Programme Carrying Signals Transmitted By Satellite ("the Brussels Convention") is the only standing multi-lateral agreement that specifically acknowledges the potential existence of intellectual property rights in a space-related creation.³¹ Article 6 of the Brussels Convention states that "[t]his Convention shall in no way be interpreted to limit or prejudice the protection secured to authors, performers, producers of phonograms, or broadcasting organizations, under any domestic law or international agreement."³² While Article 6 recognizes the existence of potential intellectual property rights in direct satellite broadcasting, Article 6 is still negative in its effect since it relies on domestic law or international agreements to fill in the meaning of those rights.

Any protection of intangible property, then, has been the result of two developments. First, Article VIII of the Outer Space Treaty has been interpreted to protect those intellectual property rights associated with a covered chattel. Under Article VIII, a property owner can claim a corresponding intangible property right under the relevant domestic regime due to the nation's ability to exercise in personam jurisdiction over the

³⁰ Leo B. Malagar & Marlo Apalisok Magdoza-Malagar, *International Law of Outer Space and the Protection of Intellectual Property Rights*, 17 B.U. INT'L L.J. 311, 350 (1999); see also Ruwantissa Abeyrante, *The Application of Intellectual Property Rights to Outer Space Activities*, 29 (1), J. OF SPACE L. 1-20 (2003).

³¹ Convention Relating To Distribution of Programme Carrying Signals Transmitted By Satellite, May 21, 1974, 1974 Lexis 269, TIAS 11078.

³² *Id.* at art. 6. The approach of Article 6 is also reflected in the Article H of the Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting. See *supra* Artificial Earth Satellite Principles, note 8, at art. H ("[w]ithout prejudice to the relevant provisions of international law, States should cooperate on a bilateral and multilateral basis for protection of copyright and neighbouring rights by means of appropriate agreements between the interested States or the competent legal entities acting under their jurisdiction. In such cooperation they should give special consideration to the interests of developing countries in the use of direct television broadcasting for the purpose of accelerating their national development"). Notably, Article H of this Principle does include a focus on the equitable redistribution of resources between developing and non-developing nations.

listed chattel.³³ The intellectual property right, then exists, as a subsidiary right that arises upon listing of an object on the register. National statutes that grant intellectual property rights in items placed on a register typically contain an explicit jurisdictional grant. For example, Section 105 of the Patent Act grants a patent in "an invention made, used or sold in outer space on a space object or component thereof under the jurisdiction or control of the United States."³⁴ Section 105 reflects two common limits contained in these national statutes: (1) the patent has to be granted on a space object or component of that space object; and (2) the patent has to be under the jurisdiction and control of the United States. The major flaw, however, of this approach is that an intellectual property right will not be recognized if the chattel is not listed on the registry; this potentially precludes a broader range of intellectual property rights from being claimed.

A treaty or principle can also create a new property object and that property object can become subsequently assimilated into a nation's existing intellectual property regime. Take, for example, the passage of the Land Remote Sensing Commercialization Policy Act ("the Policy Act")³⁵ which referenced the definition of "primary data" contained in Principle I(b) of the Remote Sensing Principles in its definition of "unenhanced" data.³⁶ By

³³ See *Ex Parte McKay*, 200 USPQ 324, 326 (1978) ("It is clear from Article VIII of said Treaty that jurisdiction of the United States in personam over any person is present if the object launched into outer space is of United States registry. A patent grant under 35 U.S.C. 154 by the United States for a process to be carried out on the moon by personnel subject to its jurisdiction is thus not inimical and at variance with the indicated section of the statute."); see also Twibell, *supra* note 8, at 617.

³⁴ 35 U.S.C. § 105 (2006). Notably, the language of Section 105 is broader than the same contained in Article VIII of the Outer Space Treaty since Section 105 subjects space objects listed on a register to the "jurisdiction" or "control" of the United States. See Dan Burk, *Application of United States Patent Law to Commercial Activity in Outer Space*, 6 SANTA CLARA COMP. & HIGH TECH. L.J. 295, 347 (1991).

³⁵ Land Remote Sensing Commercialization Policy Act, 15 U.S.C. § 5601 *et seq.* (2006).

³⁶ Compare Remote Sensing Principle, *supra* note 8, at Principle I(B) ("The term 'primary data' means the raw data that are acquired by remote sensors borne by a space object and that are transmitted or delivered to the ground from space by telemetry in the form of electromagnetic signals, by photographic film, magnetic tape or any other means") with the Policy Act, *supra* note 35, at § 5602(13) ("The term 'unenhanced data' means land remote sensing signals or imagery products that are unprocessed or subject

incorporating the Principles into its national law, a new category—data collected from remote sensing objects—then came under the ambit of the relevant domestic intellectual property regime. Such protection, however, depends on the scope accorded to that right by the domestic intellectual property regime. To continue with the above example, unenhanced data does not receive protection under copyright law in the United States because it lacks sufficient constitutional originality while under the copyright law of the European Union it most likely would receive a significant level of protection.³⁷

One central consequence results from this failure to develop an independent intellectual property regime in space law. From its beginning, the international space regime has emphasized the usefulness of a unified framework in addressing the significant theoretical issues associated with the unique territory of space and its associated resources. Now, because the approach to intangible property has developed incrementally within particular national traditions, the overall space regime has turned to local approaches to allocate resources. This only deepens a commitment to a contextual approach to the treatment of property within the overall space regime. One nation could potentially grant stronger intellectual property rights to an item, while another could potentially grant less intellectual property rights to an item. Of course, these potential differences may have been diminished due to the Agreement on Trade Related Aspects of Intellectual Property, Including Trade in Counterfeit Goods of the General Agreement on Tariffs and Trade (hereinaf-

only to data preprocessing.”). See also Joanne Irene Gabrynowicz, *Defining Data Availability for Commercial Remote Sensing Systems: Under United States Federal Law*, 23 ANNALS OF AIR AND SPACE L. 94, 98 (1998).

³⁷ Compare *Fiest Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 350-51 (1991) (“Facts, whether alone or a part of compilation, are not original, and therefore, may not be copyrighted. A factual compilation is eligible for copyright if it features an original selection or arrangement of facts, but the copyright is limited to the particular selection or arrangement.”) with Council Directive 96/9/EC, Art. 7, 1996 O.J. (L 77) (“Member States shall provide for a right for the maker of a database which shows that there has been qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents to prevent extraction and/or reutilization of the whole or of a substantial part, evaluated qualitatively and/or quantitatively, of the contents of that database.”).

ter to referred to as "TRIPS")³⁸ since TRIPS requires a minimum standard for intellectual property rights protection.³⁹ The minimal standard however, may not completely ameliorate the possibility of different approaches. The rapidness of technological change that takes place within the context of space may overtake the abilities of the international community to negotiate the varying demands of property owners and public users.

C. Rights in Property in Space

A differentiated approach to property also necessitates a more nuanced understanding of *rights* in those property objects. The rights of property owners as an object of property fall into three categories: (1) the right to exclude others from using the object; (2) the right to use the object in a socially appropriate manner; and (3) the right to transfer the object. The strength of these rights, however, will ebb and flow, based on how much power, we accord to potentially competing public rights in that property. Laura Underkuffler has argued that the power afforded these rights reflects two underlying conceptions, the common conception of property rights and the operative conception of property rights.⁴⁰ The first, the common conception of property rights, affords "the individual tremendous protections against competing public interests...[and, therefore these rights] are presumptively superior to the public that oppose

³⁸ Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994) [hereinafter TRIPS].

³⁹ *Id.* at art. 3 ("Members shall accord the treatment provided for in this Agreement to nationals of other Members."); art. 9 (outlining minimum standards of protection for copyright); art. 15 (outlining minimum standards of protection for trademark); & art. 16 (outlining minimum standards of protection for patents).

⁴⁰ LAURA S. UNDERKUFFLER, *THE IDEA OF PROPERTY: ITS MEANING AND POWER* 132-34 (2003); see also Laura S. Underkuffler-Freund, *Takings and the Nature of Property*, IX CANADIAN J.L. & JURIS. 161, 182-91 (1996); Laura S. Underkuffler-Freund, *Response, Property: A Special Right*, 71 NOTRE DAME L. REV. 1033, 1034-38 (1996). Underkuffler's theory has been applied in a variety of settings, see, e.g., Susan Ayres, *The Rhetorics of Takings Cases: It's Mine v. Let's Share*, 5 NEV. L.J. 615, 628-31 (Spring 2005) (discussing Underkuffler's two conceptions of property in relation to takings cases); Lior Zemer, *The Conceptual Game in Copyright*, 28 HASTINGS COMM. & ENT. L.J. 409, 412-14 (Spring 2006) (explaining Underkuffler's two conceptions framework and its application to copyright law).

them."⁴¹ Thus, the rights of a property owner seem to be inherently opposed to the rights of the public and in a dispute between the two, individualized property rights will usually trump any expressed public goals. The second, the operative conception of property rights is a more flexible one. Under an operative conception of power, "collective powers to control are seen as an inherent part of the initial configuration of ownership privileges."⁴² An operative conception then accords less power to any individual property right, by incorporating collective rights into the initial allocation of property rights.⁴³ Underkuffler's theory recognizes that the outcome of many debates in property reflects the underlying theoretical conception selected by the relevant decision-maker.

Underkuffler's account of variable property rights is consistent with a differentiated model of property in space law as the particular strength of individual rights to exclude, use, and transfer will vary depending on the relevant property object. For instance, individual rights in territory are accorded little or no value and must yield to a number of important public interests. Article I of the Outer Space Treaty does not simply require access to territorial space but also states that access and use must take place on a non-discriminatory and equal basis.⁴⁴ These collective "use" rights to territory can be seen to act consistently with an operative conception of property in which rights are seen as inherently collective from the onset.⁴⁵ By contrast, the rights to use, transfer, and exclude in intangible property objects, are stronger than those in territory. For instance, a potential copyright owner has a right to prevent others from

⁴¹ See UNDERKUFFLER, *THE IDEA OF PROPERTY*, *supra* note 40, at 132.

⁴² *Id.* at 41.

⁴³ *Id.* at 62.

⁴⁴ See Outer Space Treaty, *supra* note 7, at art. I.

⁴⁵ The corresponding right to exclude is diminished in light of these strong collective "use" rights. As J.E. Penner notes "rights to purely exclude or purely to use interact naturally, as it were, in the sense that use almost always involves some exclusion of others...So long as we conceive of a right to use in a social situation, in the real world, that is, the implications of that kind of right will raise issues about the rightfulness of excluding others, because the vast majority of the uses that a person will make of a thing are impossible if everyone tries to use the thing at the same time. See PENNER, *supra* note 1, at 68-69.

using and distributing enhanced data under the current international space regime.⁴⁶ Arguably, it could be said that rights as to an intangible property right are those typically associated with a common conception of property. Of course, a number of factors may complicate this claim such as the status of the intangible property within national law or the intrinsic characteristics of the intangible right itself.⁴⁷

The sharp contrast, however, between the treatment of territory, on the one hand, and intangible property, on the other, may over-simplify how *all* categories of property objects are treated in space law. Often, a more nuanced account of these rights will suffice. For example, the treatment of chattel placed on land in Article XII of the Outer Space Treaty implies an ability for individuals to own the relevant chattel (thus, a corresponding right to a transfer ownership of that right), but then subjects the chattel to significant public use and access rights.⁴⁸ Moreover, the rights of use and access are not unbounded. Article XII imposes a number of restrictions on this access, including: (1) reciprocal access to the relevant chattel; (2) reasonable notice of the projected visit; and (3) reasonable safety precautions.⁴⁹ This nuanced account of property rights demonstrates the importance of differentiating the type of property at issue from the beginning since the subsequent assessment of relevant property rights will depend very much on the type of property at issue.

II. RE-THINKING PROPERTY: ADOPTING A DIFFERENTIATED MODEL INTERNATIONAL AND NATIONAL SPACE LAW

Adopting a differentiated framework has its limits. Space, unlike a garden, or a street is a territory that is uniquely inac-

⁴⁶ J. Richard West, Comment, *Copyright Protection For Data Obtained by Remote Sensing: How The Data Enhancement Industry Will Ensure Access For Developing Countries*, 11 NW. J. INT'L & BUS. 403, 416-20 (1990) (reviewing the copyright protection that attaches to enhanced data under national laws).

⁴⁷ For example, the monopoly rights associated with a patent may accord stronger individual rights to an owner than the lesser use rights associated with a protected copyright.

⁴⁸ See Outer Space Treaty, *supra* note 7, at art. XII.

⁴⁹ *Id.*

cessible to human exploitation. Moreover, space law, may resist differentiation to the extent that it relies on a treaty framework for its primary source of law. A differentiation process benefits from the fact that common law can adopt a contextual approach to issues as they arise; a treaty framework does not always provide the same flexibility. Despite these concerns, however, a differentiated model of property in space will, perhaps, provide a useful way to analyze tensions within the current space regime that have become apparent upon the increase commercialization of space resources. In this Section, I will address two key consequences of adopting a differentiated framework. First, I will examine the other types of treaties and frameworks that have adopted a differentiated model in their treatment of property. Second, I will analyze the usefulness of a differentiated framework to support a re-conceptualized "communal" principle in the space regime.

A. *Re-Thinking Context*

Two treaty regimes usually serve as the primary models as to the treatment of property in space: (1) the treaty regime that regulates the use of Antarctica; and (2) the treaty regime that regulates use of the deep seabed mining.⁵⁰ Neither of these treaty regimes, however, differentiates between the objects of property claims. For example, the Article VII of the Antarctica Treaty refers to a category of chattel outlining a right to inspect "all stations, installations, and equipment" located on Antarctica.⁵¹ The term "inspect", however, implies a lesser type of license right rather than a broader right to use. Despite these limits, notably, both treaty regimes have adopted approaches which allow governing authorities to exercise jurisdictional control over property claims associated with nationally approved

⁵⁰ See, e.g., Eric Husby, Comment, *Sovereignty and Property Rights in Outer Space*, 3 J. INT'L L. & PRAC. 359, 362 (1994) (discussing the importance of the Antarctica Treaty regime for the development of the Outer Space Treaty); Hoffstadt, *supra* note 7, at 593-603 (discussing the deep seabed mining regime).

⁵¹ The Antarctic Treaty, arts. VII(1) & (3), Dec. 1, 1959, 12 U.S.T. 764, 402 U.N.T.S. 71.

non-governmental actors.⁵² However, an articulated framework that distinguishes between the types of potential objects remains notably silent.

On the other hand, TRIPS, the multi-lateral treaty framework for governing intellectual property, may offer a more relevant model for a differentiated framework in property in space. The framework of TRIPS recognizes a range of objects subject to property claims, including copyright and related rights, trademarks, geographical indications, industrial designs and trade secrets.⁵³ While protecting such a wide of range of objects has created intense criticism⁵⁴, the usefulness of the TRIPS' models lies in the way the treaty differentiates between the different limits placed on right-holders. TRIPS offers two distinctly different types of limits on the right-holders. First, Article 8 provides two distinct principles that members may take into an account when drafting or formulating relevant intellectual property principles. Article 8(1) allows members to "adopt measures necessary to protect public health and nutrition and to promote the public interest in sectors of vital importance."⁵⁵ Article 8(2) allows members to take appropriate measures "needed to prevent the abuse of an intellectual property rights holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology."⁵⁶ Other articles are to be interpreted in lights of these general principles; therefore, these principles can be said to

⁵² *Id.* at art. VIII.

⁵³ TRIPS, *supra* note 38, at art. 9(1) (protecting copyrights recognized under Berne Convention); art. 10 (protecting copyrights in computer programs); art. 14 (granting performers public performance rights); art. 15 (protectible subject in trademarks); art. 22 (protecting geographical indications which identify a good as a originating in the territory, region or locality of a member nation); art. 25 (protecting new or original industrial designs); & art. 27 (protecting patentable subject mater in all fields, providing that they are new, involve an inventive step and capable of industrial application).

⁵⁴ See, e.g., Marci Hamilton, *The TRIPS Agreement: Imperialistic, Outdated, and Overprotective*, 29 VAND. J. TRANS. L. 614 (1996) (TRIPS imposes a Western notion of copyright on developing nations); Donald P. Harris, *TRIPS' Rebound: An Historical Analysis of How the TRIPS Agreement Can Richocet Against the United States*, 25 NW. J. INT'L & BUS. 99, 102-03 (2004) (TRIPS undermines the sovereign power of the United States to determine domestic policy and further undermines the specific public policy goals of domestic intellectual property policy).

⁵⁵ TRIPS, *supra* note 38, at art. 8(1).

⁵⁶ *Id.* at art. 8(2).

temper these scope of the enumerated rights. Second, TRIPS contains a number of limitations and exceptions that can be applied to a discrete set of objects, namely, copyrights, trademarks, and patents. Article 13, Article 17, and Article 30, all, in varying degrees, allow members to enact laws that allow for "limitations or exceptions to exclusive rights."⁵⁷ These three Articles, in particular, are examples of a differentiated notion of property. These Articles only apply to those rights which are afforded stronger set of enumerated rights. So, for instance, these Articles are not applicable to other types of protected rights under TRIPS such as industrial designs or trade secrets. Moreover, the scope of the Articles differs. Article 13 only protects those limitations or exceptions that do not "conflict with the normal exploitation of the work" and do not "unreasonably prejudice the legitimate interests of the right holder" while Article 30 permits a member nation considering the above interests, to take into "account of the legitimate interests of third parties."⁵⁸ The variable strength of these limits emphasizes the contextual analyses under TRIPS that result from the differentiated treatment of objects and rights in those objects.

TRIPS, then, is useful in that it suggests potential strategies that support contextual interpretations of property within a treaty regime. General principles can apply to a broad range of categories covered by the treaties; more specific limitations or exceptions can be applied to specific categories. As to the former, the international space regime, actually offers a useful counter-example to TRIPS. General principles, such as the "peaceful purposes" principle articulated in the introduction of the Outer Space Treaty have been commonly viewed as an integral to interpreting the specific provisions of the relevant treaties; by comparison, this claim as to Article 8 of the TRIPS is still relatively controversial.⁵⁹ As to the latter, as discussed *infra*, the international space regime has not developed a sophisticated framework. In that, TRIPs can serve as a useful example

⁵⁷ *Id.* at art. 13 (limitations and exceptions on copyrights); art. 17 (limitations and exceptions on trademarks); & art. 30 (limitations and exceptions on patents).

⁵⁸ Compare *id.* at arts. 13 & 30.

⁵⁹ See generally Chon, *supra* note 13.

given its careful account of the appropriate balance between public and private interests.

B. Re-Thinking Commons

A differentiated model of property in space may also support a more sophisticated view of the underlying communal principles central to the current international space regime. Two significant interpretative distortions arise from a refusal to acknowledge that the international space regime contemplates variable rights in diverse property objects. Initially, certain areas of international space law may be developing in ways inconsistent with the overall communal purposes of the international space regime due to the failure to openly acknowledge the differentiated aspects of the space regime. Over-reliance on different domestic regimes to articulate the boundaries of these property rights may create inconsistent, over protective approaches to different objects.

I return to the useful example of Section 105(a) of the Patent Act. Section 105 allows a patent to be granted in any invention made, used, or sold in outer space on a space object or a component of a space object.⁶⁰ The inclusion of the terms "made, used, or sold" has typically been interpreted to read Section 105 together with Section 271(a) which defines the acts of infringement under the Patent Act.⁶¹ Recently, Federal Circuit considerably expanded the extra-territorial scope of Section 271(a) in *NTP, Inc. v. Research in Motion, Ltd.*,⁶² In *NTP*, the Federal Circuit found that if the beneficial use of the claimed invention is in the United States, a patent could be infringed even if a key

⁶⁰ 35 U.S.C. §105(a).

⁶¹ Burk, *supra* note 34 at 342-43.

⁶² *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1317 (Fed. Cir. 2005). Potentially expansive extra-territorial interpretations have also been applied within the context of 35 U.S.C. § 271(f). See *AT & T Corp. v. Microsoft Corp.*, 414 F.2d 1366, *cert. granted*, *Microsoft Corp. v. AT&T Corp.*, 127 S.Ct. 467 (U.S. Oct 27, 2006)(a master version of software code transmitted electronically and replicated abroad constitutes a component supplied from the United States, and therefore, violates 35 U.S.C. §271(f)); *Eolas Technologies, Inc. v. Microsoft Corp.*, 399 F.23d 1325 (2005)(master version of software code made in the United States, shipped on a golden master disk to be replicated abroad constitutes a component supplied from the United States, and therefore, violates 35 U.S.C. § 271(1)(f)).

component or step of the allegedly infringing product is located or performed abroad.⁶³ Under a generous reading of *NTP*, a patent claimant in a space object (such as a satellite) could assert that the laws of the United States would apply since the beneficial use of the product was in the United States even if a key component of the invention was located in space.⁶⁴ Such claims, by their very nature, may be potentially disruptive to the overall goals of the space law regime. For instance, significant proprietary claims on satellite technology itself could undermine the principle of non-discriminatory access of data contained in Article XII of the Remote Sensing Principles.⁶⁵ Refusing to address differentiated aspects of property in space leaves questions such as these unexamined and is detrimental to the overall functioning of the international space regime.

⁶³ *Id.* (The use of a claimed invention is “the place in which the system as a whole is put into service, *i.e.*, the place where control of the system is exercised and beneficial use of the system obtained.”)

⁶⁴ The United States is not the only nation that appears to be broadening its extraterritoriality concepts, *see also* *Menashe Business Mercantile Limited v. William Hill Organization, Ltd.*, RPC 31, EWCA Civ 1702 CA (2002), at H11-12:

The claimed invention required there to be a host computer. In the present age it did not matter where the host computer was situated. It could be in the United Kingdom or on a satellite or elsewhere. Its location was not important to the user of the invention nor to the claimed gaming system. In that respect, there was a real difference between the claimed gaming system and an ordinary machine. It was wrong to apply the old ideas of location to inventions of the type under consideration in the present case. A person who was in the United Kingdom who obtained in the United Kingdom a CD and then used his terminal to address a host computer was not bothered where the host computer was located. It was of no relevance to him, the user nor the patentee as to whether or not it was situated in the United Kingdom. Where the host computer was situated abroad and the terminal computer was in the United Kingdom, it was pertinent to ask who used the claimed gaming system. The answer was that it was the punter who used it. There was no doubt that he used his terminal computer in the United Kingdom and it was not a misuse of language to say that he used the host computer in the United Kingdom. It was the input to and output of the host computer that was important to the user and in a real sense he used the host computer in the United Kingdom even though it was situated and operated abroad. Thus, the supply of the CD in the United Kingdom to the United Kingdom punter was intended to put the invention into effect in the United Kingdom.

Id.

⁶⁵ *See* Remote Sensing Principles, *supra* note 8, at Principle XII.

Failure to appreciate the differentiated aspects of property in space also leads decision-makers to insufficiently address whether the communal approach articulated by Article II would have any subsequent interpretative force for Article VIII. While this Article suggests that Articles II and VIII outline variable property rights in different objects, it remains unclear whether Article II should serve as a "first among equals", performing as a basic normative principle that marks and constrains maximal private property assertions in non-territorial property objects. Again, reference to TRIPS provides a useful perspective. Margaret Chon argues that international intellectual property regime should adopt a substantive equality principle, based in part, on the general principles articulated by Article 8 of TRIPS.⁶⁶ Under such an approach, a decision-maker will engage a strict scrutiny analysis when an intellectual property right conflicts with a basic development right such as a right to health or education.⁶⁷ Arguably, Article II could be used to play a similar role within the international and national space law regime in two significant ways.⁶⁸ First, using Article II, a decision-maker might determine that in a conflict between an owner's asserted intellectual property right and wider public use of the protected object, the goals and principles of Article II protects the expansive use rather than the limited property claim. Second, a decision-maker could argue that a domestic legislative decision to expand an individual intellectual property right broadly could amount to appropriative act under Article II. However, use of Article II as a substantive norm would not eliminate the existence of property rights in non-territorial property rights. Rather, use of Article II could serve as a limiting principle that could constrain over-enthusiastic grants of an intellectual property right at the national or regional level.

⁶⁶ Chon, *supra* note 13, at 2885-86.

⁶⁷ *Id.*

⁶⁸ The use of overall principles to govern interpretations of space law appears to be a common practice. For instance, Ram Jakhu has argued that any appropriation of space territory under Article II may also be governed by the general purposes outlined by Article I, Paragraph 2 of the OST. See Ram Jakhu, *Legal Issues Relating to the Global Public Interest in Outer Space*, 32 J. OF SPACE L. 45 (2006).

CONCLUSION

Hopefully, this Essay is the beginning of a fruitful dialogue on claims of property within international and national space. I have attempted to sketch out the basic contours of a differentiated model in property in international and national space law. A nuanced framework is necessary in the international and national space law for two key reasons. First, a more nuanced framework would be helpful to respond to the major changes in technology that characterizes space law. Second, a more nuanced framework recognizes the flexibility of the treaty regime itself to accommodate and respond to stronger claims of individual property. In this, space law may share other characteristics of the gardens I mentioned at the beginning of this Essay: the ability to change and grow in response to the needs of its users.