

**JOURNAL**

**OF**

**SPACE**

**LAW**

**VOLUME 32, NUMBER 2**

**Winter 2006**

# JOURNAL OF SPACE LAW

UNIVERSITY OF MISSISSIPPI SCHOOL OF LAW  
A JOURNAL DEVOTED TO SPACE LAW AND THE LEGAL PROBLEMS  
ARISING OUT OF HUMAN ACTIVITIES IN OUTER SPACE.

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VOLUME 32

WINTER 2006

NUMBER 2

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*Journal of Space Law*. The subscription rate for 2006 is \$100 U.S. for U.S. domestic/individual; \$120 U.S. for U.S. domestic/organization; \$105 U.S. for non-U.S./individual; \$125 U.S. for non-U.S./organization. Single issues may be ordered at \$70 per issue. For non-U.S. airmail, add \$20 U.S. Please see subscription page at the back of this Volume.

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ISSN: 0095-7577

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## DIVERGENCES AND CONVERGENCES – SPACE LAW AND INTELLECTUAL PROPERTY REGIMES: A DEDICATED ISSUE

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## DIVERGENCES AND CONVERGENCES - SPACE LAW AND INTELLECTUAL PROPERTY REGIMES

*Joanne Irene Gabrynowicz\**

This issue of the JOURNAL OF SPACE LAW brings together two important areas of law: space law and intellectual property law. It was born from a conversation between myself and Prof. Kali Murray, who teaches intellectual property at the University of Mississippi School of Law. We were comparing some recent developments in each of our respective areas of law. Prof. Murray was telling me about how the idea of an information commons was developing in intellectual property law and the issues being generated by that idea in the intellectual property legal community. As I listened, I heard some ideas that were analogous to ones that had been discussed in space law for years. I told Prof. Murray that, as a matter of law, space is a global commons analogous to the Antarctica and the high seas. That led to subsequent discussions about how intellectual property concepts were being successfully developed for application

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in those common areas, but had only minimally been begun for space. The 1998 Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station<sup>1</sup> contains extensive intellectual property provisions<sup>2</sup> and the International Space Station “offers an appropriate test case for reviewing the effect of a legal framework on intellectual property rights in outer space”<sup>3</sup>. The last decade, however, has presented little further development of intellectual property concepts in the global commons of space. This fact, and my conversations with Prof. Kali led to the idea of hosting a conference specifically to address space law and intellectual property issues. Thus, *Divergences and Convergences – Space Law and Intellectual Property Regimes*<sup>4</sup> was held in Oxford, MS, USA, on September 19, 2006.

Once space law and intellectual property law was linked, identifying important, relevant topics was easy! Nearly every aspect of space activities can raise intellectual property issues. The conference agenda quickly fell into place and addressed a wide variety of legal issues. This issue of the JOURNAL OF SPACE LAW contains the papers and commentary presented at the conference.

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<sup>1</sup> Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station, Jan. 29, 1998, *available at* 1998 U.S.T. LEXIS 212 (entered into force Mar. 27, 2001), *available at*, [http://www.jaxa.jp/jda/library/space-law/chapter\\_4/4-2-2-16/index\\_e.html](http://www.jaxa.jp/jda/library/space-law/chapter_4/4-2-2-16/index_e.html).

<sup>2</sup> *Id.* at art. 21.

<sup>3</sup> European Space Agency, “Patents and Space-Related Inventions” *available at* [http://www.esa.int/SPECIALS/Intellectual\\_Property\\_Rights/SEMG3Z0A90E\\_2.html](http://www.esa.int/SPECIALS/Intellectual_Property_Rights/SEMG3Z0A90E_2.html).

<sup>4</sup> Special thanks goes to Prof. Murray for her critical role in helping to develop the ideas addressed at the conference; to Prof. Gary Myers of the University of Mississippi School of Law who also teaches intellectual property law and who provided opening and closing commentary that set the context for the conference; to Ms. Michelle Aten, the Assistant Director of the National Center for Remote Sensing, Air, and Space Law and to Mr. Jake Jenkins from the Office of Research and Sponsored Programs Science for organizing the web cast and other technical and logistical aspects of the conference.

In "Of Gardens and Streets: a Differentiated Model of Property In International and National Space Law", Prof. Kali Murray addresses the basics, and possible options, for applying intellectual property law to the commons of outer space. Prof. Julie D. Cromer analyzed an increasingly important topic in space and remote sensing law: the legal aspects of databases. Her paper, "How on Earth Terrestrial Laws Can Protect Geospatial Data" starts with Article IX of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies<sup>5</sup> and brings the reader through applicable U.S. statutory and case law; a discussion of public and private interests in geospatial data; and the *sui generis* European Union Database Directive. Thoughtful and expansive commentary on Prof. Cromer's paper, was provided by Prof. Lee Ann W. Lockridge in her paper, "Intellectual Property in Outer Space: International Law, National Jurisdiction, and Exclusive Rights in Geospatial Data and Databases", and it provided additional insight into the subject. The special case of developing nations that are newly-active in both space law and intellectual property law was presented by Dr. Tare C. Brisibe of Nigeria's National Space Research and Development Agency in his paper, "Outer Space Activities and Intellectual Property Protection In Nigeria".

Augmenting the academic perspectives were those provided by practitioners who participated in a special panel titled, *Intellectual Property Resources In and For Space: The Practitioner's Experience*. It consisted of Mr. Gary G. Borda, Agency Counsel for Intellectual Property, Office of the General Counsel, NASA Headquarters; Mr. Bradford Lee Smith, Senior Intellectual Property Counsel, Alcatel Alenia Space Division; Ms. Pam L. Meredith, Zuckert Scoutt and Rasenberger, L.L.P., Co-Chair, Space Law Practice Group; and, Mr. William Wilkins, Director, Mississippi Law Research Institute at the University of Mississippi School of Law. Their presentations were recorded and transcribed and are a special part of this JOURNAL OF SPACE

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<sup>5</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, art. IX, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205.

LAW. Together, the issues addressed by them included serving a space agency client; whether or not there are intellectual property interests in particular orbits; writing intellectual property provisions into launch contracts; and intellectual property issues regarding algorithms and mathematical formulae.

Finally, to round out the theme of space law and intellectual property law, this issue contains an article by Dr. Martha Mejía-Kaiser titled, "Copyright Claims For *Meteosat* and *Landsat* Images Under Court Challenge". In it she chronicles and analyzes two recent court cases, one in France and the other in Germany, that challenged the frequently asserted position that commercially distributed remotely sensed images from space are protected by copyright. The cases address the necessity of having a copyrighted work contain direct human creativity and a specific threshold degree of intellectual creativity.

In all, the contents of this issue of the JOURNAL OF SPACE LAW will serve to advance the discussion of the intellectual property law that ought to be applied to space, a global commons.

This issue also includes a Bibliography of Space Law and Relevant Publications; the Report of the 2005 IISL Space Law Colloquium; and, a new bilateral agreement: Framework Agreement Between the Government of the United States of America and the Government of the French Republic for Cooperative Activities in the Exploration and Use of Outer Space for Peaceful Purposes.

# CALL FOR PAPERS

## JOURNAL OF SPACE LAW UNIVERSITY OF MISSISSIPPI SCHOOL OF LAW

A JOURNAL DEVOTED TO SPACE LAW AND THE LEGAL PROBLEMS ARISING  
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### Volume 33, Issue 1

The National Center for Remote Sensing, Air, and Space Law of the University of Mississippi School of Law is delighted to announce that it will publish Volume 33, issue 1 of the *JOURNAL OF SPACE LAW* in the first half of 2007.

Authors are invited to submit manuscripts, and accompanying abstracts, for review and possible publication in the *JOURNAL OF SPACE LAW*. Submission of manuscripts and abstracts via email is preferred.

Papers addressing all aspects of international and national space law are welcome. Additionally, papers that address the interface between aviation and space law are also welcome.

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To be considered for the next issue, submissions should be received on or before May 31, 2007. The *JOURNAL OF SPACE LAW* will continue to accept and review submissions on an on-going basis.

## OUTER SPACE ACTIVITIES AND INTELLECTUAL PROPERTY PROTECTION IN NIGERIA

*Tare Brisibe \**

### I. INTRODUCTION

Intellectual property is widely understood to mean the legal rights resulting from intellectual activity in the industrial, scientific, literary and artistic fields. Intellectual property is also traditionally divided into two branches, viz: "industrial property" and "copyright."<sup>1</sup> Considering that individual countries have promulgated laws to protect intellectual property, intellectual property rights are those legal rights, obtained, exercised, interpreted and judged according to nationally enacted legislation and ensuing case law or judicial precedent. They constitute rights to forbid third party exploitation, or to allow the exploitation (by assignments, licenses, mortgages, or charges)<sup>2</sup> on terms dictated by the registered intellectual property owner or his or

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\* LL.B Hons (Jos); M.S.S. (ISU Strasbourg); PhD (Leiden); Barrister and Solicitor of the Supreme Court of Nigeria; Solicitor (non-practicing) of England and Wales; Deputy Director, Legal Services & International Co-operation, National Space Research and Development Agency - Federal Ministry of Science and Technology, Nigeria. The views expressed in this article are those of the author and do not represent the views of any organization or entity which he is or has been affiliated.

<sup>1</sup> WORLD INTELLECTUAL PROPERTY ORGANIZATION, INTELLECTUAL PROPERTY HANDBOOK 3 (2001).

<sup>2</sup> LESLIE W. MELVILLE, 1 FORMS AND AGREEMENTS ON INTELLECTUAL PROPERTY AND INTERNATIONAL LICENSING 1.04 (C. Boardman Co. 2004) (1979).

her designated successor. Because the scope for the protection of intellectual property is traditionally defined by filed instruments geographically restricted to the territory of the State which has registered the intellectual property,<sup>3</sup> pertinent to any discussion on intellectual property rights, are questions on the national or territorial extent of protection. Thus, intellectual property law in any country, including Nigeria, aims at safeguarding creators and other producers of intellectual goods and services by granting them certain time-limited rights to control the use made of those productions. Conversely, and pursuant to a number of international treaties or conventions, to which Nigeria is Party, intellectual property rights may also be international, as an intellectual property right may not be granted on an invention that had been previously disclosed, for example by publication, anywhere in the world.<sup>4</sup> Likewise, a single intellectual property application filed in one office may, "reserve" rights in many other countries.<sup>5</sup>

It has been argued that the simultaneously national and international nature of intellectual property protection is "nowhere more apparent than in the area of protection for inventions made or used in outer space."<sup>6</sup> This is because obtaining protection for an invention in outer space may sometimes depend on the national territory in which the invention is considered to have been made. It is submitted that a distinction must be made between those activities which are conducted in outer space, giving rise to intellectual property rights in outer space as opposed to activities conducted in or through outer space the effects or consequences of which, give rise to intellectual property rights on Earth. The distinction is necessary considering that outer space lies outside of all national territories and remains outside of the natural territorial jurisdiction of classical

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<sup>3</sup> B.L. Smith and E. Mazzolli, *Problems and Realities in Applying the Provisions of the Outer Space Treaty to Intellectual Property Issues*, in 40 COLLOQUIUM ON THE LAW OF OUTER SPACE 170, 170-71 (1997).

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

<sup>6</sup> A. Tramposch, *International Aspects of Protection for Inventions Made or Used in Outer Space*, in WORK SHOP PROCEEDINGS, INTELL. PROP. RTS. AND SPACE ACTIVITIES 188 (Dec. 1994).

municipal intellectual property law.<sup>7</sup> Therefore, national laws on the protection of intellectual property in general apply only to the territory of the relevant country. In other words, the acquisition and enforcement of intellectual property in a particular territory is governed by the applicable national intellectual property law. If this is true, the question immediately arises whether the territorial jurisdiction under intellectual property law permits the extension of each national law to the objects which the respective country has launched into outer space. The question falls outside the scope of this article and is not addressed.

However, considering the socio-economically oriented nature of the Nigerian space programme, being those activities relating to outer space which are carried out on the territory of Nigeria or on the territories of several countries, this article examines the Nigerian laws, policies, procedures pertaining to intellectual property rights arising on Earth, based upon activities conducted through space based remote sensing and telecommunications platforms. Section 2 summarizes the current institutional structure underpinning the Nigerian space programme. Section 3 discusses the notions of intellectual property to outer space activities, in the broad context of international intellectual property law and international space law. Whilst Section 4 analyses the institutional and especially the legal framework for the protection of intellectual property rights in Nigeria, through an examination of specific instances drawn from within the Nigerian space programme, Section 5 concludes on future space related activities in Nigeria and the protection of attendant intellectual property rights.

## II. INSTITUTIONS

In the 1960s, Nigeria had started using satellite based infrastructure for various purposes, though it is on record that Nigeria's desire to venture into space technology was first made

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<sup>7</sup> B.L. Smith, *Intellectual Property Issues for the Galileo Project*, in 44 COLLOQUIUM ON THE LAW OF OUTER SPACE 4 (2001).

known to the Economic Community of Africa / Organization of African Unity member countries at a 1976 inter-governmental meeting in Addis Ababa.<sup>8</sup> It was not until 1987 that the Federal Ministry of Science and Technology created a National Committee on Space Applications to advise government on modalities for the implementation of a Space Science and Technology Programme.<sup>9</sup> In 1993, the National Agency for Science and Engineering Infrastructure (NASENI) set up a nine-person committee to produce a draft Policy on Space Science and Technology.<sup>10</sup> By 1999, pursuant to a Federal Executive Council (FEC) Conclusion (EC4 (99)10), approval was granted to establish the National Space Research and Development Agency (NASRDA).<sup>11</sup> It is important to note that prior to the establishment of NASRDA, some space centers and projects already existed under NASENI, including the National Centre for Remote Sensing in Jos, Nigeria, and the Centre for Space Science and Technology Education affiliated to the United Nations, located at the Obafemi Awolowo University, Ile-Ife.

Thus, the FEC Conclusion EC27 (01)3 not only approved a National Space Policy, but also recognized the centers in Jos and Ile-Ife respectively whilst establishing a number of new development centers, under NASRDA including the: Centre for Basic Space Science; Centre for Satellite Technology Development; Centre for Geodesy and Geodynamics; Centre for Space Transportation and Propulsion.<sup>12</sup> This decision led to a total of

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<sup>8</sup> Spaceweek International Association, Summary of National Space Policy and Programme - Statement of the Director General/ Chief Executive, Nigerian National Space Research and Development Agency, [http://www.spaceweek.org/nigeria\\_and\\_space.html](http://www.spaceweek.org/nigeria_and_space.html) (last accessed on 25th January 2007).

<sup>9</sup> *Id.*

<sup>10</sup> *Id.*

<sup>11</sup> This Federal Executive Council Decision was passed into Law by the National Science and Technology Act of 1980 (NASENI Act) – National Space Research and Development Agency Order of 5<sup>th</sup> May 1999. The NASENI Act was enacted when the Federal Ministry of Science and Technology was scrapped in 1992. When the Ministry of Science and Technology was re-established, a draft NASENI (Repeal) Act 1996 was prepared. That proposed Act was however never signed into law. At present the NASENI Act 1992 is undergoing review to correct several anomalies and enable legislation reflecting actual situations. One of the proposed pieces of legislation will include an enabling Act on the National Space Research and Development Agency.

<sup>12</sup> FEC Conclusion EC27 (01)3.

six centers under the supervision of NASRDA intended to develop and coordinate various programmes for the attainment of national space capabilities. In the context of this article, outer space activities currently being undertaken through Nigerian government agencies such as NASRDA, give rise to intellectual property rights in various forms that require protection. It is important to bear in mind the fact that intellectual property rights may arise from government funded research and development contracts including results of activities conducted in Nigerian State owned laboratories. Intellectual Property Rights may also arise from collaborative or cooperative research and development arrangements between NASRDA, and third parties, of Nigerian or foreign origin.

### III. INTERNATIONAL INTELLECTUAL PROPERTY LAW AND INTERNATIONAL SPACE LAW

Because the protection of intellectual property may be simultaneously national and international, one should examine the applicable international legal framework in the context of this article, considering that States in their relations with one another are governed by the rules of international law, the sources of which are generally agreed to include: International Treaties; Customary International Law; General Principles of Law; Declarations, Resolutions and Decisions of International Intergovernmental Organizations; Judicial Decisions of International Courts and Tribunals; and doctrines of legal specialists in international law. In the realm of international intellectual property law, the treaties / conventions identified by the World Intellectual Property Organization (WIPO)<sup>13</sup> as relevant to outer space activities include, the Paris Convention for the Protection of Industrial Property of 1883<sup>14</sup>; the Berne Convention for the Protection of Literary and Artistic Works of 1886<sup>15</sup>; the 1994

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<sup>13</sup> International Bureau of WIPO, *Intellectual Property and Space Activities*, 5-7 (April 2004).

<sup>14</sup> Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, 13 U.S.T. 2, 828 U.N.T.S. 107.

<sup>15</sup> Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, 828 U.N.T.S. 221 [hereinafter Berne Convention].

Agreement on Trade-Related Aspects of Intellectual Property Rights<sup>16</sup>; and the WIPO Copyright Treaty of 1996<sup>17</sup>. Nigeria is Party to all of the aforementioned international instruments including the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, 1961<sup>18</sup>; the Patent Cooperation Treaty of 1970<sup>19</sup>; and the Patent Law Treaty, 2000<sup>20</sup>.

These international intellectual property treaties, amongst others currently in force, govern the protection of intellectual property, defined, pursuant to Article 2(viii) of the *Convention Establishing the World Intellectual Property Organization*, 1967, to include:

[T]he rights relating to: literary, artistic and scientific works[;] performances of performing artists, phonograms, and broadcasts[;] inventions in all fields of human endeavor[;] scientific discoveries[;] industrial designs[;] trademarks, service marks, and commercial names and designations[;] protection against unfair competition[;] and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.<sup>21</sup>

These intellectual property rights, as indicated in Section I of this article, have traditionally been identified as "industrial property" and "copyright." "Industrial property" therefore would encompass patents, trademarks, industrial drawings geographical indications, know-how and trade secrets, whilst "copyrights" would apply to literary or musical work. In contrast to international intellectual property law, space law has been referred to as a term of "functional classification."<sup>22</sup> In other words, space

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<sup>16</sup> Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, 33 I.L.M. 81 1994 [hereinafter TRIPS Agreement].

<sup>17</sup> WIPO Copyright Treaty (1996), Apr. 12, 1997, S. Treaty Doc. No. 105-17, 1997 WL 447232.

<sup>18</sup> Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, Oct. 26, 1961, 12 U.S.T. 2377 [hereinafter Rome Convention].

<sup>19</sup> Patent Cooperation Treaty (1970), 28 UST 7645 (1979).

<sup>20</sup> Patent Law Treaty, June 1, 2000, 39 I.L.M. 1047.

<sup>21</sup> Convention Establishing the World Intellectual Property Organization, July 14, 1967, 21 U.S.T. 1770, 828 U.N.T.S. 3.

<sup>22</sup> BIN CHENG, *STUDIES IN INTERNATIONAL SPACE LAW*, 1xi (Clarendon Press 1994).

law is that part of the existing legal systems on Earth which relates to outer space or to activities in or involving outer space. The term functionalism, in the context of space law and its application, is believed to mean that once a space activity is lawful, it may be conducted as such under *lex spacialis*, or special rules, regardless of where the activity takes place.<sup>23</sup> In distinction to the functionalist view, there also exists a spatialist theory which appears to favour the application of a presumed autonomous system of laws whereby the scope of space law for legal purposes can be divided into different areas of human activity for each of which a *lex loci spacialis* could be made applicable.<sup>24</sup> That said, bearing in mind the widely acknowledged fact that the legal system which has been most directly concerned is public international law, there is a consensus to the effect that alongside international space law, there are various systems of domestic space law. Consequently, the argument<sup>25</sup> stands that with the particularity of the nature, characteristics, and scope of international space law, different approaches should be adopted when deducing and analyzing its sources based upon either notional, doctrinal, material, evidential or sanctionable approaches.

In spite of the different available approaches which one may adopt in ascertaining the rules of space law, suffice it to state for the purposes of this article, that in dealing with the general subject of sources of the present space law, this author aligns with the assertion, that:

[T]he regulation of space activities consists of, and is growing in, two layers of legal norms: The first layer represented by the international law of outer space that governs the space activities of international persons, i.e. States and international intergovernmental organizations, which also create this law

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<sup>23</sup> See Chia-Jui Cheng, *New Sources of International Space Law*, citing, HENRI WASSENBERGH, PRINCIPLES OF SPACE LAW IN HINDSIGHT 18 (Springer 1991), in THE USE OF AIR AND OUTER SPACE COOPERATION AND COMPETITION: PROC. OF THE INT. CONF. ON AIR AND OUTER SPACE AT THE SERVICE OF WORLD PEACE AND PROSPERITY 213, Beijing, China Aug. 21-23, 1995 (Kluwer Law International, 1998).

<sup>24</sup> Cheng, *supra* note 23; Eileen Galloway, *Should the UN Draft a Treaty on Earth Resources Satellite? A Pro and Con Analysis*, 3 J. SPACE L. 78, 78-79 (1979).

<sup>25</sup> Cheng, *supra* note 23, at 207-08.

through a growing number of bilateral and multilateral treaties of different kinds, mostly dealing with international cooperation and individual projects thereof, which have been concluded between two or more States and international organizations. The second layer of the legal regulation of space activities has been developing particularly during the recent period by means of national laws adopted by individual space faring States. These laws govern the activities of States and their space agencies, implement the principles of international space law at the level of domestic legal orders, and also regulate the activities of their nationals, both physical and juridical persons.<sup>26</sup>

Suffice it to state that, the prime legislative document applicable to space activities emerged as the 1963 *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*<sup>27</sup>, adopted in the form of a United Nations General Assembly Resolution. That Declaration was transformed into the legally binding 1967 *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*<sup>28</sup>. In the following years, an additional four treaties intended to regulate human activities in outer space were developed under the auspices of the United Nations. These treaties include: The 1968 *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space*<sup>29</sup>, the 1972

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<sup>26</sup> Vladimir Kopal, *Existing United Nations Treaties: Strengths and Needs*, in PROC. OF THE WORKSHOP ON SPACE LAW IN THE TWENTY-FIRST CENTURY, UNISPACE III TECHNICAL FORUM 11 (1999); Vladimir Kopal, *Introduction to the United Nations Treaties and Principles on Outer Space*, in PROCEEDINGS OF THE UNITED NATIONS / INTERNATIONAL INSTITUTE OF AIR AND SPACE LAW WORKSHOP ON CAPACITY BUILDING IN SPACE LAW 10-11 (The Hague, 2003). For a brief discussion on the definition and sources of space law see also: Tare Brisibe, *Law and Regulation of Activities Related to Outer Space in Nigeria*, 4 ZLW 556-560 (2006).

<sup>27</sup> Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, G.A. Res. 1962, U.N. GAOR, 18th Sess., Supp. No. 15, at 15, U.N. Doc. A/5515 (1964).

<sup>28</sup> 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 Treaty].

<sup>29</sup> 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.

*Convention on International Liability for Damage Caused by Space Objects*<sup>30</sup>, the 1976 *Convention on Registration of Objects Launched into Outer Space*<sup>31</sup>, and the 1979 *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*<sup>32</sup>. The United Nations General Assembly also adopted four Resolutions relating to outer space. These Resolutions which themselves establish a number of principles are comprised of the 1982 *Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting*<sup>33</sup>, the 1986 *Principles Relating to Remote Sensing of the Earth from Outer Space*<sup>34</sup>, the 1992 *Principles Relevant to the Use of Nuclear Power Sources in Outer Space*<sup>35</sup>, and the 1996 *Declaration by the United Nations Committee on the Peaceful Uses of Outer Space on International Cooperation in the Exploration and Use of the Outer Space for the Benefit and the Interest of All States, Taking into Particular Account the Needs of Developing Countries*<sup>36</sup>.

In addition to being Party to the Outer Space Treaty<sup>37</sup>, as well as the Rescue Agreement<sup>38</sup>, Nigeria recently became Party to the Liability Convention<sup>39</sup> and has taken steps to accede to

16, at 5, U.N. Doc. A/6716 (1968), 19 U.S.T. 7570, 1968 U.S.T. LEXIS 584 [hereinafter Rescue Agreement].

<sup>30</sup> Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 961 UNTS 187 [hereinafter Liability Convention].

<sup>31</sup> 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].

<sup>32</sup> 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.

<sup>33</sup> 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).

<sup>34</sup> 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).

<sup>35</sup> Principles Relevant to the Use of Nuclear Power Sources in Outer Space, GA Res. 47/68 (Dec. 14, 1992).

<sup>36</sup> Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of all States, Taking into Particular Account the Needs of Developing Countries, G.A. Res. 51/122, U.N. Doc. A/AC.105/572/Rev. 1 (1996) [hereinafter Declaration on International Cooperation].

<sup>37</sup> Outer Space Treaty, *supra* note 28.

<sup>38</sup> Rescue Agreement, *supra* note 29.

<sup>39</sup> Liability Convention, *supra* note 30.

the Registration Convention<sup>40</sup>. Nonetheless, it is interesting to note that of all the international space law instruments mentioned above, the sole explicit reference to intellectual property rights is made in the Declaration on International Cooperation<sup>41</sup>. Its second paragraph provides:

States are free to determine all aspects of their participation in international cooperation in the exploration and use of outer space on an equitable and mutually acceptable basis. Contractual terms in such cooperative ventures should be fair and reasonable and they should be in full compliance with the legitimate rights and interests of the parties concerned as, for example, with intellectual property rights.<sup>42</sup>

That said, and as far as the thrust of this article is concerned, the international intellectual property law framework does address the conduct of satellite communications and remote sensing in certain respects which are examined hereinafter.

#### A. *Satellite Communications*<sup>43</sup>

With respect to satellite communications, the belief is that satellite broadcasting raises a large number of problems of considerable interest in the copyright field. The problem posed herein (and to a lesser degree, the problem regarding rights in encrypted transmissions), is that whereas copyright protection remains national by nature, satellite transmissions do not conform to national boundaries. This is compounded by the fact that signals may be transmitted to the satellite from one specific country (or from extraterritorial waters or other places outside the jurisdiction of any country), but can be received in two or more countries. Accordingly, a variety of national laws may be relevant to determining the consequences in copyright law of a par-

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<sup>40</sup> Registration Convention, *supra* note 31.

<sup>41</sup> Declaration on International Cooperation, *supra* note 36.

<sup>42</sup> *Id.*

<sup>43</sup> See INTELLECTUAL PROPERTY HANDBOOK, *supra* note 1, ¶¶ 7.98-7.103; STEWART WHITE ET AL., SATELLITE COMMUNICATIONS IN EUROPE: LAW AND REGULATION 293-355 (Longman 1994).

ticular transmission. Under Article 11*bis*(1) of the *Berne Convention*, broadcasting is one of the forms of communication to the public that is covered by the rights granted under that Convention, and since that provision grants authors of literary and artistic works the rights to "broadcasting of their works or the communication thereof to the public by any other means of wireless diffusion of signs, sounds or images," it is obvious that satellite broadcasting is covered by those rights.<sup>44</sup> More particularly, Article 11*bis*(1) provides as follows:

Authors of literary and artistic works shall enjoy the exclusive right of authorizing:

- (i) the broadcasting of their works or the communication thereof to the public by any other means of wireless diffusion of signs, sounds or images;
- (ii) any communication to the public by wire or by rebroadcasting of the broadcast of the work, when this communication is made by an organization other than the original one;
- (iii) the public communication by loudspeaker or any other analogous instrument transmitting, by signs, sounds or images, the broadcast of the work.<sup>45</sup>

From the foregoing, it must be determined which law or laws apply to such international transmissions. Is it the law of the country from which the transmission originates only, is it the law of the countries in which it can be received, or is it — where applicable — both? This question is of particular interest in those cases where, under Article 11*bis*(2) of the *Berne Convention*, non-voluntary licenses apply in one country, for example the country from which the transmission originates, but not in others, for example the country or countries where the transmission is received. For the sake of clarity, Article 11*bis*(2) provides as follows:

It shall be a matter for legislation in the countries of the Union to determine the conditions under which the rights mentioned

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<sup>44</sup> Berne Convention, *supra* note 15, at art. 11*bis*(1).

<sup>45</sup> *Id.*

in the preceding paragraph may be exercised, but these conditions shall apply only in the countries where they have been prescribed. They shall not in any circumstances be prejudicial to the moral rights of the author, nor to his right to obtain equitable remuneration which, in the absence of agreement, shall be fixed by competent authority.<sup>46</sup>

In this respect, the records<sup>47</sup> indicate that one theory leans to the belief that broadcasting takes place in the transmitting and receiving States. The other theory is that broadcasting only takes place in the State from where the signals are transmitted to the satellite. Each theory naturally gives rise to practical difficulties. As with regards to the latter, it presupposes that the "emitting" State has adequate laws relating to copyright and related rights. The first theory also causes potential difficulties because *inter alia*, it requires a broadcaster to obtain consent from each territory within the footprint of the satellite. However, the WIPO is of the view<sup>48</sup> that a consensus seems to be emerging, to the effect that the applicable law is that of the country from which the transmission originates. However, in those cases where the transmission originates from a country which does not grant exclusive broadcasting rights, there is a tendency towards stretching the international applicability of national legislation as much as possible, in order to avoid to the extent possible, the use of countries without copyright protection, or with inadequate protection, as "safe havens."<sup>49</sup> A related question would concern the identification of the relevant right-owners in those cases where the rights have been granted on a territorial basis, and where there are different owners of the rights in the country where the transmission originates and in the country or countries where it can be received. Here again, the WIPO<sup>50</sup> is of the view that the solution is first and foremost to be found in well coordinated international contracts which do not leave any doubt in that respect.

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<sup>46</sup> *Id.* at art. 11bis(2).

<sup>47</sup> See White, *supra* note 43, at 296.

<sup>48</sup> See INTELLECTUAL PROPERTY HANDBOOK, *supra* note 1, at ¶ 7.100.

<sup>49</sup> *Id.*

<sup>50</sup> *Id.* at 7.101.

Further problems can be seen to arise out of the language set forth in other relevant conventions relating to satellite transmissions and copyrights. This is evident from the provisions of the *Rome Convention*<sup>51</sup>. Summarily, the *Rome Convention* provides secure protection in performances of performers, phonograms of producers of phonograms and broadcasts of broadcasting organizations. For the purposes of the article, it is pertinent to note that the *Rome Convention* in Article 3(f) defines broadcasting as "transmission by wireless means for public reception of sounds or of images and sounds,"<sup>52</sup> whilst pursuant to Article 3(g) rebroadcasting means "the simultaneous broadcasting by one broadcasting organisation of the broadcast of another broadcasting organisation."<sup>53</sup> These definitions obviously encompass transmissions made over telecommunications satellites. The crux of the problem lies in the *Rome Convention's* Articles 4-6 which request States to, upon the satisfaction of certain criteria, grant "national treatment" (as defined in the Convention's Article 2) to certain entities including broadcasters.<sup>54</sup> It appears therefore that, as a consequence of the rights for States to make reservations under this Convention, its protective effect is neither complete nor homogenous.

### B. Remote Sensing<sup>55</sup>

In the realm of remote sensing, it has been argued that quite like the Cold War human spaceflight programs, the early political rationale for remote sensing was to demonstrate technological superiority of participating States. This meant that the primary focus was on the space segment where satellites displayed technical sophistication overhead. This space segment focus meant however, that attention to the satellites product,

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<sup>51</sup> Rome Convention, *supra* note 18.

<sup>52</sup> *Id.* at art. 3(f).

<sup>53</sup> *Id.* at art. 3(g).

<sup>54</sup> *Id.* at arts. 4-6.

<sup>55</sup> Joanne Irene Gabrynowicz, *Expanding Global Remote Sensing Activities*, in PROC. OF THE WORKSHOP ON SPACE LAW IN THE TWENTY-FIRST CENTURY, UNISPACE III TECHNICAL FORUM 123 (1999); D. Gervais, *International Copyright Law Related to Outer Space Activities*, in WORK SHOP PROCEEDINGS, INTELL. PROP. RTS. AND SPACE ACTIVITIES 188 (Dec. 1994).

i.e. data, was virtually non-existent. As a result, a long term, coherent regional and global approach to the archiving of remotely sensed data has yet to be established. Nonetheless, some States have since recognised the economic value of remotely sensed data in both the public and private sectors which in turn has driven data-oriented organizational efforts. Thus, emerging approaches emphasize intellectual property rights and data protection. It must be said though, that the consequence of protecting databases containing remote sensing data is a potentially difficult area. This is because, pursuant to Article 2(5) of the *Berne Convention*, databases are protected by copyright as original, that is, if they are intellectual creations "by reason of the selection or arrangement of their contents"<sup>56</sup>. This derives from the provisions of Article 2(5) of the *Berne Convention* which also states that "[c]ollections of literary or artistic works such as encyclopaedias and anthologies which, by reason of the selection and arrangement of their contents, constitute intellectual creations shall be protected as such, without prejudice to the copyright in each of the works forming part of such collections."<sup>57</sup>

The application of Article 2(5) of the *Berne Convention* to databases is peculiar considering that in most electronic databases, the data is not "arranged" since the program operating the database, usually through an index system, will locate data useful to a particular user. Therefore, only the selection of data remains as a possible way of getting under the copyright umbrella.<sup>58</sup> Furthermore, the protection of databases is construed as different from other categories of works since the protection accorded only covers the extrinsic structure of the database. This obviously excludes the contents of the database that typically would be raw data or works, parts of works, and the rights in which belong to rights-holders other than the maker of the database. Such issues may be witnessed in the case of earth remote sensing data obtained in raw binary form that is subsequently dumped on databases without selection or arrangement

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<sup>56</sup> Berne Convention, *supra* note 15, at art. 2(5).

<sup>57</sup> *Id.*

<sup>58</sup> See D. Gervais, *supra* note 55.

of any kind, thereby precluding any presumption of originality. A similar preclusion applies to maps and other works which are the result of creative work following significant enhancements to raw data. Once again protection would apply to the work as a whole, such as a digital terrain model of a particular geographical region, and not the data represented on the model.

Because Article 2(5) of the *Berne Convention* does not indicate any specific category of works to which the level of protection shall be assimilated, it should be assumed that the level of protection to be granted is that which, in general, is granted to literary and artistic works under the *Berne Convention*. Though the said provision in Article 2(5) of the *Berne Convention* limits its scope to original collections of literary and artistic works, this does not mean that there is no basis in the *Berne Convention* for the protection of original collections of other material such as data, and it has been argued that a basis can be found in Article 2(1) of the *Berne Convention*, which provides, *inter alia*, that "[t]he expression 'literary and artistic works' shall include every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression."<sup>59</sup>

While the list of categories of works listed in Article 2(1) of the *Berne Convention* does not include databases, it is clear that the list is not exhaustive, and records<sup>60</sup> indicate a general consensus emerging that every (original) production in the above-mentioned domain must be protected under the Convention. Despite the ambiguity provided by the *Berne Convention*, an explicit provision on the protection of databases was included in Article 10(2) of the *TRIPS Agreement* which provides that:

Compilations of data or other material, whether in machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected as such. Such protection, which shall not extend to the data or material itself, shall be without prejudice to any copyright subsisting in the data or material itself.<sup>61</sup>

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<sup>59</sup> Berne Convention, *supra* note 15, at art. 2(1).

<sup>60</sup> See INTELLECTUAL PROPERTY HANDBOOK, *supra* note 1, at ¶ 7.36.

<sup>61</sup> TRIPS Agreement, *supra* note 16, at art. 10(2).

Furthermore, the WIPO Copyright Treaty contains in its Article 5 provisions to the effect that:

Compilations of data or other material, in any form, which by reason of the selection or arrangement of their contents constitute intellectual creations, are protected as such. This protection does not extend to the data or the material itself and is without prejudice to any copyright subsisting in the data or material contained in the compilation.<sup>62</sup>

It should also be noted that, the Diplomatic Conference which adopted the WIPO Copyright Treaty adopted, by consensus, a statement that "[t]he scope of protection for compilations of data (databases) under Article 5 of this Treaty, read with Article 2, is consistent with Article 2 of the *Berne Convention* and on a par with the relevant provisions of the TRIPS Agreement."<sup>63</sup> Article 2 of the WIPO Copyright Treaty, to which the agreed statement refers, provides that "[c]opyright protection extends to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such."<sup>64</sup>

What is pertinent to all of the above is that under the originality requirement of the WIPO Copyright Treaty, databases "by reason of the selection or arrangement" of their contents would stand protected, although this could also be construed to mean that some databases are not protected, even if they are of a considerable size and have been expensive to prepare. Such is, for example, the case where a database is "exhaustive", that is, it contains all the relevant data "without any selection or omission", and the data is arranged according to basic, straightforward rules, such as alphabetically, or in numerical or chronological order. Such databases, however, still represent substantial investments, and when stored in machine-readable form, they may easily and inexpensively be downloaded, copied and otherwise used. It has been argued that such investments should also be protected, for example, by a *sui generis* right, covering copying, distribution and communication to the public,

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<sup>62</sup> WIPO Copyright Treaty, *supra* note 17, at art. 5.

<sup>63</sup> *Id.* at art. 5.

<sup>64</sup> *Id.* at art. 2.

albeit for a shorter period than under copyright protection. The possibility of such *sui generis* protection is said to be on-going.

#### IV. CASE STUDIES FROM THE NIGERIAN SPACE PROGRAMME

On satellite telecommunications in general and broadcasting in particular, Nigeria, through the NASRDA embarked on the procurement of a hybrid geo-stationary communications satellite (Nigcomsat-1) designed to operate in the C, KU, KA and L radio frequency bands. Consequently, the anticipated broadcasting applications from Nigcomsat-1 when launched and operational will include, Direct-to-Home broadcasting, multimedia and video streaming. Bearing in mind the issues discussed in the preceding section with respect to which law or laws apply to such international transmissions, it can be stated without a doubt that the applicable copyright laws are those in force on Nigerian territory, being the country of transmission. This is consequent upon provisions of the Nigerian Copyright Act, Cap 68 Laws of the Federation, 1990, which reads in its Section 1(1) that works eligible for copyright include: "literary works; musical works; artistic works; cinematograph films; sound recordings; and broadcasts."<sup>65</sup> Furthermore, Section 7 of the Nigerian Copyright Act provides that:

(1) Subject to this section, copyright in a broadcast shall be the exclusive right to control the doing in Nigeria of any of the following acts, that is—

(a) the recording and the re-broadcasting of the whole or a substantial part of the broadcast;

(b) the communication to the public of the whole or a substantial part of a television broadcast, either in its original form or in any form recognisably derived from the original; and

(c) the distribution to the public for commercial purposes, of copies of the work, by way of rental, lease, hire, loan or similar arrangement.

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<sup>65</sup> Nigerian Copyright Act, Cap 68 Laws of the Federation, 1990, at §1(1).

(2) The copyright in a television broadcast shall include the right to control the taking of still photographs from the broadcast.

(3) The exceptions specified in paragraphs (a), (h), (k), (n) and (o) of the Second Schedule to this Act shall apply to the copyright in a broadcast, in like manner as they apply to copyright in literary, musical or artistic work or a cinematograph film.<sup>66</sup>

The same cannot be said for provisions intended to protect the broadcasts of broadcasting organizations, pursuant to the provisions of the *Rome Convention*, because on the controverted issue of "national treatment," Nigeria made reservations to the *Rome Convention's* Articles 5(3) (concerning Article 5(1)(c), 6(2) and 16(1)(a)(ii)-(iv). Nonetheless, with respect to the protection of broadcasts of broadcasting organizations and the broadcasting of works incorporated in cinematograph film, the Nigerian Copyright Act further provides in its Section 8:

(1) Where the owner of the copyright in any literary, musical or artistic work authorises a person to incorporate the work in a cinematograph film and a broadcasting authority broadcasts the film, the owner of the copyright shall, in the absence of any express agreement to the contrary between the owner and that person, be deemed to have authorised the broadcast.

(2) Notwithstanding subsection (1) of this section, where a broadcasting authority broadcasts a cinematograph film in which a musical work is incorporated, the owner of the right to broadcast the musical work shall, subject to this Act, be entitled to receive fair compensation from the broadcasting authority.

(3) In the absence of an agreement on or relating to the compensation payable under subsection (2) of this section, the amount of compensation shall be determined by the court.<sup>67</sup>

With respect to the protection of data from remote sensing satellites and databases in the Nigerian context, it is of note

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<sup>66</sup> *Id.* at §7.

<sup>67</sup> *Id.* at §8.

that Nigeria through the NASRDA, enabled the launch of an earth observation micro-satellite (*NigeriaSat -1*) in 2003 as part of the *Disaster Monitoring Constellation (DMC)* whereby each of the satellites is independently owned and operated by one nation or organization, though the whole constellation is designed to act as a single coordinated instrument if required.<sup>68</sup> Nations contributing spacecraft to the DMC include Algeria, China, Nigeria, Turkey and the United Kingdom.<sup>69</sup> Each DMC Member State therefore operates a satellite in a co-coordinated phased orbit, carrying a 32 meter multispectral imager and operates a compatible ground station.<sup>70</sup> The participating States remain committed towards working together to share assets and data for mutual benefit. The provisions relating to the protection of intellectual property under the DMC framework are unique in the sense that a Commercial Operating Agreement between all the Parties enabled the establishment of a subsidiary company called DMC International Imaging Ltd (DMCII), headquartered in the United Kingdom, to serve as a central commercial operation for international sales.<sup>71</sup> DMCII is therefore responsible for amongst other functions, the processing and archiving of remotely sensed data. This is without prejudice to the right of participating States, including Nigeria, to maintain their own national archives, whilst being able to retrieve their own data from the DMCII archive for their national use.

In this respect, we will also recall that the Collaboration Agreement between Surrey Satellite Technology Limited<sup>72</sup> and participating States, including Nigeria, provides that "all foreground information resulting from collaboration under this

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<sup>68</sup> Collaboration Agreement for the Disaster Monitoring Constellation Between Surrey Satellite Technology Limited (SSTL) and Federal Ministry of Science and Technology (FMST), Supplemental to a Purchase and Sales Agreement between SSTL and FMST, Nov. 7, 2002, at Appendix [hereinafter Collaboration Agreement]. (On file with author.)

<sup>69</sup> DMC Members Commercial Operating Agreement, Nov. 19, 2004. [hereinafter Commercial Operating Agreement].

<sup>70</sup> Appendix to Collaboration Agreement, *supra* note 68, at 3.

<sup>71</sup> Commercial Operating Agreement, *supra* note 69, at 1.

<sup>72</sup> Surrey Satellite Technology Limited is the United Kingdom based technology company that built the satellites within the DMC constellation and manages the day to day operations of DMCII.

agreement, including any copyright or other form of intellectual property rights (IPR) including background rights, will reside with the party that originates such IPR."<sup>73</sup> It is apparent therefore that the nature of intellectual property protection accorded to remotely sensed data (as well as data held on databases) from the Nigériasat-1 satellite is a consequence of several factors including where the data is stored and more importantly, the rights accruing from the enhancement and/or processing of raw data to produce "foreground." The accession by Nigeria to the WIPO Copyright Treaty on January 1995, and the self-executing nature of this Treaty is pertinent to the issues being discussed here.

Similarly, the provisions of the Nigerian Copyright Act are of direct relevance, as Section 4 reads:

(1) Copyright shall be conferred by this section on every work if—(a) on the date of its first publication at least one of the authors is—(i) a citizen of or domiciled in, or (ii) a body corporate established by or under the laws of a country that is a party to an obligation in a treaty or other international agreement to which Nigeria is a party; (b) the work is first published—(i) in a country which is a party to an obligation in a treaty or other international agreement to which Nigeria is party; (ii) by the United Nations or any of its specialised agencies; (iii) by the Organisation of African Unity, or (iv) by the Economic Community of West African States. (2) Where the question arises as to whether a country is a party to an obligation in a treaty or other international agreement to which Nigeria is also a party, a certificate from the Commission to that effect shall be conclusive proof of that fact.<sup>74</sup>

In addition to Section 4 above, the Nigerian Copyright Act provides in Section 9(1) that "[c]opyright conferred by sections 2 and 3 of this Act, shall vest initially in the author,"<sup>75</sup> and Section 9(5) of the same Act provides that:

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<sup>73</sup> Collaboration Agreement, *supra* note 68, at art. 5.

<sup>74</sup> Nigerian Copyright Act, *supra* note 65, at §4.

<sup>75</sup> *Id.* at §9(1).

Copyright conferred by section 4 of this Act, shall vest initially in the Government on behalf of the Federal Republic of Nigeria, in the State authority on behalf of the State in question, or in the international body in question, as the case may be, and not in the author.<sup>76</sup>

The protection of intellectual property as applied to remotely sensed and archived data in Nigeria must also acknowledge the proposals set forth in the 2003 National Geoinformation Policy which intends to facilitate coordinated production and utilisation of Geospatial data, common to multiple applications in order to eliminate duplication of efforts and waste of resources, across a large number of Nigerian users.<sup>77</sup> That Policy provides for the protection of intellectual property arising from remotely sensed data.<sup>78</sup> In particular, the policy states that a data owner shall own the copyrights of the data produced and for value-added data, the producer shall own the copyrights of only the value-added component of such data.<sup>79</sup> For integrated, non-decomposable composite datasets, the producer of the data shall own the copyright provided that permission has been obtained from the copyright holder(s) of the individual base data.<sup>80</sup> Furthermore, a data owner, custodian and user shall prior to the utilization of any geo-spatial data set to which the user has gained access, enter into a licensing agreement with regards to the use of the dataset.<sup>81</sup> The Licensing agreement shall provide for: a duration; the legal protection of the copyrights of the owner and any other interested party; a maximum number of permitted users within the organization (where an organization is the beneficiary) and any other provisions.<sup>82</sup> To facilitate the adoption of appropriate legislation, a legal sub-committee to be comprised of stakeholders drawn from across the diverse range

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<sup>76</sup> *Id.* at §9(5).

<sup>77</sup> Federal Ministry of Science and Technology, Draft National GeoInformation Policy, 8-9 (Sept. 2003). (On file with author.)

<sup>78</sup> *Id.* at 30, para. 5.2.2.

<sup>79</sup> *Id.*

<sup>80</sup> *Id.*

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*

of geospatial data creators and users, is in the process of being constituted.

#### V. FUTURE SPACE RELATED ACTIVITIES IN NIGERIA AND THE PROTECTION OF INTELLECTUAL PROPERTY RIGHTS

The Government of Nigeria's decision, as set forth in the National Policy on Space to make Nigeria build indigenous competence in developing and building appropriate hardware and software in space technology as an essential tool for its socio-economic development, is laudable. The Government, no doubt recognizes the fact that in as much as space technology remains one of the most advanced technological fields of human endeavor, it is a critical aspect of any nation's development. The future of the Nigerian space programme is ambitious. For instance, it aims to achieve the launching of a Nigerian manufactured satellite from Nigerian territory in the coming years. This long term vision would necessarily require a re-orientation of the current earth based space related activities, to a different range of activities occurring in outer space. Whilst the national policy objectives are being pursued, it is recommended that attention be paid to the fruit of intellectual creation, for a variety of reasons.

The capital intensive nature of space programmes necessitates collaboration with the private sector (local or foreign). It is important not to forget that benefits from a nation's space programme will be licensed to third parties as part of government's role in spinning off various technological benefits to society at large. Collaborating with the private sector and enabling spin-offs from space based technologies has to be motivated by the expectation that the investment in research and development could be recovered in the future. This guarantee can be achieved through adequate legal frameworks designed to protect arising intellectual property rights in all their ramifications, thereby encouraging invention and competition. Besides, space activities are increasingly globalized and may be the result of international co-operation arrangements with foreign entities (governmental or non-governmental). Maintaining and fostering new co-operative arrangements with other nations (bi-lateral or

multi-lateral) will enable Nigeria to: develop hardware; coordinate utilization of data and scientific results; enable technology transfer; and participate in formulation of the ground rules for global standards setting. The need will surely arise, to proactively pursue a simple, uniform and reliable international legal framework. Likewise, at the national level, although national intellectual property laws are relatively well harmonized, different national laws still apply different principles, and thus the intellectual property laws in Nigeria must be revisited, from time to time, in order to ensure their adequacy.

# HOW ON EARTH TERRESTRIAL LAWS CAN PROTECT GEOSPATIAL DATA

*Julie D. Cromer\**

## INTRODUCTION

In the exploration and use of outer space, including the moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty.<sup>1</sup>

Authors shall enjoy, in respect of works for which they are protected...the rights which their respective laws do now or may hereafter grant to their nationals....<sup>2</sup>

Laws are a byproduct of conflict and exist in anticipation of conflict, seeking to guide conduct in a way to minimize situations in which reasonable and unreasonable minds could differ. If conflict were not an inherent part of society, laws would largely be unnecessary. It is unsurprising, then, that in an area of the law that presupposes action among its participants without conflict, an aim of perfect convergence may be frustrated, especially when juxtaposed with another legal field where conflict not only is expected, but also influences the body of law itself.

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\* Assistant Professor of Law, Thomas Jefferson School of Law. The author would like specifically to thank Joanne Irene Gabrynowicz, Kali Murray, Lee Ann Lockridge, Linda Keller and Claire Wright for their helpful input. The author would also like to thank the National Center for Remote Sensing, Air, and Space Law for its fascinating symposium and for initiating this invaluable discussion.

<sup>1</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, art. IX, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

<sup>2</sup> Berne Convention for the Protection of Literary and Artistic Works, art. V, 828 U.N.T.S. 221, S. Treaty Doc. 99-27, Sept. 9, 1886 [hereinafter Berne Convention].

Such is the case when considering the dual legal regimes of outer space and intellectual property. As noted in the Outer Space Treaty, "States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance."<sup>3</sup> This suggests an interaction among states that relies upon conflict avoidance to be successful, preserving outer space as the neutral zone in legal battle. But as technology improves, capabilities grow, and imagination expands, private actors are better able to utilize outer space in ways that inspire profit-seeking activities, relying upon the laws of the individual states to protect their individual ventures.

Remote sensing technology and the availability of the geospatial data it generates present examples of such a development. Location of the sensor in orbit notwithstanding, the ability to protect geospatial data in raw and imaged format may be essential to the encouragement of competition among actors, both private and public.<sup>4</sup> This protection is likely to occur under the umbrella of intellectual property, specifically copyright. Copyright is the arm of intellectual property law which protects original works of authorship, which collections of data usually are.<sup>5</sup>

With the simple introduction of intellectual property to outer space, conflict exists, and it is multifold. The mere policy of intellectual property is necessarily privatized in nature. Not only does it primarily concern the individual author, but it is also governed on a national, rather than international, basis. As such, the policy interests of intellectual property laws clash with those represented by the laws of outer space, creating a situation where the broad policies of the two regimes must be prioritized in order to proceed.

Moreover, conflict arises between individual states, which may have fundamentally different approaches to protection of

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<sup>3</sup> See Outer Space Treaty, *supra* note 1, at art. IX.

<sup>4</sup> See, e.g., Tare Brisibe, Assistant Director, Legal Services and International Cooperation, National Space Research and Development Agency, Nigeria, Remarks at the Conference, *Divergences and Convergences: A Symposium Addressing Space Law and Intellectual Property Regimes*, National Center for Remote Sensing, Air, and Space Law, University of Mississippi School of Law (Sept. 19, 2006).

<sup>5</sup> See, e.g., 17 U.S.C. § 101 (definition of "compilation").

any geospatial work in question. An initial conflict is procedural in nature, questioning which jurisdiction in fact governs the application of substantive copyright law to the work. Attempts have been made to provide analogies between outer space to the law of the seas, creating a tension between law of the crew and law of the flag.<sup>6</sup> In the world of remote sensing, and of outer space jurisdiction generally, even more players emerge, causing issues of potential applicable jurisdictions for territory and for choice of law to multiply.

The secondary conflict is that within substantive copyright and intellectual property laws. Copyright may protect images generated with geospatial data, but may fail to protect raw geospatial data transmitted from satellites en route to Earth in a completely intangible, and perhaps indistinguishable, form. Mechanisms may exist under a pure copyright regime to protect against the unauthorized appropriation of such data, but not if the subject matter of the data is considered to be outside the scope of copyright laws in the first place. Under other protective regimes, additional mechanisms have been introduced which may protect even basic facts from unauthorized appropriation from a database. Thus, choice-of-law problems thus may arise when an author is from a pure copyright regime and an infringer is not, or vice versa; and privatization of geospatial data, originating from the satellite collectors in outer space, opens conflict in an area of the universe which initially touts international cooperation as a primary goal.<sup>7</sup>

Part I of this article explains remote sensing technology and examines the role that intellectual property promises to play in connection with the future commercialization of geospatial data. Part II discusses the governing principles of outer space law and intellectual property law, identifying the potential conflicts arising from the clash of these two bodies of law. Part III then considers the conflict between the two regimes, not only using choice of law rules in the United States as a model to test how they might affect claimants of infringement in jurisdictions un-

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<sup>6</sup> See, e.g., BIN CHENG, *STUDIES IN INTERNATIONAL SPACE LAW* 623 (Clarendon Press 1997)..

<sup>7</sup> See Outer Space Treaty, *supra* note 1, at pmbl.

der the respective database protection regimes, but also considering that choice of law difference to highlight the divergent policy goals between intellectual property law and outer space law.

Part IV has two aims. It first addresses the substantive laws of copyright-based regimes and database-right regimes, discussing the protections that copyright, and specifically copyright as encoded by the United States, can offer to authors of works comprised of geospatial data. Part IV then considers a *sui generis* database right, which may be available to protect geospatial data as a result of statutory protections offered in Europe and the European Union Database Directive,<sup>8</sup> and the potential conflicts that its existence generates. Finally, Part V questions whether one regime or the other will be forced to adapt to maintain principles of uniformity or, in the alternative, if intellectual private property can coexist in geospatial data and other property in the auspices of outer space law. It suggests some conclusions that can be drawn from the clash of the regimes of intellectual property law and space law and raises issues that will have to be resolved in order to craft a framework sufficient to safeguard intellectual property in future remote sensing activities.

This article assumes the geospatial data in question are being generated, used, and copied for primarily commercial, non-military purposes not intended to invade individuals' privacy. This article does not address the interception of data for reasons contrary to national security and does not intend to address a course of action in those circumstances.

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<sup>8</sup> This article recognizes that other states offer copyright-based or *sui generis* protections as well, and refers primarily to the United States and Europe for the purpose of explanation.

## I. THE INTELLECTUAL PROPERTY ISSUE PRESENTED BY REMOTE SENSING

Since the first satellite in the *Landsat* system was launched in 1972,<sup>9</sup> the United States has been gathering geospatial data via satellite. Before the introduction of satellite technology, geospatial data and images could be collected and assembled through surveying activities, cartography, and aerial photography;<sup>10</sup> it had its beginnings “starting with photographs of the disposition of Confederate trenches from balloons during the American Civil War.”<sup>11</sup> Satellites both eased the data-gathering process and redefined geospatial data for the world. In its modern definition, geospatial data are “data files that are comprised of geographically-referenced features (i.e., land cover or soils [sic] types) that are described by geographic positions and attributes in a digital format.”<sup>12</sup> Familiar uses of geospatial data include weather forecasting, natural disaster monitoring, and military applications.<sup>13</sup>

Geospatial data are collected by satellite via the technology of remote sensing. In its simplest form, “[r]emote sensing is simply the collection of information from a distance about an object or an area without any direct physical contact.”<sup>14</sup> More specifically and in the context of data-gathering from space, during remote sensing satellites “detect... a continuous stream of digital data, [which] ...are transmitted to ground reception stations, processed to create defined data products, and made

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<sup>9</sup> *Landsat* is “[a] series of remote-sensing satellites in sun-synchronous, polar orbit that began in 1972.” S.A. DRURY, A GUIDE TO REMOTE SENSING: INTERPRETING IMAGES OF THE EARTH 188, (Oxford Science Publications 1990).

<sup>10</sup> See, e.g., W.G. REES, PHYSICAL PRINCIPLES OF REMOTE SENSING 2 (2d ed. 2001).

<sup>11</sup> DRURY, *supra* note 9, at 3.

<sup>12</sup> Report to the Chairman, Subcommittee on Department Operations, Nutrition and Foreign Agriculture, Committee on Agriculture, House of Representatives: USDA Service Centers: Multibillion Dollar Effort to Modernize Processes and Technology Faces Significant Risks, United States Gen. Accounting Office, GAO/AIMD-98-168 USDA Service Center IT Modernization, 5 (Aug. 1998).

<sup>13</sup> For a detailed discussion of applications of geospatial data, see, e.g., Drury, *supra* note 9, at 6-21.

<sup>14</sup> CHENG, *supra* note 6, at 572.

available for sale to users on a variety of digital data media."<sup>15</sup> The Principles Relating to Remote Sensing of the Earth from Outer Space<sup>16</sup> (the Principles) identify various applicable stages of the remote sensing process "not only [as] 'the operation of remote sensing space systems, primary data collection and storage stations,' but also [as] 'activities in processing, interpreting and disseminating the processed data.'"<sup>17</sup>

A great deal of creativity may go into the manipulation of geospatial data in order to create images that are not only representative of the electromagnetic data received by satellites from the earth, but also visually pleasing. W.G. Rees begins the second edition of *Physical Principles in Remote Sensing* with a series of plates: a false-color infrared aerial photograph of the Tay reed beds on the Firth of Tay, Scotland; a thermal infrared image of Death Valley; and an interferometric image of the Hector Mine earthquake area in California.<sup>18</sup> Each, while produced with geospatial data, is distinct, with distinguishing color schemes and manipulations.

The value of such remote sensing activities is incalculable. As Bin Cheng notes:

Remote sensing can provide accurate, detailed and, given the resources, almost instant information, which is not otherwise available or at least not easily available, on topographic features, including inaccessible jungles and mountain ranges, geological structure, soil types, crop species, crop health and crop yield, mineral resources, hydrocarbon resources, water pollution, coastal changes, ice floes and icebergs, and marine resources. Such information is obviously of tremendous value to national economic planning and the exploitation by either the State or by individuals of the natural resources of the world, including agriculture and forestry, fishery, and mining, as well as many related activities, such as shipping, cartogra-

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<sup>15</sup> See Columbia University, Center for International Earth Science Information Network, CIESIN Thematic Guides, <http://www.ciesin.org/TG/RS/sattech.html> (last visited Sept. 17, 2006).

<sup>16</sup> Principles Relating to Remote Sensing of the Earth from Outer Space, G.A. Res. 41/65, U.N. Doc. A/RES/41/65 (Dec. 3, 1986) [hereinafter Principles].

<sup>17</sup> See CHENG, *supra* note 6, at 596 (citing Principles at I).

<sup>18</sup> See REES, *supra* note 10, at plates 2, 3, and 7.

phy, the planning of trans-continental highways, and so forth.<sup>19</sup>

To the United States, the importance of remote sensing technology and geospatial data could not be clearer. According to the U.S. Office of Management and Budget, “[s]tudies indicate that roughly 80 percent of all government information has a geographic component.”<sup>20</sup> Speaking about President George W. Bush’s budgetary increases to the *Landsat 7* satellite program, Secretary of the Interior Gale Norton noted, “The funds will ensure that those who depend on these satellite images for public safety, research and planning will continue to receive them.”<sup>21</sup>

Although the dominant policy in nations such as the United States has been to maintain remote sensing capabilities in the public sector,<sup>22</sup> governmental providers are not the only bodies hoping to benefit from the information remote sensing can provide. In recent decades, it has become apparent that “all information of this nature will have important practical and commercial bearings”<sup>23</sup> as well. For example, the Earth Observation Satellite Company, or EOSAT, initially provided images costing from \$50 to \$200 each; images from its French counterpart, Spot-Image, were “freely available at £1,500 a time.”<sup>24</sup> Twenty years later, the Google Earth function of the popular web site [google.com](http://google.com) and the introduction of GeoPortail, the recently-launched French equivalent which offers “more detail of

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<sup>19</sup> See CHENG, *supra* note 6, at 587.

<sup>20</sup> E-GOV, <http://www.whitehouse.gov/omb/egov/c-2-1-geo.html> (last visited July 28, 2006).

<sup>21</sup> Press Release, U.S. Department of the Interior, *President Bush Proposes Increase in USGS Landsat 7 Funding for FY 2006* (Feb. 4, 2005), available at [http://www.doi.gov/news/05\\_News\\_Releases/050204a](http://www.doi.gov/news/05_News_Releases/050204a) (last visited Sept. 11, 2006).

<sup>22</sup> For a discussion of the history of Landsat and the struggle of commercialization, see Joanne Gabrynowicz, *The Perils of Landsat from Grassroots to Globalization: A Comprehensive Review of US Remote Sensing Law with a Few Thoughts for the Future*, 6 CHI. J. INT’L L. 45 (Summer 2005).

<sup>23</sup> See CHENG, *supra* note 6, at 587.

<sup>24</sup> *Id.* at 588.

its territory than Google Earth"<sup>25</sup> demonstrate that competition exists for providers of geospatial data and the images derived from them. Commentators have noted that the trend toward commercialization is "irreversible," and "[t]he trend towards greater availability of images of higher and higher resolution is probably also inevitable."<sup>26</sup>

If, then, as Joanne Gabrynowicz has noted, "a stable, long-term, open, national civilian land imaging capability is the closest to reality it has ever been,"<sup>27</sup> that civilian imaging capability will be accompanied by civilians who expect their investments in remote sensing technology and geospatial data to be protected as personal, intellectual property. This property interest may come at one of the several stages in the creation of an image or an assembly of geospatial data from remote sensing; and as a result, geospatial information garnered from any or all of these remote sensing activities "may carry a great deal of independent input, creating problems of ownership and intellectual property rights"<sup>28</sup> at each of the various stages.

## II. DIVERGENCES BETWEEN THE POLICIES OF OUTER SPACE AND INTELLECTUAL PROPERTY

That authors will seek to protect their creations of geospatial data is assured. For example, of the Rees examples above, some of the images bear a copyright notice; others specifically note that they are reproduced only with the courtesy or permission of the individual author.<sup>29</sup> The goal of intellectual property is to procure rights for these individual authors through the available mechanisms of national sovereigns. As the Berne

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<sup>25</sup> See, e.g., Reuters News Service, *French Unveil Own Answer to Google Earth; Site Quickly Swamped*, (June 26, 2006), available at <http://www.foxnews.com/story/0,2933,200946,00.html> (last visited Sept. 11, 2006).

<sup>26</sup> See CHENG, *supra* note 6, at 589.

<sup>27</sup> Gabrynowicz, *supra* note 22, at 67.

<sup>28</sup> See CHENG, *supra* note 6, at 594. "A similar problem may arise regarding also primary and processed data when remote sensing has been commercialized, but this can probably be overcome in the authorization and licensing process." *Id.*

<sup>29</sup> The aerial photograph of the Firth of Tay notes the copyright of the Cambridge University Collection. The images of Death Valley and the Hector Mine earthquake are "Reproduced by courtesy." As demonstrated *infra*, this is due largely in part to the governmental source of the California images.

Convention, which governs copyright internationally, states, "[a]uthors shall enjoy, in respect of works for which they are protected...the rights which their respective laws do now or may hereafter grant to their nationals."<sup>30</sup>

On its face, however, this simple Convention statement creates a rift between the basic policies underlying intellectual property and outer space law. The focus of intellectual property law is naturally centered on individuals and the rights that individuals have in their creations with respect to one another. This suggests a fundamental conflict with the laws of outer space, which seek harmony among nations to achieve cooperation and mutual assistance.<sup>31</sup> This conflict between the fundamental policies of the laws of intellectual property and the laws of outer space led to one observation that "[w]hile the scientific community considers the outer space as the 'Great Unknown,' so too does the legal community consider the protection of intellectual property in outer space."<sup>32</sup>

P.P.C. Haanappel notes that some of the basic features of international space law were set forth in the United Nations General Assembly Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space on December 13, 1963, which include:

...use of outer space shall be for the benefit of all mankind; outer space ...shall be free for ... use by all States on a basis of equality...; outer space ...[is] not subject to national appropriation by claims of sovereignty, use, exploration or by any other means; States bear international responsibility for national activities in outer space, whether carried on by governmental agencies or non-governmental entities; in the ...use of outer space, States shall be guided by the principles of co-operation and mutual assistance; a State on whose registry an object

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<sup>30</sup> Berne Convention, *supra* note 2, at art. V.

<sup>31</sup> Outer Space Treaty, *supra* note 1, at art. IX.

<sup>32</sup> Leo B. Malagar & Marlo Apalisok Magdoza-Malagar, *Int'l Law of Outer Space and the Protection of Intellectual Property Rights*, 17 B.U. INT'L L.J. 311, 349 (Fall 1999).

launched into outer space is carried shall retain jurisdiction and control thereof....<sup>33</sup>

Cooperation among the several nations is utmost in importance in the Outer Space Treaty. This is apparent in the corporeal world, encouraging countries to work together to share airspace, explore outer space, and facilitate the safety of astronauts and space personnel.

But even though the blanket statement has been made that "[t]here are no private rights in outer space, ...because outer space is *res communis*, not subject to appropriation, either in public or in private law[,] "<sup>34</sup> the interpretation of the Outer Space Treaty does not necessarily preclude intellectual property; its effect instead depends entirely upon the interpreter's viewpoint. This dichotomy is pointed out by Professors Reynolds and Merges, who note that the "treaty provisions could be read together to preclude [intellectual property] protection based on territoriality," or to "support the proposition that outer space is available for use by all, but that property rights, both tangible and intangible may be protected."<sup>35</sup> They note specifically that "under article VIII [of the Outer Space Treaty], states retain jurisdiction and control over objects launched into outer space,"<sup>36</sup> and that "under article VII, states are liable for the damages caused by objects or personnel under their jurisdiction and control."<sup>37</sup>

Professors Reynolds and Merges' discussion reflects interpretations in light of patent law, discussing the enactment of United States laws to cover space inventions. However, its extension to copyright principles is predictable. Just as article VIII of the Outer Space Treaty may apply to inventions launched into outer space, giving individual states jurisdiction and control, so too may it apply to works of authorship created

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<sup>33</sup> P.P.C. HAANAPPEL, *THE LAW AND POLICY OF AIR SPACE AND OUTER SPACE: A COMPARATIVE APPROACH* 8 (Kluwer Law Int'l 2003).

<sup>34</sup> *Id.* at 10-11.

<sup>35</sup> See GLENN H. REYNOLDS AND ROBERT P. MERGES, *OUTER SPACE: PROBLEMS OF LAW AND POLICY* 345-46 (2d. ed. 1997) (1989).

<sup>36</sup> *Id.* at 345.

<sup>37</sup> *Id.*

in outer space. And, just as article VII may apply to damages incurred in outer space with respect to inventions, so too, it may apply to infringers of works of authorship created in outer space.

### III. CONFLICT OF LAWS: WHICH LAWS APPLY, AND WHERE?

When the Berne Convention notes that the rights granted to individuals will be those that their "respective laws do now or may hereafter grant to their nationals,"<sup>38</sup> the discord inherent in this clause is twofold. In addition to the conflict between the policies of the two bodies of law noted above, the clause also suggests that individuals seeking intellectual property rights will not be governed by a uniform regime, but by each sovereign seeking to establish its own intellectual property laws governing its own citizens. Again from a standpoint contrasting the policy of intellectual policy with the policy of outer space law, which states "States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space...with due regard to the corresponding interests of all other States Parties to the Treaty,"<sup>39</sup> the two regimes seem to be fundamentally at odds. In one, international cooperation is paramount, opening the path for a legal system with a truly international set of laws. In the other, each state is free to employ its own system of developed laws, governing intellectual property.

But this recognition of national sovereignty gives rise to even more potential tension. First, Professors Reynolds and Merges write that the articles of the Outer Space Treaty making it possible for the ownership of intellectual property refer to the States' "jurisdiction and control." A question of the appropriate jurisdiction naturally follows, and must be addressed. Second, the intellectual property administrations of each nation may vary, despite the Berne Convention's edict. Therefore, in addition to the issue of where a case may be heard, the issue of

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<sup>38</sup> Berne Convention, *supra* note 2, at art. V.

<sup>39</sup> Outer Space Treaty, *supra* note 1, at art. IX.

which sovereign's intellectual property laws apply must be taken into account.

### A. *Jurisdiction of Intellectual Property in Space*

Jurisdiction is "[a] government's general power to exercise authority over all persons and things within its territory."<sup>40</sup> Jurisdiction gives the government not only police power over activities within its bounds, but also the judicial power to adjudicate disputes and interpret the relevant laws of the land. In a system such as intellectual property, that relies solely on law for the very existence of the rights afforded the owner, the determination of jurisdiction is of utmost importance.

Doctor Bin Cheng notes three separate types of jurisdiction that may apply in questions of outer space. The first is territorial jurisdiction, which Doctor Cheng defines as "the jurisdiction enjoyed by a State over its own territory, and all persons and things within it."<sup>41</sup> This territorial jurisdiction heeds the physical borders of each state, and gives the government of the territory jurisdiction over persons and property within it much in the nature of *in rem* jurisdiction in the United States.<sup>42</sup>

The second type of jurisdiction, Doctor Cheng terms "quasi-territorial jurisdiction." Under quasi-territorial jurisdiction, the State enjoys authority "over ships and aircraft of its nationality, and all persons and things on board."<sup>43</sup> Quasi-territorial jurisdiction is the law of the flag, used in maritime law to declare its authority over those on board vessels duly registered and operating under the laws of an individual sovereign.

Finally, Doctor Cheng recognizes personal jurisdiction, "the jurisdiction enjoyed by a State over its nationals, whether corporate or natural persons."<sup>44</sup> This use of personal jurisdiction is akin to the use of general *in personam* jurisdiction in the United States, which gives a state the authority to hear any action

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<sup>40</sup> BLACK'S LAW DICTIONARY 687 (7<sup>th</sup> ed. 2000).

<sup>41</sup> See CHENG, *supra* note 6, at 622.

<sup>42</sup> See, e.g., *International Shoe v. Washington*, 326 U.S. 310 (1945).

<sup>43</sup> See CHENG, *supra* note 6, at 622.

<sup>44</sup> *Id.*

against a citizen as long as the person is domiciled in that forum state.

The problem with the layers of possible jurisdiction that may or may not apply in outer space law is, of course, the potential for multiple states with claims to jurisdiction over an actor or object in space. As Doctor Cheng notes:

[T]here can often be a concurrence of jurisdictions even in fairly normal circumstances. Thus a person on board a ship which is anchored in the port of a third State would simultaneously be under the jurisdictions of three separate States: (i) the territorial jurisdiction of the territorial State, (ii) the quasi-territorial jurisdiction of the flag-State of the ship, and (iii) the personal jurisdiction of his national State.<sup>45</sup>

In addition to the multiple jurisdictions possible in connection with a property in outer space, further jurisdictional complications emerge when that property is intellectual in nature. In the United States, "[b]ecause a copyright is an intangible, incorporeal right, it has no situs apart from the domicile of the proprietor, and hence, a copyright infringement action must be based on *in personam* jurisdiction."<sup>46</sup> *In personam* jurisdiction relies upon the nature of the defendant's contacts with the forum state, so as long as the contacts are of a quality sufficient to demonstrate a connection between the defendant and the forum state, jurisdiction may attach.<sup>47</sup> Because a defendant may be mobile, then, general *in personam* jurisdiction may be found in any forum with which the defendant has had systematic and continuous contacts;<sup>48</sup> and specific *in personam* jurisdiction may be found where the cause of action arises so long as the contacts meet Constitutional due process.<sup>49</sup> In interpreting these stan-

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<sup>45</sup> *Id.* at 623.

<sup>46</sup> MELVILLE B. NIMMER & DAVID NIMMER, 3 NIMMER ON COPYRIGHT § 12.01[C] 12-33 (Matthew Bender 1985 - 2002).

<sup>47</sup> See *International Shoe*, 326 U.S. at 310.

<sup>48</sup> See *Helicopteros Nacionales de Colombia, S.A. v. Hall*, 466 U.S. 408, 418 (1984).

<sup>49</sup> In order for the contacts to rise to the level of fairness dictated by Constitutional due process, the defendant must have purposefully availed itself of the benefits and protections of the forum state so that it could reasonably anticipate being haled into court there, so that the exercise of jurisdiction would not offend the notions of fair play and substantial justice. See, e.g., *Hanson v. Denckla*, 357 U.S. 235, 255 (1958); *World-*

dards in U.S. courts, Nimmer notes that "over the years such jurisdiction has grown sufficiently capacious" so that even an offer of a sale for work has been held to invoke jurisdiction in the courts, "even if there is no actual sale."<sup>50</sup>

The combination of the two regimes leads to a jurisdictional quagmire that may have myriad possibilities when considering the specific problem of geospatial data as a result of remote sensing. Under the intellectual property approach of *in personam* jurisdiction, jurisdiction may possibly attach where the data is created, where the author resides, where the damage is incurred, or where the defendant infringer is located.

Using territorial jurisdiction, more questions are raised. First, the physical territorial limits of space are indefinite. Doctor Cheng notes that the absence of an agreement can lead some states that are particularly sensitive to having data gathered from them to extend their terrestrial territorial boundaries, thus extending the same boundaries in outer space. He notes that "[t]he result would be that it could be claimed that [remote sensing] satellites are operating within [nations'] territorial space and could in future continue to do so only subject to their consent."<sup>51</sup>

The ramification of the continued spread of physical territory, or the lack of clear delineations between states, on jurisdiction for intellectual property ownership and infringement is clear. If a "sensed" nation claims that satellites operating within its territorial boundaries are operating according to the laws of that nation, it is possible that the nation would perceive that any data or images taken of that nation due to the satellite's position above the land (or expanding coastline) are in fact subject to the intellectual property laws of the "sensed" nation.

Under quasi-territorial jurisdiction, the galactic law of the flag, jurisdiction would attach to the sovereign that put the satellite generating the data into space. This, of course, may be different from the vertical territory where the satellite is lo-

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Wide Volkswagen Corp. v. Woodson, 444 U.S. 286, 292 (1980), and Asahi Metal Co. v. Superior Court, 480 U.S. 102, 112 (1987).

<sup>50</sup> NIMMER, *supra* note 46, at 12-33 - 12-34.

<sup>51</sup> See CHENG, *supra* note 6, at 582.

cated, and could be different from the jurisdiction over a defendant. This raises further questions when the entity placing the satellite into orbit is not the governmental body of any one sovereign, but is a multinational corporation, again possibly subject to personal jurisdiction in several States.

### B. Analysis of Potential Conflict of Laws

The same circumstances, physically and conceptually, that raise issues of jurisdiction will also raise corresponding issues of choice of law. Specifically, in light of the conflicting laws which protect different aspects of geospatial data acquired from remote sensing technology, a detailed analysis may be required to determine which law would apply to govern disputes over data. Because "there is no sovereignty in outer space,"<sup>52</sup> and because of the mandate from the Berne Convention, recognizing the "respective laws" of the sovereigns, there may be nowhere else to look than to the individual sovereigns' laws to determine which law can direct us to the "right" answer.

As a default, the law of the forum is the law which applies to a case filed in that forum, *lex fori*.<sup>53</sup> However, when the parties are from different forums and the interests of those forums are in conflict, a court must often choose which jurisdiction's laws to apply to the situation. In the United States, courts generally use one of seven methodologies to determine which law would be of interest in a tort action;<sup>54</sup> only three state jurisdictions<sup>55</sup> use the *lex fori* approach. The most popular approaches

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<sup>52</sup> HAANAPPEL, *supra* note 33, at 23.

<sup>53</sup> See, e.g., JOSEPH STORY, COMMENTARIES ON THE CONFLICT OF LAWS, § 18, 19 (Boston: Hilliard, Gray & Co., 2d ed. 1841) (1834) (noting as a general maxim that "the laws of every state affect, and bind directly all property, whether real or personal, within its territory; and all persons, who are resident within it, whether natural born subjects or aliens, and also all contracts made, and acts done within it").

<sup>54</sup> EUGENE F. SCOLES, PETER HAY, PATRICK J. BORCHERS & SYMEON C. SYMEONIDES, CONFLICT OF LAWS, § 2.20, 86 (4<sup>th</sup> ed. 2004). Around the same time that individual states in the United States were abandoning the traditional *lex fori* approach, European scholars were doing the same, focusing on relationships as opposed to geography. See, *id.* § 2.6, at 15-18 (discussing the writings of Carl Georg von Wächter, who opined that judges should move on from *lex fori* choices if they produce an inequitable result, and Friedrich Carl von Savigny, who proposed consideration of legal relationships).

<sup>55</sup> Kentucky, Michigan, and Nevada. *Id.* § 2.20, at 86.

are *lex loci delicti*, applying the law of the place of the where the injury occurred,<sup>56</sup> and the Second Restatement, applying the law of the state with the "most significant relationship" to the occurrence and the parties.<sup>57</sup> Other approaches include "interest analysis,"<sup>58</sup> "comparative impairment,"<sup>59</sup> and the "better law."<sup>60</sup> Each of these choice-of-law methodologies either employs a policy consideration in its factors or offers a policy exception to the rigid application of its rule.<sup>61</sup>

Principle IV of the Principles Relating to Remote Sensing of the Earth from Outer Space<sup>62</sup> "provides that remote sensing activities shall be conducted among other things on the basis of respect for the principle of full and permanent sovereignty of States and peoples over their own wealth and natural resources, and 'shall not be conducted in a manner detrimental to the legitimate rights and interests of the sensed State.'"<sup>63</sup> With respect to geospatial data, this choice-of-law framework inherently points back to the conflict of policy: Because geospatial data physically originate in outer space, suggesting the harkening to the principles of cooperation and mutual assistance, the potential conflict of national laws regarding the intellectual property of geospatial data highlights a tension between the policies of regimes that may in fact be irreconcilable.

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<sup>56</sup> *Id.* § 17.2, at 713. Eleven states embrace this approach, including Alabama, Georgia, Kansas, Maryland, Montana, New Mexico, North Carolina, South Carolina, Virginia, West Virginia, and Wyoming.

<sup>57</sup> *Id.* § 17.24, at 759. Twenty-one states use the Second Restatement: Alaska, Arizona, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Iowa, Maine, Mississippi, Missouri, Nebraska, Ohio, Oklahoma, South Dakota, Tennessee, Texas, Utah, Vermont, and Washington.

<sup>58</sup> Interest analysis focuses on examining the governmental interests in having its law applied in a case. *Id.* § 17.12, at 726.

<sup>59</sup> Comparative impairment "calls for the application of the law of the state 'whose policies would be most seriously impaired if its law were not applied.'" *Id.* § 17.20, at 750, citing La. Civ. Code art. 3515.

<sup>60</sup> The better law approach is the "superiority of one rule of law over another in terms of socio-economic jurisprudential standards." *Id.* § 17.21, at 752, citing R. Leflar, *Choice Influencing Considerations in Conflicts Law*, 41 N.Y.U. L. REV. 267, 296 (1966).

<sup>61</sup> See generally SCOLES, *supra* note 54, § 17.34, at 786-789.

<sup>62</sup> Principles, *supra* note 16.

<sup>63</sup> See CHENG, *supra* note 6, at 596 (citing Principles, *supra* note 16, at IV).

#### IV. A STUDY IN CONFLICT: INTELLECTUAL PROPERTY PROTECTION OF GEOSPATIAL DATA

The conflicts inherent in the intellectual property protection of outer space actually come to light when considering the laws which would actually be utilized to protect raw and imaged geospatial data. As noted above, intellectual property protection of this data has been claimed, but not yet tested or justified. Framing the conflict directly in the context of geospatial data highlights the conundrums that remain to be solved. On one hand, the presentation of data has been protected through a pure copyright regime, which the laws of the United States represent. On the other hand, intellectual property regimes have created a right *sui generis* for the specific protection of databases, which has the effect of protecting some of the data themselves as well. The European model is such a regime. The models of the United States and Europe are contrasted below.

##### A. *Protection of Geospatial Databases through Copyright*

The primary way to protect an expression of information is through copyright. In particular, copyright protects "literary works" and "pictorial works," both of which can be used to convey geospatial data.<sup>64</sup> Thus, although copyright may not be used for the protection of facts<sup>65</sup> or ideas,<sup>66</sup> it may be used to protect the expressions of those data. With geospatial data, that expression can occur as a database, as a map, or as a photograph.<sup>67</sup> Private ownership of any of these expressions may be protected by the anti-circumvention provisions of the Digital Millennium Copyright Act and may be compromised by problems with fixation, public domain status, or a fair use defense.

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<sup>64</sup> See Copyright Act § 102(a), 17 U.S.C. § 102 (2006) [hereinafter Copyright Act].

<sup>65</sup> Feist Publ'n, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 344 (1991).

<sup>66</sup> Copyright Act, *supra* note 64, at § 102(b).

<sup>67</sup> This is, of course, mindful of the fact that certain geospatial data has been considered to be open to access by all. See, e.g., Gabrynowicz, *supra* note 22, at 52 (noting "the most important principle in remote sensing law and policy was...nondiscriminatory access").

### 1. Protection as a Database or Map

In the United States, a database may receive protection through copyright. By definition, copyright extends to original works of authorship that are fixed in a tangible medium of expression;<sup>68</sup> a "database" is "a comprehensive collection of related data organized for convenient access...."<sup>69</sup> A database may be protected in the U.S. Copyright Act through its protection afforded to compilations<sup>70</sup> – that is, works "formed by the collection and assembling of preexisting materials or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship."<sup>71</sup> What may be protected under the Copyright Act, therefore, is not the underlying data themselves, but the selection, arrangement, and coordination of these preexisting materials in the format of the database.<sup>72</sup>

The scope of protection that a database receives was examined by the Supreme Court in *Feist Publications Inc. v. Rural Telephone Servs. Corp.*<sup>73</sup> In *Feist*, the Court considered and denied copyright protection to a "white pages" telephone directory.<sup>74</sup> The *Feist* Court interpreted the white pages to be a section 103 compilation and looked for the requisite originality in the selection, coordination, and the arrangement of the data. In doing so, the *Feist* Court noted that the copyright protection for a compilation of facts is necessarily "thin,"<sup>75</sup> offering protection against infringement only if the copying is "very close...because

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<sup>68</sup> Copyright Act, *supra* note 64, at § 102(a).

<sup>69</sup> RANDOM HOUSE WEBSTER'S UNABRIDGED DICTIONARY 508 (2001). *See also* the definition of "databank": "a fund of information on a particular subject or group of related subjects...." *Id.*

<sup>70</sup> Copyright Act, *supra* note 64, at § 103(a).

<sup>71</sup> *Id.* at § 101.

<sup>72</sup> *Id.* at § 103. The copyright in a database "is independent of, and does not affect or enlarge the scope, duration, ownership, or subsistence of, any copyright protection in preexisting material." *Id.*

<sup>73</sup> *Feist*, 499 U.S. at 340.

<sup>74</sup> *Id.* at 342. The "white pages" of a telephone directory are the pages "in which [individual] subscribers are listed alphabetically." WEBSTER'S, *supra* note 69, at 2169.

<sup>75</sup> *Id.* at 349.

the majority of the work is unprotectable.”<sup>76</sup> The Supreme Court articulated a two-part test that assists a court to determine whether the work is in fact sufficiently original for copyright protection: the work must have been created by the author independently of any preexisting work, and the work must possess a minimal degree of creativity.<sup>77</sup> The Court found that because there is only one logical way to arrange a telephone directory, and because the selection was dictated by the subscribers of the telephone service, no there was no minimum creativity, and no originality could exist.<sup>78</sup> Therefore, regardless of evidence of wholesale copying, the database could not be protected.<sup>79</sup>

The *Feist* decision and the body of law surrounding compilations are directly related to geospatial data as delivered to Earth-bound entities via satellite. As Dennis Karjala notes, “[t]oday’s comprehensive geographic information systems may simply constitute electronically stored collections of spatial and nonspatial data, which under traditional copyright law are more naturally classified as ‘compilations’ rather than ‘maps.’”<sup>80</sup> Traditionally, a “map” is “a representation, usually on a flat surface, as of the features of an area of the earth or a portion of the heavens, showing them in their respective forms, sizes, and relationships according to some convention of representation”;<sup>81</sup> and maps have been expressly protected in American copyright from the first Copyright Act in 1790.<sup>82</sup> Applying the *Feist* decision squarely to the definition of “map,” because the features of the earth are shown “in their respective forms, sizes, and relationships,” it can be deduced that the selection, arrangement, and coordination of a map is far from creative and represents the same degree of originality found in a white pages telephone

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<sup>76</sup> See *Beaudin v. Ben and Jerry’s Homemade, Inc.*, 95 F.3d 1, 2 (2d Cir. 1996) (finding cow pattern hat not infringed by other cow pattern hats).

<sup>77</sup> *Feist*, 499 U.S. at 345.

<sup>78</sup> *Id.* at 363.

<sup>79</sup> *Id.*

<sup>80</sup> See Dennis S. Karjala, *Copyright in Electronic Maps*, 35 JURIMETRICS J. 395, 396 (Summer 1995).

<sup>81</sup> WEBSTER’S, *supra* note 69, at 1173.

<sup>82</sup> An Act for the Encouragement of Learning, 1 Stat. 124, ch. 15 (May 31, 1790) (repealed 1802). Maps have been expressly covered in each revision of the Copyright Act, which occurred in 1831, 1870, 1909 and 1976.

book. As Professor Kajala warned, “[i]f *Feist* applies to these maps, they will be denied copyright protection even against slavish takings, such as photocopying.”<sup>83</sup>

Yet copyright protection for maps has been far from lacking. Soon after the *Feist* decision, the Fifth Circuit squarely addressed the issue of copyrightability of maps in *Mason v. Montgomery Data, Inc.*<sup>84</sup> In *Mason*, the works at issue were real estate ownership maps, pictorially portraying “location, size, and shape of surveys, land grants, tracts, and various topographical features within the county.”<sup>85</sup> The author “drew the corners of lines of the surveys onto topographical maps of the county that were published by the United States Geological Survey (USGS),”<sup>86</sup> further enhanced the maps, and “used substantial judgment and discretion to reconcile inconsistencies among [his] various sources.”<sup>87</sup> The court, while qualifying the author’s maps as “compilations of facts,”<sup>88</sup> found them to be original, finding that the author exercised “creativity that far exceeds the required minimum level.”<sup>89</sup> In addition, the *Mason* court protected the maps as “pictorial, graphic, and sculptural works,” as specified by the Copyright Act, noting their “inherent pictorial or photographic nature that merits copyright protection.”<sup>90</sup>

As with the data in *Mason*, several geospatial mapping services include enhancements that entitle the map to copyright protection. For example, data enhancements on a single weather map can include “built-up’ areas, political boundaries, and coastlines.”<sup>91</sup> As potential enhancements for its user, Google Earth also offers as map “layers” three-dimensional buildings, roads, parks and recreational areas, and places for

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<sup>83</sup> See Kajala, *supra* note 80, at 398.

<sup>84</sup> *Mason v. Montgomery Data, Inc.*, 967 F.2d 135 (5<sup>th</sup> Cir. 1992).

<sup>85</sup> *Id.* at 136.

<sup>86</sup> *Id.*

<sup>87</sup> *Id.* at 136-137.

<sup>88</sup> *Id.* at 141.

<sup>89</sup> *Id.* at 142. The court also rejected the contention that the idea of the surveyed land and their expression had merged, subjecting it to a challenge under section 102(b) of the Copyright Act, discussed *supra*. *Id.* at 138.

<sup>90</sup> *Id.* at 142. See also Copyright Act, *supra* note 64, § 101 (“Pictorial, graphic, and sculptural works’ include ... maps, globes, charts....”).

<sup>91</sup> SDI Cookbook, Chapter 5, *Implementation Approaches*, available at <http://www.gsdi.org/pubs/cookbook/chapter05a.html> (last visited Aug. 27, 2006).

gas, food and lodging, to name a few,<sup>92</sup> and with each enhancement that the user desires, a new copyright notice appears. However, as noted above, these enhancements are likely entitled to only a "thin" copyright, protecting only against direct copying.

## 2. Protection as Photographs

Another way to address the copyrightability of geospatial data images is as a photograph. Geospatial imagery providers classify geospatial data images as photography; the NOAA<sup>93</sup> Satellite and Information Service boasts that "[c]urrent weather satellites can transmit visible or infrared *photos*, focus on a narrow or wide area, and maneuver in space to obtain maximum coverage" from its Geostationary Operational Environmental Satellites.<sup>94</sup> And, as photography is "the process or art of producing images of objects on sensitized surfaces by the chemical action of light or of other forms of radiant energy, as x-rays, gamma rays, or cosmic rays,"<sup>95</sup> the classification may be appropriate for collections of geospatial data, if not more so.

Like maps, photographs are expressly covered as copyrightable subject matter in the Copyright Act.<sup>96</sup> However, as Nimmer appropriately points out, "[a] rich literature surveys the terrain, discussing whether a photograph simply captures an uncopyrightable fact or qualifies as a work of authorship."<sup>97</sup> It has been argued that because of the mechanical nature of a photograph, this modicum does not exist; the camera merely records the "manual operation...of transferring to the plate the visible rep-

<sup>92</sup> Google Earth, at <http://earth.google.com>.

<sup>93</sup> National Oceanographic and Atmospheric Administration.

<sup>94</sup> NOAA Satellite and Information Service and National Environmental Satellite, Data and Information Service (NESDIS), *Satellites*, at <http://www.nesdis.noaa.gov/satellites.html> (last visited Aug. 27, 2006) (emphasis added).

<sup>95</sup> WEBSTER'S, *supra* note 69 at 1459.

<sup>96</sup> The Copyright Act extends protection to "pictorial, graphic, and sculptural works," Copyright Act, § 102(a)(5), which in turn are defined to include "two-dimensional and three-dimensional works of fine, graphic, and applied art, photographs." Copyright Act, *supra* note 64, § 101. The Supreme Court has extended protection to photographs. See *Burrow-Giles Lithographing Co. v. Sarony*, 111 U.S. 53, 60 (1884) (finding a photograph to be "an original work of art").

<sup>97</sup> NIMMER, *supra* note 46, § 2.08[E].

resentation of some existing object."<sup>98</sup> The Supreme Court in *Burrow-Giles Lithographing Co. v. Sarony* dismissed this idea, noting that the photograph came entirely from the plaintiff's

own original mental conception, to which he gave visible form by posing the said Oscar Wilde in front of the camera, selecting and arranging the costume, draperies, and other various accessories in said photograph, arranging and disposing the light and shade, suggesting and evoking the desired expression, and from such disposition, arrangement, or representation, made entirely by plaintiff, he produced the picture in suit.<sup>99</sup>

As a result, the *Sarony* Court found the photograph to be "an original work of art."<sup>100</sup>

*Sarony* seems distinguishable, however, when the photographed subject is merely a truthful, factual representation of the Earth. While some "creativity" may be said to exist when determining the position of the satellite/camera over the Earth, the contributing factors on which *Sarony* relied to enforce protection – accessories, light and shade, expressions, and other representations – are plainly absent when relying on a data stream from the satellite transmitter to fill out the image. With the creativity lacking, so too is the protection, perhaps conceding to a geospatial "photograph" only a thin copyright such as is offered to factual databases.

### 3. Protection under the Digital Millennium Copyright Act

Another way in which copyright could protect against the unauthorized appropriation of a database or photograph is through the Digital Millennium Copyright Act of 1999 ("DMCA").<sup>101</sup> The DMCA prohibits the circumvention of "a technological measure that effectively controls access to a work pro-

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<sup>98</sup> *Sarony*, 111 U.S. at 59.

<sup>99</sup> *Id.* at 60.

<sup>100</sup> *Id.* Because the case was one of first impression in the United States, the Supreme Court looked overseas for guidance. The English copyright act of 1882 had already authorized the photographer to have rights over "reproduction and multiplication" of a photograph, which had been upheld by the English courts. *Id.*

<sup>101</sup> DMCA, 17 U.S.C. 512 *et seq.* (effective Aug. 5, 1999).

tected under [the Copyright Act].”<sup>102</sup> It is logical that the DMCA could be extended to the unauthorized appropriation of the database or photograph, as long as the satellite contains the technological measures that would control the access to the work in the first place. And, as Charles McManis points out, “a party engaging in circumvention of technological protection measures ... associated with an ostensibly uncopyrightable compilation of data apparently bears the risk that the database will turn out to contain copyrightable subject matter, thereby subjecting the party to liability under the DMCA.”<sup>103</sup>

#### 4. Problems with Copyright Protection of Geospatial Data

Although it is apparent that copyright protection can serve to protect geospatial these data images, several questions must be answered before concluding that it will in fact protect any unauthorized appropriation of the database, map or photograph, however the presentation of data is categorized. Satellite data feeds are at issue, especially with questions of fixation, of the public domain, and of fair use.

##### *a. Fixation*

Explicit in the Constitutional mandate to Congress regarding intellectual property is the idea that copyright extends to “Authors” to protect their “Writings.”<sup>104</sup> Implicit in this clause is the notion that it is the physical expression of an idea, rather than the idea itself, which is necessary for copyright protection to accrue.<sup>105</sup> Congress embodied that manifest into the Copyright Act,<sup>106</sup> declaring that in order for a work to be protected by copyright, the work must be “fixed in a tangible medium of expression, now known or later developed, from which [it] can be perceived, reproduced, or otherwise communicated, either di-

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<sup>102</sup> *Id.* § 1201(a)(1)(A).

<sup>103</sup> Charles R. McManis, *Database Protection in the Digital Information Age*, 7 ROGER WILLIAMS U. L. REV. 7, 17 (Fall 2001).

<sup>104</sup> U.S. CONST., art. I, § 8, cl. 8.

<sup>105</sup> NIMMER, *supra* note 46, § 1.08[B] (citing *Goldstein v. California*, 412 U.S. 546 (1973)).

<sup>106</sup> Copyright Act, *supra* note 64, § 101 *et seq.*

rectly or with the aid of a machine or device."<sup>107</sup> The flexibility of this definition has led courts to ensure its liberal application with the expansion of technology into new media, such as computer-perceived read-only memory,<sup>108</sup> random access memory,<sup>109</sup> and clean feeds from satellites.<sup>110</sup> This extension, however, presupposes that a traditional "work" exists, in that the technological medium through which it is "perceived, reproduced or otherwise communicated for a period of more than transitory duration"<sup>111</sup> could easily translate into a form of expression that traditional copyright would in fact acknowledge.<sup>112</sup>

Obviously, if a printed version of the image is misappropriated, that printed image is "fixed," and thus eligible for copyright protection. What happens to the protection, however if an image is intercepted *en route* to the intended receiving apparatus, after the data is gathered but before the image from the data can be created? According to the current standard put forth by the Copyright Act, no change in the protection will occur. Section 101 of the Copyright Act states that "[a] work consisting of sounds, images, or both, that are being transmitted, is 'fixed' ...if a fixation of the work is being made simultaneously with its transmission."<sup>113</sup> With respect to mapped or enhanced

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<sup>107</sup> *Id.* § 102(a).

<sup>108</sup> *See, e.g., Williams Electronics Inc. v. Artic Intern., Inc.*, 685 F.2d 870, 874 (3d Cir. 1982) (finding a computer video-game to be sufficiently permanent to be fixed). Read-only memory, or ROM, is "a memory not capable of being changed by program instruction." *THE OXFORD AMERICAN DICTIONARY AND LANGUAGE GUIDE* 868 (Oxford University Press, 1999).

<sup>109</sup> *See, e.g., MAI Systems Corp. v. Peak Computer, Inc.*, 991 F.2d 511, 518 (9<sup>th</sup> Cir. 1993) (finding software loaded into computer's random access memory to constitute a "copy" for infringement purposes). Random-access memory, or RAM, is "internally stored software or data that is directly accessible, not requiring sequential search or reading." *OXFORD AMERICAN DICTIONARY*, *supra* note 108, at 825.

<sup>110</sup> *See, e.g., National Football League v. McBee & Bruno's, Inc.*, 792 F.2d 726, 732 (8<sup>th</sup> Cir. 1986) (protecting the live satellite broadcast of a professional football game).

<sup>111</sup> Copyright Act, *supra* note 64, § 101.

<sup>112</sup> For example, the examples above concerning ROM and RAM memory concern a computer program, defined in the Copyright Act to be "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result," and the example regarding the professional football game regards the transmission of a copyrightable "performance or display...whereby images or sounds are received beyond the place from which they are sent." *Id.*

<sup>113</sup> *Id.*

data, if a protectable image is the ultimate result of the data to be transmitted, this clause in the fixation definition applies.<sup>114</sup>

The question of raw data destined to be arranged into a database raises additional issues. *Feist* defines raw data as “wholly factual information not accompanied by any original written expression.”<sup>115</sup> If the protection in a database is limited to the selection, arrangement, and coordination of data, as noted above, the protection may be compromised if there is not yet an arrangement or coordination to protect. For example, if an infringer intercepts data intended for a geographic information system (“GIS data”),<sup>116</sup> it does not intercept an expression, but merely the data that have not yet been arranged or coordinated. Absent a “fixation,” there may be no copyrighted expression to protect.

Even if the clause regarding broadcast fixation could be extended to the data feed, the lack of visible fixation may make it even more difficult to protect an arrangement that is not easily perceived. A user misappropriating data from a satellite feed might be able to perceive the material in a substantially similar arrangement as the arrangement the database author intended, in which case, infringement would occur.<sup>117</sup> However, “a copyrighted arrangement is not infringed ... if a machine can perceive the arrangement only after another person uses the machine to re-arrange the material into the copyright holder’s arrangement.”<sup>118</sup> While there may be no question that the expression of the database had been intended to be fixed somewhere, the manipulability of the data makes the copyright holder’s intended arrangement of that data very difficult to discern.

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<sup>114</sup> See, e.g., *McBee & Bruno’s*, 792 F.2d at 732.

<sup>115</sup> *Feist Publ’n, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991).

<sup>116</sup> “The Association for Geographic Information defines GIS as: A system for capturing, storing, checking, integrating, manipulating, analyzing, and displaying data which are spatially referenced to the Earth [sic] (usually) land surface.” See Nicholas Short, Section 15, *Geographic Information Systems – the GIS Approach to Decision Making*, in REMOTE SENSING TUTORIAL, for the National Aeronautics and Space Administration, available at [http://rst.gsfc.nasa.gov/Sect15/Sect15\\_4.html](http://rst.gsfc.nasa.gov/Sect15/Sect15_4.html) (last visited Sept. 10, 2006).

<sup>117</sup> See *Matthew Bender & Co. v. West Pub. Co.*, 158 F.3d 693, 702 (2d Cir. 1998) (holding arrangement of public domain case law on a CD-ROM not infringed).

<sup>118</sup> *Id.* See also *EPM Communications, Inc. v. Notara, Inc.*, No. 00CIV.4299(LMM), 2000 WL 1154315 (S.D.N.Y. Aug. 14, 2000) (extending *Matthew Bender* to apply to an Internet database).

### b. Public Domain

Another general problem is the idea that the U.S. federal government cannot create a copyrighted work. Several geospatial data programs are missions of the National Aeronautics and Space Administration (NASA), a government agency. *Aqua* is a satellite featuring six different Earth-observing instruments on board and obtaining approximately 89 gigabytes of data per day.<sup>119</sup> A joint project with NOAA, Geostationary Operational Environmental Satellites ("GOES") hover continuously over one position on the Earth's surface and constantly monitor atmospheric "triggers" for severe weather conditions.<sup>120</sup> The *Landsat* Program satellites have been collecting information about Earth from space since 1972, taking specialized digital photographs of Earth's continents and surrounding coastal regions.<sup>121</sup> These and several other programs provide invaluable data and countless opportunities.

Works authored by the U.S. government, however, do not receive any protection whatsoever. "A government publication is not subject to copyright protection because the work is in the public domain."<sup>122</sup> The Copyright Act expressly states that copyright protection "is not available for any work of the United States Government,"<sup>123</sup> and defines a "work of the United States Government" as "a work prepared by an officer or employee of

<sup>119</sup> NASA, *Mission News*, at [http://www.nasa.gov/mission\\_pages/aqua/index.html](http://www.nasa.gov/mission_pages/aqua/index.html) (last visited Sept. 10, 2006).

<sup>120</sup> NASA, *GOES-N Mission*, at [http://www.nasa.gov/mission\\_pages/goes-n/main/index.html](http://www.nasa.gov/mission_pages/goes-n/main/index.html) (last visited Sept. 10, 2006).

<sup>121</sup> NASA, *The Landsat Program*, at [http://landsat.gsfc.nasa.gov/news/soc\\_articles.html](http://landsat.gsfc.nasa.gov/news/soc_articles.html) (last visited Sept. 10, 2006).

<sup>122</sup> JOHN COSGROVE MCBRIDE & THOMAS J. TOUHEY, 9 GOVERNMENT CONTRACTS: CYCLOPEDIA GUIDE TO LAW, ADMINISTRATION, PROCEDURE, § 52.160[4] 52-199 (2006). The "public domain" is "the status of a literary work...whose copyright...has expired or that never had such protection." WEBSTER'S, *supra* note 69, at 1562.

<sup>123</sup> Copyright Act, *supra* note 64, at § 105. To use an example, as discussed above, McBride and Touhey note that "[a] map published by the Government is not subject to copyright, and a person who republishes it privately is not entitled to a monopoly thereon," but "[i]f the person publishing that map...adds something new to the map, the novel features are copyrightable." MCBRIDE, *supra* note 122, § 52.160[4], 52-200 (citing *Woodman v. Lydiard-Peterson Co.*, 192 F. 67 (8<sup>th</sup> Cir. 1912)).

the United States Government as part of that person's official duties."<sup>124</sup>

The U.S. government is not, however, precluded from owning the copyright of a work "transferred to it by assignment, bequest, or otherwise."<sup>125</sup> As a result, government contractors are able to create copyrighted works privately and then assign those works to the government as a condition of the contract. "An agency...may not impose restrictions or limitations on a contractor's ability to copyright data unless the agency determines that the limitations are necessary to the furtherance of agency mission objectives, needed to support specific agency programs, or necessary to meet statutory requirements."<sup>126</sup> Therefore, if a copyrighted work, such as a geospatial data set, is "authored" by a government contractor and assigned back or licensed to the U.S. government, copyright protection will continue to protect the work and not send it into the public domain. Moreover, the U.S. government may commission a work that ultimately is subject to copyright.<sup>127</sup>

The public domain treatment of copyrighted works leaves two questions respecting its treatment of geospatial data. First, even if the data are created by the federal government, it is possible that the data set would be selected, coordinated, or arranged by a private entity, government contractor, or government commission for manipulation into the final image or presentation to customers. In that respect, a data set beginning as public domain receives some level of copyrightability, much as a book or database of judicial opinions. As such, copyright protection still exists.

Second, even if the data-generating satellites begin as governmental entities, a question emerges if the governmental entity transfers or privatizes the satellite. As such, although the

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<sup>124</sup> Copyright Act, *supra* note 64, § 101. *But see* MCBRIDE, *supra* note 122, § 52.160[4], 52-200 ("When an employee of the United States secures a copyright on a document prepared by him in the course of performing his official duties, the copyright is held by that employee in trust for the Government....").

<sup>125</sup> Copyright Act, *supra* note 64, § 105.

<sup>126</sup> MCBRIDE, *supra* note 122, § 52.170[1], 52-202, *citing* 48 C.F.R. § 27.404(g)(3).

<sup>127</sup> *See* Schapper v. Foley, 667 F.2d 102, 110 (D.C. Cir. 1981) (finding television series commissioned by U.S. government protected by copyright).

government satellite is "creating" or "authoring" a geospatial data set, would that data stream continue to be authored by the federal government if the government transferred the data to another entity midstream? Because copyright extends to the expression, not to the apparatus, a transfer such as this may create a copyrighted work.

*c. Fair Use*

Policy reasons suggest that no one entity should be the owner of facts, as this would stymie creativity and dissemination of information and run afoul of First Amendment rights of speech and the press. To date, certain ventures have recognized these policy reasons for precluding protection and have rendered intellectual property protections moot by allowing liberal access: Joanne Gabrynowicz writes that nondiscriminatory access – "the most important principle in remote sensing law and policy" – was established early in the *Landsat* era,<sup>128</sup> although the government retains ownership of *Landsat* data.<sup>129</sup>

This tension between the private ownership of intellectual property and the desire to have it accessible for use by all is codified in the Copyright Code as fair use. Fair use, a statutory defense to copyright infringement allowing certain uses of copyrighted works, is triggered upon certain protected activities – "criticism, comment, news reporting, teaching, scholarship, or research"<sup>130</sup> – so that the private ownership of the intellectual property right will not prevent further expressions if used by a later party for one of these statutorily-defined purposes. Congress set out a four-factor test which a court must consider when determining whether to apply fair use: "the purpose and character of the [secondary] use...; the nature of the copyrighted work; the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and the effect of the [secondary] use upon the market for or value of the copyrighted

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<sup>128</sup> See Gabrynowicz, *supra* note 22.

<sup>129</sup> *Id.* at 63.

<sup>130</sup> Copyright Act, *supra* note 64, § 107.

work.”<sup>131</sup> The factor that implicates mapped geospatial works is the nature of the copyrighted work. Generally, works that involve a lesser degree of creativity are generally more susceptible to a defense of fair use against infringement.<sup>132</sup> Geospatial data translated into an image that accurately represents that which it is supposed to portray involves less creativity than a book, portrait, or musical work,<sup>133</sup> and may be more likely to be used fairly by second comers.

However, because of the remaining factors required to be considered in a fair use analysis, it is uncertain that a single factor could be dispositive of a fair use finding. If the secondary use of a copyrighted work is purely commercial, such as a printed topographical map displaying hiking trails, that use could weigh against a finding of fair use.

*B. Protection under Database Rights  
(and the Conflict that Results)*

Copyright, which protects against the copying of the expression of the data, is one way in which the provider of data can be protected against infringement or unauthorized appropriation. However, as noted by the Commission of the European Communities, “it is frequently the raw data itself and the fact that it can be easily retrieved and readily updated, which is of value, rather than the way in which the work was originally written,”<sup>134</sup> and “the form of expression of the information is of lesser importance than the substance of the information itself.”<sup>135</sup> Because this important material is often not protected by copyright, the European Union created a *sui generis* right to protect not only the expression of the database, but the content

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<sup>131</sup> *Id.*

<sup>132</sup> See NIMMER, *supra* note 46, § 13.05[A][2][a], 13-183 (“It is...true that copyright protection is narrower, and the corresponding application of the fair use defense greater, in the case of factual works than in the case of works of fiction or fantasy.”).

<sup>133</sup> *Id.*

<sup>134</sup> *Green Paper on Copyright and the Challenge of Technology – C*, COM (1988) 172 final (June 17, 1988).

<sup>135</sup> *Id.*

of the database itself.<sup>136</sup> Where copyright fails to protect a raw data stream, it is possible that this innovative approach toward databases may enable authors to protect their products without rising to the level of originality that copyright requires.

### 1. The European Union Database Directive

Adopted in 1996, the European Union Database Directive (the "Database Directive") acknowledges copyright's role of protecting databases but also creates a *sui generis* database right (the "database right") for the protection of databases and their content.<sup>137</sup> This database right extends to all databases representing a collection of "data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means,"<sup>138</sup> and covers the protection of databases "in any form."<sup>139</sup> To merit protection for the database, the creator of the database must show a substantial investment in obtaining, verifying, or presenting the contents of the database.<sup>140</sup> This investment may be evaluated qualitatively or quantitatively.<sup>141</sup>

Once it has established that the database deserves the protection of the database right, the database creator has various recourses against a party that has misappropriated data. First, the creator can prevent a party from "extracting" substantial amounts of the data from the database or from repeatedly and systemically extracting insubstantial parts of the database.<sup>142</sup> Under the Database Directive, "extracting" data is the "perma-

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<sup>136</sup> Council Directive 96/9/EC, 1996 (L 77 1996-03-27) 20 - 28) (of the European Parliament and the Council of 11 March 1996 on the legal protection of databases) [hereinafter Database Directive].

<sup>137</sup> *Id.* at art. 3 (noting the selection and arrangement constituting the author's own intellectual creation shall be protected by copyright, which protection shall not extend to the contents themselves of the database).

<sup>138</sup> *Id.* at art. 1, § 2.

<sup>139</sup> *Id.* at art. 1, § 1.

<sup>140</sup> *Id.* at art. 7, § 1.

<sup>141</sup> The "investment" component of the Database Directive directly counters the *Feist* court's holding that the "sweat of the brow" theory - "the underlying notion ... that copyright was a reward for the hard work that went into copying facts" - was invalid under the Copyright Act. See *Feist*, 499 U.S. at 359-60.

<sup>142</sup> Database Directive, *supra* note 136, at art. 7, §§ 2, 5.

nent or temporary transfer of all or a substantial part of the contents of a database to another medium by any means or in any form,<sup>143</sup> and may be measured quantitatively or qualitatively.<sup>144</sup> Second, the creator may prevent a party from “reutilizing” the data in its own product or from repeatedly or systematically reutilizing insubstantial amounts of the data,<sup>145</sup> defining reutilization as “any form of making available to the public all or a substantial part of the contents of a database by the distribution of copies, by renting, by on-line or other forms of transmission.”<sup>146</sup>

To date, this author has not found an instance where the Database Directive has been applied to geospatial satellite data, but neither has the author found an instance expressly declining to apply the *sui generis* protection to a raw data feed. Although not geospatial data that results from remote sensing technology, a raw data feed from a satellite has qualified as data that may be protected using the database right.<sup>147</sup> It therefore follows that geospatial data may also be protected, despite a question to the data’s individual accessibility, in accordance with the broad definition outlined in the Database Directive. It seems certain that a substantial investment is expended when collecting satellite data; for example, the U.S. President’s budget request for fiscal year 2007 for the NASA mission that encompasses *Landsat* was 2.21 billion dollars.<sup>148</sup>

However, application of the Database Directive to potential unauthorized appropriations of geospatial data is not certain. The “substantial investment” was recently considered to “be un-

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<sup>143</sup> *Id.* at art. 7, § 2(a).

<sup>144</sup> *Id.* at art. 7, § 1. “Qualitative” extraction may attach if even a small portion of the database contents is of great or potentially great commercial value.

<sup>145</sup> *See id.* at art. 7, § 2; art. 10 § 1.

<sup>146</sup> *Id.* at art. 7, § 2(b). Like extraction, the reutilization must be of a quantitatively or qualitatively substantial portion of the contents of the database, or consist of the repeated and systemic reutilization of an insubstantial part. *Id.* at art. 7, §§ 1, 5.

<sup>147</sup> Case C-46/02, *Fixtures Mktg. Ltd. v. Oy Veikkaus AB*, 2004 E.C.R. I-10,365; Case C-203/02, *British Horseracing Bd. Ltd. v. William Hill Org.*, 2004 E.C.R. I-10,415; Case C-338/02, *Fixtures Mktg. Ltd. v. Svenska Spel AB*, 2004 E.C.R. I-10,497; Case C-444/02, *Fixtures Mktg. Ltd. v. Organismos Prognostikon Agonon Podosfairou AE*, 2004 E.C.R. I-10,549 (Nov. 9, 2004).

<sup>148</sup> NASA’s FY 2007 Budget Estimates, available at [http://www.nasa.gov/pdf/142458main\\_FY07\\_budget\\_full.pdf](http://www.nasa.gov/pdf/142458main_FY07_budget_full.pdf) (last visited Sept. 11, 2006).

derstood to refer to the resources used to seek out existing independent materials and collect them in the database, and not to the resources used for the creation as such of independent materials.<sup>149</sup> This raises the question: Does a satellite merely "collect" the data in a database, or does it simultaneously "create" the data that it collects in the compilation or database of data? Depending on the answer, satellite collections of geospatial data may be exempted from the protections of the Database Directive altogether. Furthermore, the Database Directive recognizes potentially applicable permissible non-commercial extractions or reutilizations: data may be extracted or re-utilized in scientific or academic fields as long as the source of the data is credited and the use not for a commercial purposes, and data may be used for matters of public security.<sup>150</sup>

The Database Directive directly conflicts with U.S. copyright law because it expands intellectual property protection to cover that which the Supreme Court expressly said copyright could not: facts, and unexpressed facts at that. While the term of protection offered under the Database Directive is short – a mere fifteen years compared with the potential "life plus seventy" offered by the U.S. Copyright Act – the scope of protection is much broader.<sup>151</sup> Furthermore, with the expansive definition of what constitutes an "extraction" or "reutilization" of data, what constitutes an illegal activity under the Database Directive is much less specific than under copyright.<sup>152</sup>

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<sup>149</sup> British Horseracing, 2004 E.C.R. I-10,415, at ¶ 1.

<sup>150</sup> See *id.* at art. 9.

<sup>151</sup> Compare Database Directive, *supra* note 136, at art. 10, § 1, with Copyright Act, *supra* note 64, at § 302(a), (c).

<sup>152</sup> Infringement of a copyright is identified by section 501 of the Copyright Act as a violation of "any of the exclusive rights of the copyright owner," which rights include the rights "(1) to reproduce the copyrighted work in copies...; (2) to prepare derivative works based upon the copyrighted work; (3) to distribute copies ... of the copyrighted work...; ...[and] (5) to display the copyrighted work publicly." Copyright Act, *supra* note 64, at §106.

## 2. The Potentially False Conflict: Database Rights or a Pure Copyright Regime?

Often among cases within the borders of the United States, courts identify "false" conflicts, where "only one of the involved states would be interested in applying its law...."<sup>153</sup> Such a false conflict exists, for example, when considering the preference of the United States to abide by copyright in order to protect the various expressions of the data above. The Database Directive does not discourage the use of copyright to protect the expressions of data; in fact, it encourages it.<sup>154</sup> To the extent one is arguing the copyright protection of the data, absent differences in implementation among the nations, no true conflict exists.

Instead, the difference comes in the decision of the individual jurisdiction whether to apply the *sui generis* database right to protect those data falling outside the acceptable copyright parameters. While it is possible that the differences among the nations regarding database rights is in fact an academic exercise, "[c]ases involving facts that cross national boundaries may be affected by policies and considerations not present in interstate cases....Government interests may be more sharply identifiable, and the contrast between competing rules of law with corollary preference for the forum's own rules may be more striking."<sup>155</sup>

Predictably, the law that will be applied by the United States with respect to database protection will be the federal Copyright Act, which preempts state rights that "come within the subject matter of copyright as specified by sections 102 and 103."<sup>156</sup> This easy solution may not work, however, if the reviewing court determines that the misappropriated data are in the public domain or otherwise fall outside of the subject matter of section 103, which states that it "does not imply any exclusive

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<sup>153</sup> SCOLES, *supra* note 54, at 28.

<sup>154</sup> Database Directive, *supra* note 136, at ch. II (discussing the object of protection, authorship of a database, and listing restricted acts and their exceptions).

<sup>155</sup> LUTHER L. MCDUGAL, III, ROBERT L. FELIX & RALPH U. WHITTEN, *AMERICAN CONFLICTS LAW*, § 6, 10 (Ardsley, NY 5<sup>th</sup> ed. 2001).

<sup>156</sup> Copyright Act, *supra* note 64, at § 301.

right in the preexisting material.”<sup>157</sup> As Tyler Ochoa points out, the preemption clause of the Copyright Act sought to ensure that states could not extend copyright to raw data where they lacked the originality otherwise necessary for protection under federal copyright law.<sup>158</sup>

What is less clear is whether a state court can apply its own choice-of-law rules in order to impose a right not extended by the Copyright Act. It has been held that “[a] choice of law provision...merely designates the state whose law is to be applied to the extent its use is not preempted by nor contrary to the policies of the 1909 and 1976 Copyright Acts.”<sup>159</sup> Therefore, to the extent that the property right conferred in preexisting material to be included in a compilation is outside a database, the possibility exists, however remote, that a state’s choice of law rules could apply to consideration of whether a foreign plaintiff “owned” a right to exploit the data which it compiled in its database.

As noted above, in the United States, various choice-of-law methodologies are applied among the several states, and each either employs a policy consideration in its factors or offers a policy exception to the rigid application of its rule.<sup>160</sup> Because recognition of the Database Directive may be contrary to the policy interests of the United States,<sup>161</sup> it would perhaps be more surprising if a U.S. court determined that the Directive should be interpreted or enforced. In the event that this happened, however, U.S. defendants sued in their home forums by extra-jurisdictional plaintiffs may ultimately be subject to the database right depending on the choice of law regime present in a

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<sup>157</sup> *Id.* § 103(b).

<sup>158</sup> Tyler T. Ochoa, *Origins and Meanings of the Public Domain*, 28 U. DAYTON L. REV. 215, 228-229 (Symposium 2002) (discussing legislative history of section 301).

<sup>159</sup> *Fantastic Fakes, Inc. v. Pickwick Int’l, Inc.*, 661 F.2d 479, 483 (5<sup>th</sup> Cir. 1981). *But see* Edward Lee, *The New Canon: Using or Misusing Foreign Law to Decide Domestic Intellectual Property Claims*, 46 HARV. INT’L L.J. 1, 4 (Winter 2005) (“[C]hoice of law should [not] be used to alter the domestic law’s express regulation of the terms and conditions of [intellectual property] rights created by domestic statute.”).

<sup>160</sup> *See generally* SCOLES, *supra* note 54, § 17.34, 786-789.

<sup>161</sup> *See generally* Christopher A. Bloom & Julie D. Cromer, *Legal Protection for Databases in the United States: Is Sui Generis Protection Required?*, Presentation, Computer Law Association Annual Meeting, Paris, France (Nov. 14-15, 2002).

specific jurisdiction. If anything, the database directive may be considered similar to a state-law unfair competition cause of action, which generally requires the examination of three interests: "regulation of conduct, protection of the injured party's business, and protection of the public," in many cases adopting "the reference to the place where the claimant was injured in his business."<sup>162</sup> In that respect, if the claimant is from a jurisdiction adopting the Database Directive or similar right, it is possible that a choice-of-law analysis could lead to the application of the right in the United States, if the injury is established to have occurred where the plaintiff was.<sup>163</sup>

Conversely, in jurisdictions that embrace the database right, injured parties may have no voice. The Database Directive refuses to confer reciprocal benefits of the database right upon any party that is not a citizen of the European Union or another country that has a corresponding database right.<sup>164</sup> As a result, the courts of the European Union Member states are effectively closed as forums to extrajurisdictional plaintiffs whose data violation injuries may fall outside the scope of traditional copyright protections, but which injury was caused by a defendant domiciled in the Member state. On the other hand, the Database Directive contains no limitations regarding the territoriality of a defendant; so long as the Member state can acquire jurisdiction, a defendant may be subject to the obligations of the database right and the applicable damages.

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<sup>162</sup> SCOLES, *supra* note 54, § 17.53, 870. Scoles and Hay note that "[r]ecent European codifications...employ a similar test." *Id.* § 17.3, 871.

<sup>163</sup> The "place where the plaintiff sustained injury" test is also used to determine personal jurisdiction in infringement actions, but does not necessarily mean the place where the plaintiff resides. See *Indianapolis Colts, Inc. v. Metropolitan Baltimore Football Club, Ltd. P'ship*, 34 F. 3d 410, 411-12 (7<sup>th</sup> Cir. 1994) (determining the "locus of the tort" to be where infringing sales are made). But see *Reeves v. American Broadcasting Cos.*, 580 F. Supp. 84, 90 (S.D.N.Y. 1981), *aff'd*, 719 F.2d 602 (2d Cir. 1983) (finding reputation of plaintiff to be injured where plaintiff resided, although signal was broadcast from a different state).

<sup>164</sup> Database Directive, *supra* note 136, at cl. 56.

## V. POTENTIAL CONSEQUENCES AND FUTURE ISSUES

Plainly, if we are to give weight to the policies behind both broad fields of intellectual property law and outer space law, there emerges a necessary impossibility: it is not possible to achieve uniformity regarding intellectual property among the several nations if their ideas about protecting the property remain disparate. This conundrum is best typified by the "irresistible force versus an immovable object": neither can coexist with the other. One of two possible scenarios is likely. Either one of the legal fields will make a concerted change to accommodate the other, or, each of the two fields will ignore the principles of the other and press forward as if no conflict exists.

Assuming that cooperation is a preferred goal for the intersection of intellectual property and outer space in the context of remote sensing, the field of intellectual property will have to change to achieve international cooperation and harmony. As a result, either the pure copyright regimes or the database right regimes will have to readjust in order to work together, aligning intellectual property with outer space. The database right under the European Union Database Directive has been in force in Europe for nearly ten years, providing sparse but adequate empirical evidence with which to assess its effectiveness. The first evidence of this inefficiency is in the legal interpretation of the Directive. After several conflicting cases in the lower courts of implementing states and some interpretation by the European Court of Justice, it is still unclear what exactly the scope and the effect that the data right has.

On December 12, 2005, as required by the Directive,<sup>165</sup> the Commission of the European Communities issued its Internal Market and Services Working Paper reviewing the Database Directive "to assess whether the policy goals of [the Database] Directive...have been achieved and, in particular, whether the creation of a special 'sui generis' right has had adverse effects

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<sup>165</sup> *Id.* at art. 16 (requiring committee review and comments).

on competition.”<sup>166</sup> Upon review, the Commission determined that while the database right had done little to spur competition – the original purpose of the Database Directive – it had beneficial side effects that members of the industry had identified.<sup>167</sup> As a result, while the Commission considered changing the Directive or doing away with it altogether, it instead concluded that it is not necessary to repeal it. Therefore, based on its very recent standpoint, the European Union will remain an irresistible force in the area of database protection.

As a pure copyright regime, the United States, on the other hand, has tried several times to pass laws incorporating a database right similar to that created by the directive. In four different congressional sessions since 1996, legislation has been introduced to introduce this right to American jurisprudence.<sup>168</sup> The last two Congressional attempts were thwarted internally by dissension among two congressional committees, the Judiciary Committee and the Energy and Commerce Committee. Representing sets of two different interest groups, Judiciary introduced legislation mirroring the database right, while Energy and Commerce introduced a more watered-down version, becoming a database right in name only.

The introduction of the competing bills ensured that neither would pass, and all four bills died in the house before any action could be taken on them whatsoever. As such, it appears as if the United States promises to be an immovable object in the protection of databases, leaving the two types of regimes to tinker with their rights, hoping to achieve some middle ground.

Or, this can be an area where the intellectual property theorists agree to disagree, and continue, in a state of conflict, to oppose the cooperation sought by the Outer Space Treaty. Strictly speaking, these two areas of the law and their respec-

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<sup>166</sup> Commission of European Communities, *DG Internal Market and Services Working Paper: First evaluation of Directive 96/9/EC on the legal protection of databases* 1.1 (Dec. 12, 2005) [hereinafter Working Paper].

<sup>167</sup> *Id.* at 1.4. These effects include legal certainty, reduced costs, more business opportunities and ease of marketing.

<sup>168</sup> H.R. 3531, 104<sup>th</sup> Cong. (1996); H.R. 2652, 105<sup>th</sup> Cong. (1997); H.R. 354, 106<sup>th</sup> Cong. (1999); H.R. 1858, 106<sup>th</sup> Cong. (1999), H.R. 3261, 108<sup>th</sup> Cong. (2003), H.R. 3872, 108<sup>th</sup> Cong. (2004).

tive policies are not at theoretical odds and not competing with each other. Intellectual property seeks to protect the databases, whereas outer space is seeking equalization. Perhaps what is needed is a specific framework excluding geospatial data either from intellectual property laws altogether, or to exclude intellectual property from the goals of uniformity.

Regardless of the ultimate resolution, this article has identified several issues which should be addressed before such a policy or framework is promoted to the remote sensing community. First, it must be established where in the remote sensing process a protectable work is established. Does data constitute a work capable of being protected at the data collection stage? The transmission stage? The processing stage? Or, do we reserve protection for data once it is in imaged format?

The answer to this series of questions, about where intellectual property protection attaches, leads to the second and third questions -- about jurisdiction and choice of law. Will jurisdiction be awarded to the state that put the satellite into orbit, or to the state that is manipulating the satellite to collect the data? Will jurisdiction lie with the state that has the receiver, or the state where the data is processed and stored? In cases of infringement and/or unauthorized appropriation, do we consider the personal jurisdiction of the defendant? Or, as in intellectual property cases, do we consider where the most damage has occurred? Each of these questions can be asked in a choice of law context, with the additional question of which choice of law rule will apply to determine the appropriate intellectual property law to use.

The questions about possible protection of geospatial data under copyright lead to the fourth and fifth issues that should be addressed. The fourth issue would examine the remote sensing process critical to the issues of jurisdiction and choice of law to determine the point of fixation, securing copyright protection at a point in time under certain laws. The fifth issue would be to consider not the process of remote sensing, but the origins, determining whether a geospatial work with its origins in a governmental satellite could be granted rights outside the public domain, whether government contractors should be specially

treated, or if private copyright can be retrieved once that satellite is transferred into private, commercial ownership.

Once these issues have been addressed and perhaps resolved, scholars can revisit the question of which intellectual property model can best protect remote sensing activities and geospatial works of authorship. Perhaps the resolution of jurisdiction, choice of law, and fixation will lead to the conclusion that all along, the conflict was in fact false, presenting answers under a pure copyright regime. Or, the opposite truth may be reached, determining that finally justification may exist in the United States and other pure copyright regimes to implement a database right correspondent to that of the forward-thinking European Union. Once all issues are resolved, then possibly a framework can be attempted that encompasses both the cooperative goals of outer space and the competitive ends of intellectual property.

### CONCLUSION

Because the majority of remote sensing projects have placed geospatial images and databases in the public domain, intellectual property considerations of the raw data from satellite feeds has largely been unexplored. The outright failure to recognize the ownership in geospatial products will not be sustained for much longer; remote sensing activities are too valuable. In addition to being of vital importance to the public goods of national security, meteorology, disaster management, and environmental protection, these data products are gaining in commercial value. And if we are, as Stephen Hawking has recently noted, truly to move into an interplanetary existence,<sup>169</sup> the value of "maps to the universe," turning the geospatial satellites outward, for space exploration may be immeasurable.

It is not impossible for intellectual property and outer space principles to coexist; they have before, and they must continue to do so. As they do in the terrestrial world, the regimes of

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<sup>169</sup> See, e.g., Associated Press, *Hawking says humans must go into space*, MSNBC (June 14, 2006), available at <http://www.msnbc.msn.com/id/13293390/> (last visited Oct. 31, 2006).

physical and intellectual space must coexist in outer space. Oliver Wendell Holmes wrote, "Man's mind, once stretched by a new idea, never regains its original dimensions."<sup>170</sup> It remains to be seen whether one dimension can or will be stretched to accommodate the policies and the ideas of the other.

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<sup>170</sup> Oliver Wendell Holmes.

# COPYRIGHT CLAIMS FOR *METEOSAT* AND *LANDSAT* IMAGES UNDER COURT CHALLENGE

*Martha Mejía-Kaiser\**

## I. INTRODUCTION

Since the beginning of commercial distribution of images gathered by satellite, distributors have been confronted with the question of how to legally protect their products from unauthorized copying. Several governments, private companies, and international organizations have decided to simply declare that copyright protection applies to their satellite images. However, in most national legislation, as well as in international treaties, works can only be protected under copyright when they are directly created by a human being and when enough intellectual creativity has been introduced into such products.

Taking advantage of the technological complexity of producing satellite images and the lack of jurisprudence on the topic, remote sensing satellite owners and data distributors established distribution policies whereby raw data<sup>1</sup>, minimally processed data<sup>2</sup> and analyzed information<sup>3</sup> are labeled as copyright "works". In addition, distribution agreements include clauses referring to copyright protection.

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<sup>1</sup> "Raw or primary data" is "...the 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". Principles Relating to Remote Sensing of the Earth from Outer Space, Prin. I (b). U.N. GAOR, 41st Sess., Supp. No. 53, at 115, U.N. Doc. A/41/65 (1986) [hereinafter Principles].

<sup>2</sup> "Minimal processed data" means "...the products resulting from the processing of the primary data, needed to make such data usable". *Id.* at Prin. I (c).

<sup>3</sup> The term "analysed information" means "...the information resulting from the interpretation of [minimal] processed data, inputs of data and knowledge from other sources". *Id.* at Prin. I (d).

Satellite remote sensing data owners obviously hoped that entities would refrain from copying remote sensing data to avoid copyright violation charges. As national and international copyright legislation are of general application, remote sensing data owners and distributors thought that copyright protection would be recognized, even if many products do not qualify for it under national copyright legislation.

Two such copyright declarations were formally challenged in court actions. A German case was brought in the first instance to the State Court of Berlin, which did not grant copyright protection for a satellite remote sensing image. A second case, heard in both a French court of first instance and a court of appeal, did grant copyright for satellite images. Although the arguments in both cases are different, they have a similar center of gravity. Can certain types of satellite images be considered to be human creations; and, do they contain enough intellectual creativity to be protected under the applicable copyright regime?

## II. GERMANY

In 1988, the European Space Agency (ESA) started a legal action against an advertising agency, which published a *Meteosat*<sup>4</sup> image in a German newspaper for the automobile producer Mercedes-Benz. The agency obtained the image through the ESA's official distributor in Germany, CDZ Film.

In 1984, ESA and CDZ Film signed several agreements<sup>5</sup> whereby the latter was designated as exclusive distributor of *Meteosat* images for commercial users in the Federal Republic of Germany. It was stipulated that users acquiring ESA's satellite products, may publish such images in Germany. Also through these contracts, ESA was declared to be the copyright holder of the images, some rights were transferred to CDZ Film "as far as

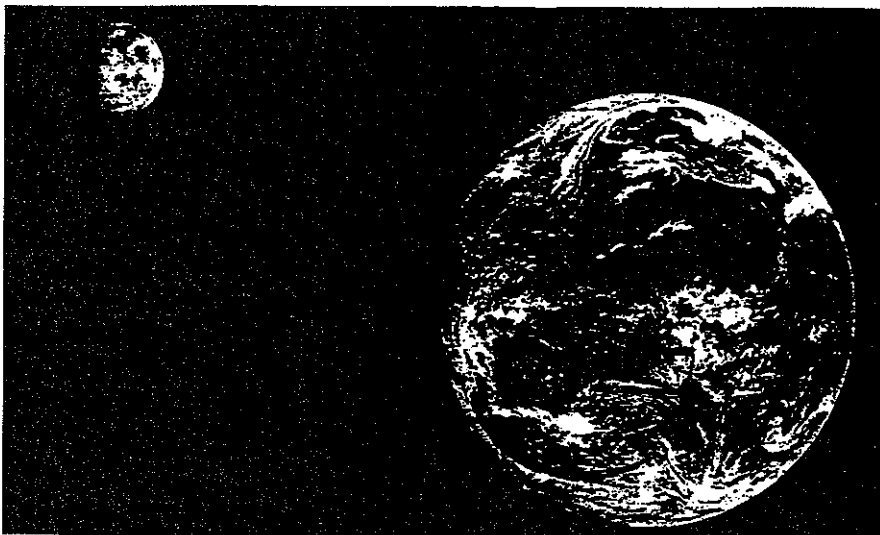
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<sup>4</sup> The Meteosat satellite system was created by ESA, but it was later transferred to the European Organization for the Exploitation of Meteorological Satellites (Eumetsat).

<sup>5</sup> The first contract was signed on Mar. 26-28 (1984). Following agreements were made on Dec. 19 (1984) and Jan. 31 (1985).

legally permissible"<sup>6</sup> and CDZ Film was authorized to represent ESA in any dispute before German courts.

On 14 March 1988, the advertising agency published a commercial ad in the newspaper *Die Welt* (The World) with a *Meteosat* image. As the advertisement did not contain any copyright reference, CDZ Film and ESA decided jointly to sue the agency before the State Court of Berlin, a court of first instance.



Satellite image n. 8 a, submitted in the court proceedings<sup>7</sup>.

#### *A. State Court of Berlin, First Instance*

The photograph in dispute portrayed the Earth and the Moon under a German advertising slogan, "Transport vehicles

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<sup>6</sup> LG Berlin, 16<sup>th</sup> civil chamber, 16 O 33-89, May 30, (1989), at "Facts"[hereinafter State Court of Berlin]. The original German version of the court decision and an unofficial English translation by the author are published as annexes of the article: Martha Mejia-Kaiser, *The 1989 Berlin Court Decision on Copyright to a Space Remote Sensing Image*, in 47 PROCEEDINGS OF THE COLLOQUIUM ON THE LAW OF OUTER SPACE (2004). In the decision released by the State Court of Berlin to the public, the names of the parties were omitted. That ESA was one of the plaintiffs is confirmed in statements of several specialists as Oosterlinck and Gervais in the WORKSHOP PROCEEDINGS ON INTELLECTUAL PROPERTY RIGHTS AND SPACE ACTIVITIES 105-106, ESA, Dic. (1994).

<sup>7</sup> *Id.*

with the star frequently accumulate about the same [Earth-Moon] distance". In the court proceedings ESA asserted that the disputed image was a "photograph" and presented itself as the "author" of such photograph. The advertising agency took a different position and requested that the Court deny copyright protection for the photograph and claimed that ESA did not take the photograph.

1. The *Meteosat* photograph examined under German copyright legislation

An important argument presented by ESA was that the photograph in dispute was protected under the German Copyright and Neighboring Rights Act<sup>8</sup> (hereinafter "German Copyright Act"). However, the German Copyright Act mentions two sorts of photographs: "photographic works" and "simple photographs". "Photographic works" are protected under the Copyright part of the Act, while "simple photographs" are protected under the Neighboring Rights part. In order to expand its possibilities of success, ESA submitted that the disputed photograph was both, a photographic work and a simple photograph<sup>9</sup>. ESA apparently hoped that the Court would pick the correct label and grant protection.

Under the German Copyright Act, "simple photographs" are considered to have less intellectual creativity and therefore are protected for a shorter period than "photographic works". The ESA claim is self-contradictory because it states that the disputed photograph had enough intellectual creativity to qualify as a photographic work, but at the same time, it contained less creativity than a photographic work.

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<sup>8</sup> Gesetz über Urheberrecht und verwandte Schutzrechte [German Copyright and Neighbouring Rights Act], Sept. 9, 1965 (amended with status June 24, 1985), BGBl. I S. 1273 (F.R.G.) [hereinafter German Copyright Act].

<sup>9</sup> State Court of Berlin, *supra* note 6, at "facts".

## 2. Two sorts of photographs

### a. *Meteosat* photograph as a "photographic work"

The German Copyright Act, Article 2, lists works that are protectable under copyright. Among these works are *Lichtbildwerke*.<sup>10</sup> *Lichtbildwerke* include photographic works and works produced with techniques similar to those used for photographic works. Although the word "*Lichtbild*" is usually translated into English as "photograph", it can also be translated as "picture of light" or "scene reproduced with light". The word indicates that radiation is manipulated in order to generate an image. From this follows that the "photographic works and similar works" concept is flexible enough to include new technological products created with light or other radiation. Photographs based on digital images, like the photograph in dispute, appear to qualify.

However, a "photographic work or similar work" with protection under the German Copyright Act is required to be created by the direct intervention of a human being and with sufficient intellectual creativity embedded in such.<sup>11</sup> In a legal dispute, the author of "photographic works and similar works" must provide evidence that his intellectual creativity was introduced in the work by selection of the light source, the inclination of the illumination, the time of exposure of the device, object photographed, etc.<sup>12</sup> Taking the concept of "photographic works and similar works" into consideration, the issue of whether the *Meteosat* image qualified as such a "work" will be analyzed according to the German legislation.

Like many other remote sensing satellites, *Meteosat* measures light reflected, refracted, and emitted by sensed objects. Such measurements, called "raw data", are sent in digital format to Earth stations by an electromagnetic signal. When the

<sup>10</sup> German Copyright Act, *supra* note 8, at art. 2, para. 1, "Protected works: 1. Protected works in literacy, science and art, are...5. photographic works, including the works produced in a similar manner as the photographic works."

<sup>11</sup> German Copyright Act, *supra* note 8, at art. 2, para. 2.

<sup>12</sup> PAUL KATZENBERGER, ADVISORY OPINION ON THE QUESTION OF THE LEGAL PROTECTION OF METEOSAT IMAGES, DATA AND PRODUCTS ON BEHALF OF EUMETSAT 25 (1989).

data is received by Earth stations, most of the data is reconfigured in matrixes and relevant information is added, like geographic references and geospatial corrections. The product that results from this is called a "minimally processed image". Both products, raw data and minimally processed images, are the outcome of automated processes.

To create the *Meteosat* photograph, a computer assigned color levels to each number of the minimally processed matrixes. According to a pre-programmed scale of tones from black to white, a computer transformed the matrixes into a photographic image. When this photograph arrived in the hands of technicians, it was "enlarged, colored and then again reduced in size"<sup>13</sup>, resulting in the photograph in dispute.

In ESA's opinion, the enlarging, coloring and reducing of an image constituted enough intellectual creativity to qualify the disputed photograph as protected by copyright. Exactly how much effort and intellectual work were actually introduced into the photograph to make it qualify as a "work" is not known. However, the question that is raised is: Can another technician reproduce the same image using the same minimally processed matrixes, using the natural colors of the Earth and Moon as a model? If the answer is yes, then it cannot be characterized as a unique and personal work.

*b. Meteosat photograph as "simple photograph"*

Because ESA knew that there was a problem demonstrating the intellectual creativity contained in the photograph, it decided to submit that the disputed photograph was also a "simple photograph", under the terms of Article 72 of the German Copyright Act.<sup>14</sup>

The second part of the German Copyright Act addresses neighboring rights<sup>15</sup> which protects "simple photographs and similar products". German legislators also granted legal protec-

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<sup>13</sup> "...the black and white image of the satellite was enlarged, colored and then reduced in size". State Court of Berlin: "Facts", *supra* note 6.

<sup>14</sup> German Copyright Act, *supra* note 8, at art. 72.

<sup>15</sup> At the time of the *Meteosat* dispute, the June 24, 1985 version of the German Act on Copyright and Neighboring Rights with modifications applied.

tion to photographs that lack sufficient intellectuality and cannot qualify as "photographic works". But Article 72 introduces a strange mix of protection regimes for "simple photographs". "Simple photographs" are declared protected under the "copyright" regime, although Article 72 belongs to the section of neighboring rights.<sup>16</sup> Therefore, "simple photographs and similar products" do benefit from copyright protection, but they are protected for a shorter period than the period provided for "photographic works".<sup>17</sup>

There are no written guidelines to determine the degree of intellectual effort required for a photograph to qualify for the full or reduced period of copyright protection. Therefore, German courts have to decide which protection period applies to a given work on a case-by-case basis.

### 3. ESA as the author of the photograph

In Germany all photographs may qualify for copyright protection, even those without intellectual creativity. The Court therefore decided to examine another important factor: was the photograph created with the direct intervention of a natural

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<sup>16</sup> Article 72 states "[simple] photographs and products, that are produced similarly to [simple] photographs, are protected by the provisions applicable to photographic works of the First Part" (under copyright). Second Part: Neighboring rights, second section: Protection of photographs (simple photographs). German Copyright Act, *supra* note 8, at art. 72.

<sup>17</sup> The German Copyright Act with modifications until 1985, stipulated different protection periods: Article 72, paragraph 3 stated, "The protection granted in paragraph 1 to [simple] photographs which are documents of history, expires 50 years after their publication, but in any case 50 years after their production if the [simple] photograph was not published in this period. For all other [simple] photographs, the protection expires after 25 years, instead of 50 years." German Copyright Act, *supra* note 8, at art. 72, para. 3 (emphasis added). When ESA submitted that the photograph in dispute was a simple photograph under Article 72 (neighboring rights), it failed to address which type of simple photograph it was. One may believe that, since it appeared in a newspaper, it was a document of history with a copyright protection of 50 years. But this photograph was part of a commercial advertisement and did not communicate any breaking news, which could be labeled as "another" type of simple photograph, with only 25 years of copyright protection. Since 1985, the German Copyright Act has been amended. Nevertheless, the status of the articles devoted to the protection of photographic works and simple photographs have not changed substantially, hence the analysis under the present German legislation would be the same.

person? Under the German Copyright Act (Article 7)<sup>18</sup>, the word "*Urheber*" (author) may be literally translated as "creator of the work", "first creator" or "original creator". ESA claimed that ESA itself was the "author" of the photograph so the Court needed to consider if legal entities, like ESA, qualified as an "author".<sup>19</sup> German specialists on copyright have already asserted that an "author" is "...the creative (human) individual who, as a natural person, has created the work; that is not a robot, apparatus, machine, or even animal".<sup>20</sup> Consequently, it appears that legal persons like private companies and international intergovernmental organizations are left outside of the "author" concept.

At the international level, the Berne Convention on Copyright makes no explicit reference that only natural persons can create a work to be benefited under such legislation. However, at the 1948 Brussels Conference it was stated that it is unnecessary to mention that the works are "personal intellectual creations", because it was already implied that such a requirement was necessary.<sup>21</sup>

Although the German legislation does not explicitly indicate if the "author" of a work has to be a natural person, one may deduce by the wording of the Act that natural persons are the only bearer of such rights. One indication is in Article 11, that states copyright protection is granted to an author for the "intellectual and personal relation to its work".<sup>22</sup> Article 2 also makes reference to "personal intellectual creations"<sup>23</sup>, while Article 64 refers to the copyright protection period that ends 70 years after the "death" of the author. The terminology used in this legislation implies that legal persons like ESA do not qualify as authors. The Court based its decision on this and decided that an

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<sup>18</sup> German Copyright Act, *supra* note 8, at art. 7. "Author is the creator of the work." See also NORDEMANN ET AL., INTERNATIONAL COPYRIGHT (COMMENTARY), VCH, 220 (1990).

<sup>19</sup> State Court of Berlin, *supra* note 6, at "Reasons for the decision".

<sup>20</sup> NORDEMANN, *supra* note 18.

<sup>21</sup> *Id.* at 43.

<sup>22</sup> "The copyright protects the author's intellectual and personal relation to his work." German Copyright Act, *supra* note 8, at art. 11.

<sup>23</sup> "Work in the meaning of this Act are only the personal intellectual creations." German Copyright Act, *supra* note 8, at art. 2, para. 2.

"[a]uthor in the meaning of art. 2 of the German Act, as well as creator of an image in the meaning of art. 72 of the German Act, can be only a natural person, because only a natural person has the personal and intellectual capability for the creation of a work. As a legal person ESA can neither be author nor creator of an image".<sup>24</sup>

ESA was requested to present the natural person who authored the photograph in dispute or, in his or her absence, the contract whereby the employee transferred his or her exploitation rights to their employer, ESA.<sup>25</sup> The Court requested this on the basis of Article 31, that indicates the exploitation rights (*Nutzungsrecht*) of a work can be transferred from one person to another<sup>26</sup> and on the basis of Article 34, that stipulates that such transfer requires a contract<sup>27</sup>. ESA declined to present a natural person, and insisted that ESA itself was the "author" of the photograph. ESA also insisted that it had transferred, through a contract, the copyrights to CDZ Film, the German distributor.<sup>28</sup> But the Berlin Court did not accept the ESA – CDZ film contract as legal evidence that established ESA possessed copyrights of the photograph<sup>29</sup>. The Court argued that ESA failed to "provide evidence, which natural person has taken the photos by technical aids and that this person has transferred its right to use to (ESA)".<sup>30</sup> The Court decided that "it was therefore not relevant if the photos have a protection under Art. 2 paragraph 1 no. 5 of the Copyright Act as optical images or if

<sup>24</sup> State Court of Berlin, *supra* note 6, at "Reasons for the decision".

<sup>25</sup> State Court of Berlin, *supra* note 6, at "Reasons for the decision".

<sup>26</sup> German Copyright Act, *supra* note 8, at art. 31. "Transfer of rights of use, paragraph 1: The author may grant another person the right to exploit the work in a certain or all ways of exploitation." Copyright and neighboring rights are a bundle of rights that are traditionally separated into two groups: The moral rights and the exploitation rights. The moral rights, as rights of paternity over a work, are not transferable. On the other hand, exploitation rights, as rights to exploit the work, to copy and to publish it, are transferable.

<sup>27</sup> German Copyright Act, *supra* note 8, at art. 34. "Transfer of exploitation rights, paragraph 1: Exploitation rights may only be transferred with the consent of the author."

<sup>28</sup> State Court of Berlin, *supra* note 6, at "Reasons for the decision".

<sup>29</sup> *Id.* The judges also reasoned, "[a]s the defendant had disputed that the images were taken by (ESA), such proof was necessary. The plaintiffs were unable to provide such proof in court, even when requested by the court in the hearing".

<sup>30</sup> State Court of Berlin, *supra* note 6, at "Reasons for the decision".

they have protection under art. 72 paragraph 1 of the Copyright Act."<sup>31</sup>

ESA did not to appeal the Court's decision.

Some years later, Gervais, a specialist of the World Intellectual Property Organization, commented, "[i]f you take the remote sensing data and the Meteosat case...if they had been able to prove to the judge that the satellite is not taking dumb pictures, that someone has to tell it what to take the picture of, when to take the picture, that there was a human intervention, I think the Court would have concluded that the photos were protected."<sup>32</sup> From this statement, it can be concluded that Gervais did not know that ESA took the extreme position and declined to present a natural person as the "original" author of the photograph.

### III. FRANCE

#### A. Landsat Image Distribution

The United States' *Landsat* satellite system was the first to produce remote sensing images dedicated to civil uses. After some years of operation, during the attempted privatization process of the *Landsat* system, the United States Government contracted with a private company, the Earth Observation Satellite Corporation (EOSAT) for the distribution of *Landsat* products. EOSAT started to commercialize the satellite products in 1985<sup>33</sup>, based on trade secret<sup>34</sup>.

Trade secret is the legal tool designed to protect "any formula, pattern, device or compilation of information which is used in one's business and which gives person an opportunity to obtain an advantage over the competitors who do not know or use it."<sup>35</sup> As trade secrets are established through contracts,

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<sup>31</sup> *Id.*

<sup>32</sup> D. Gervais, WORKSHOP PROCEEDINGS ON INTELLECTUAL PROPERTY RIGHTS AND SPACE ACTIVITIES, *supra* note 6, at 106.

<sup>33</sup> 3/3 EOSAT BULLETIN (Dec. 1988).

<sup>34</sup> In the distribution terms for Landsat products to users, EOSAT stipulated that the Landsat products constituted a confidential trade secret of EOSAT. EOSAT: Agreement for Purchase and Protection of Satellite Data, "Package Warning" (1989).

<sup>35</sup> BLACK'S LAW DICTIONARY 1039 (6<sup>th</sup> ed. 1991).

only the parties to the contract are bound and third parties cannot violate them.

In the quest to commercialize *Landsat* images in a growing competitive market, the official U.S. *Landsat* distributor signed a contract<sup>36</sup> with Eurimage<sup>37</sup>, a European distributor of remote sensing images. The aim of this agreement was to commercialize *Landsat* imagery products of the European continent by selling them to European users. In 1996, operation of the *Landsat* system was transferred to another U.S. private company, Space Imaging, when it bought EOSAT, but the *Landsat* product supply to Eurimage continued. In the Space Imaging-Eurimage partnership, the trade secrets policy was reaffirmed as the tool to protect the *Landsat* products.<sup>38</sup>

#### *B. Tribunal of Commerce of Clermont-Ferrand, First Instance*

In 1993, Eurimage signed an agreement with M Sat Editions<sup>39</sup>, a French private company, for the exclusive distribution of satellite photographic products of the French territory, based on *Landsat* data and images. Such products were used in French magazines as *Le Point*<sup>40</sup> and *Géo*. The contract between Eurimage and M Sat stipulated that M Sat could present itself, besides Eurimage, as proprietary holder of the *Landsat* products of the French territory.<sup>40</sup>

Later, game puzzles were commercially offered in the marketplace. Rubie's France, a private French company that pro-

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<sup>36</sup> "Eurimage...has an exclusive agreement with EOSAT for the distribution of world-wide *Landsat* coverage and other EOSAT data sets", <http://www.geostrategies.com/about/partners/eurimage.htm>.

<sup>37</sup> Eurimage was established in 1986 and was first registered as a private company in the United Kingdom. D. Wilson, *The Commercialization of Remote Sensing From Eurimage View*, 10 INT'L J. OF REMOTE SENSING 353, at n. 2 (1989). Eurimage later changed its place of register to Italy.

<sup>38</sup> Eurimage Standard Terms and Conditions, Clause 15: Space Imaging Data, at 2 (Nov. 2000).

<sup>39</sup> M Sat Editions is a French value-added company, who enhances digital images and distributes them on a commercial basis. The agreement was signed on Aug. 25 (1993). See Ph. Gaudrat, *La Terre Vue en Haut sur le Puzzles des Amateurs d'en Bas: Brèves Observations à propos de Riom* (Com. 14 mai 2003), 2 RTD.com, 309 (2004).

<sup>40</sup> T.P.I. Clermont-Ferrand (Commerce), *M Sat Editions v. Rubie's France*, N. 217, Role General n. 99 002123 (Oct. 4, 2001), at "Parties' Submissions".

duces and commercializes several board games, created and started to commercialize puzzles that depicted the French regions of Auvergne and Corsica Island in color. When the puzzles were introduced into the market, M Sat believed they contained images that were unauthorized copies of color photographs that M Sat produced based on *Landsat* imagery<sup>41</sup>. M Sat started a legal action against Rubie's France before the Tribunal of Commerce of Clermont-Ferrand<sup>42</sup>, not on the violation of trade secret agreements but, surprisingly, on the basis of violation of copyright. It was clear that Rubie's France did not obtain the puzzles photographs through agreement with M Sat. Further, because third persons not party to a trade secret contract can not violate a trade secret agreement, M Sat's claim to the Tribunal was that Rubie's France violated M Sat copyrights.

According to copyright legislation, the act of unauthorized copying of an object under copyright protection, establishes a legal relation between the copyright holder and the person that made the copy.<sup>43</sup> Thus, in case of a copyright violation, there is no need of a contract among the actors.

The images of the region of Auvergne and Corsica Island might have been obtained by other satellite remote sensing systems, but in this legal proceedings, M Sat submitted as evidence *Landsat* satellite photographs that served to produce the color photographs.<sup>44</sup>

The Tribunal placed the photographs in dispute under the Code of Intellectual Property, addressing the section devoted to

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<sup>41</sup> It is an astonishing event that M Sat realized that Rubie's France puzzles photographs were copies of its photographs, considering the present market with satellite images appearing in many products as calendars, postcards, notebooks covers and other items. Many of these images have no reference to the source and some even declare to be a result of a composition of several satellite images, without mentioning which ones. Often it is not known if the manufacturers of such commercial items legally obtained such satellite images under a contract with satellite products distributors. It is very likely that some producers of merchandise with satellite images consider such images to be public domain.

<sup>42</sup> T.P.I. Clermont-Ferrand (Commerce), *supra* note 40, at "Parties' Submissions"..

<sup>43</sup> CREIFELDS RECHTSWÖRTERBUCH 1089 (8<sup>th</sup> ed. 1986).

<sup>44</sup> T.P.I. Clermont-Ferrand (Commerce), *supra* note 40, at "Parties' Submissions"..

"*droit d'auteur*" (copyright)<sup>45</sup>. Article 111-1 of the section on copyright indicates that an "author" is the one who produces "works of the spirit".<sup>46</sup> Article 112-1 contains a list of such works including photographic works and those created by techniques that are analogous to the ones used in photography, as well as geographic charts.<sup>47</sup> The Tribunal accepted that the M Sat photographs were "works of the spirit" and concentrated its efforts on whether or not the photographs in Rubie's France puzzles were copies of the M Sat photographs.

M Sat argued that several minimally processed images were necessary for the production of the photographs in dispute. In order to support these arguments, M Sat presented some photographs in black and white, which were computer representations of digital minimally processed data. These photographs, dark and diffuse, supposedly showed France<sup>48</sup>, but the Judges had difficulty recognizing it. The Judges' attention was drawn to what was believed to be a cloud in the north of Corsica Island. It was considered that clouds were temporal meteorological events in this region, with individual characteristics.

The same features and other notable similarities were present in the color photographs, therefore, the Judges declared the Rubie's France puzzles photographs as counterfeits and granted copyright protection to M Sat. Rubie's France appealed the decision to the Court of Appeal of Riom.

### *C. Court of Appeal of Riom*

On appeal, M Sat again submitted dozens of dark *Landsat* photographs, in black and white, which served as supporting evidence about the origins of the M Sat color photographs, where the French territory was hardly identifiable. M Sat argued that its employees selected those *Landsat* photographs,

<sup>45</sup> Code de la Propriété Intellectuelle [French Intellectual Property Code], Law N° 92-597, July 1st, 1992 (ed. Dec. 1992), at Part 1, The Literary and Artistic Property; Book I: Copyright.

<sup>46</sup> *Id.* at art. L. 111-1.

<sup>47</sup> *Id.* at art. L. 112-2.

<sup>48</sup> The minimal processed data of the *Landsat* digital images were transformed by a computer into photographic format. The computer assigned white, black and grey levels to each number according to a pre-programmed scale of tones.

corrected them geometrically, set them to create a mosaic, and colored them.

1. M Sat processed image as a "work of the spirit"

Like the Tribunal, the Court of Appeal studied the disputed photographs and considered them under the concepts of the Code of Intellectual Property. The M Sat color photographs were inspected under Article 111-1 dedicated to "works of the spirit". The Court also took into account the list of objects mentioned in Article 112-1 which meet the criteria for copyright protection.

After reviewing the satellite photographs, the Court qualified M Sat photographs to be "works of the spirit". The Court reasoned that the assignment of color elements and their harmonization produced specific and original works of a unique nature. The Court reasoned further that the use of complex technology in the transformation and enhancement process; selecting particular colors, contrast and luminosity; as well as softening the colors, introduced personal intellect into the works. The Court was of the opinion that human creativity and initiative were required for the production of the photographs of M Sat.<sup>49</sup>

It seems that the color photographs produced by M Sat was a value-added product based on *Landsat* raw and minimally processed digital images. But, questions still remain: was enough intellectual creativity introduced into the disputed photographs to make them qualify for copyright protection? Were they still minimally processed images?

It is generally accepted that human intellectual creativity is necessary to produce "analyzed images", which qualify to be protected under intellectual property rights.<sup>50</sup>

Nevertheless, in this particular case, Pierre Sirinelly, a French intellectual property expert raised the hand to argue against both decisions. He disagreed that the M Sat color pho-

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<sup>49</sup> CA Riom, *Rubie's France v. M Sat Editions*, Case N. 219, 01/02993 (May 14, 2003). An unofficial English translation (by the author) of excerpts of this court decision is annexed to this article.

<sup>50</sup> CARL Q. CHRISTOL, *THE MODERN INTERNATIONAL LAW OF OUTER SPACE*, 739 (1982).

tographs qualified for copyright protection. Sirinelli stated that the Court improperly applied the traditional photographic criteria (selection of the photographed subject, angle, illumination, time of the shot) to the M Sat photographs. This made it appear as if the choice of the M Sat employees in selecting the *Landsat* photographs, the colors, the contrasts, the luminosity, etc., had the same level of creative choices required in traditional photography to produce a "work of the spirit".<sup>51</sup> Sirinelli insisted that the time, effort, and tools used for producing the M Sat photographs do not constitute sufficient elements to benefit from copyright protection.<sup>52</sup>

## 2. Was the M Sat photograph copied?

The Court then proceeded to review the question of whether the photographs used in Rubie's France Puzzle were copies of M Sat photographs. This time the Court recognized that the "cloud" that had been identified by the Tribunal of first instance as located over the sea in the north of Corsica, was in fact an underwater reef. Nevertheless, the judges of Riom found again that quite a lot of features were similar between the two photographs, including the same scale and precise resemblances in the terrain's topography. The Court found it significant that Rubie's France failed to present any evidence about the source, like geographic documents, that served as its basis for the production of the photographs in the puzzles. Therefore, it concluded that Rubie's France could not have created its own work.<sup>53</sup>

Pierre Sirinelli regretted that the Court centered its efforts on searching for similarities in the color photographs of both parties, instead of carefully scrutinizing the creativity content in the M Sat color photographs. Although it could be proved that the photographs of both parties in dispute had a lot of similarities, the French specialist commented that the natural land-

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<sup>51</sup> P. Sirinelli, *Originalité d'images satellites ou comment distinguer la carte du territoire*, 40 RECUEIL DALLOZ 2754-2756 (Nov.13, 2003).

<sup>52</sup> *Id.* at 2755.

<sup>53</sup> CA Riom, *supra* note 49.

scape of France was actually the one which was copied and not the M Sat photographs.<sup>54</sup>

### 3. Copyright protection for *Landsat* images

Philippe Gaudrat, another French intellectual property expert, thought that the Court was lost in guesses. Gaudrat referred to the transfer of some rights by the agreement between Eurimage and M Sat which made the *Landsat* satellite images appear as original works. For Gaudrat, the way the term, "original works" was written in the contract, it was intended to give the images intellectual property right protection.<sup>55</sup> However, Gaudrat is of the view that a contract can neither create copyright of a product, nor be a proof thereof. He affirmed that reciprocal recognition of copyright on such items among private persons, has no legal effect.<sup>56</sup> This French specialist concluded that such arguments are only a sign of the uncertainty regarding the status of satellite images. The mechanical, methodical, and systematical production of satellite images, do not allow for the introduction of human creativity. He is of the opinion that the M Sat photograph was enhanced in color, but lacked new information and therefore, creativity.

In May 2003, the Appeal Court of Riom affirmed the decision of the Tribunal of first instance. The Court of Appeal found the Rubie's France puzzles to be counterfeits and reaffirmed the copyright of M Sat over the images in dispute.<sup>57</sup> Although these court decisions do not create legal precedent in the German and the French legal systems,<sup>58</sup> they do reflect the emerging challenges in applying copyright protection to satellite products.

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<sup>54</sup> Sirinelli, *supra* note 51, at 2755.

<sup>55</sup> Gaudrat, *supra* note 39, at 309.

<sup>56</sup> *Id.*

<sup>57</sup> CA Riom, *supra* note 49.

<sup>58</sup> CREIFELDS RECHTSWÖRTERBUCH, *supra* note 43, at 866.

## IV. CONCLUSIONS

*A. Creation of Copyright through Contracts*

Both the German and the French cases reveal a common contracting practice in the remote sensing industry. It is a practice in which the contracting parties attempt to act as legislators to create whatever property protection they wish. Additionally, they then attempt to get this "protection" recognized by third parties, including Judicial entities. However, individuals, companies, and intergovernmental agencies cannot create an intellectual legal property regime for their products as they wish. States define objects, terms, and conditions for copyright protection. States' legislative and judiciary bodies are the only entities with the authority to decide if an item qualifies for copyright protection.

In the German case, the Court recognized that no copyright could be derived from a contract clause. Conversely, the French Tribunal and Court of Appeal confirmed the intellectual property claims declared in the distribution contract, but failed to examine closely the nature of the objects claimed to be protected.

The trend among most of the satellite remote sensing data distributors is to conclude contracts wherein private persons declare that all satellite products are protected under copyright law, even if some of the products do not qualify for it. This trend includes distribution contracts with end-users that contain clauses referring to "copyright" of satellite products. Such contracts are invalid attempts to establish copyright protection. Consistent contract practice cannot be a substitute for intellectual creativity and direct human intervention.<sup>59</sup>

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<sup>59</sup> A representative of ESA commented, "[a]ll [contracts] include clauses that bind the user to recognize ESA's full title over ERS-1 data as owner of the satellite. This right is reinforced by separate recognition of ESA's copyright in the data. Through this consistent practice, ESA has established a precedent for general application in the field of Earth Observation data generally". M. Ferrazzani, *ESA Data Policy*, 9 ECSL NEWS (June 1992).

*B. Direct Human Intervention*

Most national legislation has no written minimum standards that establish the necessary level of creativity that has to be introduced into a photograph to enable it to be considered as a "work". The artistic or professional character of a "photographic work" must be manifest through the introduction of inputs into the photograph by the artist or professional. Traditionally, some of these inputs are the selection of the light source, the inclination of the illumination, the time of exposure of the device, the selection and perspective of the photographed object, etc. In both cases the objects of dispute were addressed as photographs. It is necessary to look for analog acts of direct human intervention in the creation of satellite images.

In the German case, the *Meteosat* satellite, then operated by ESA, was designed to provide meteorological data. From its geostationary orbit, at a distance of 36,000 km it usually took images of Europe. In order to take an image of the Earth and the Moon, the satellite needed to be specially programmed. ESA's employees decided on the selection of the photographed objects, on the illumination of the bodies during the moment of the sensing, on programming the sensor to capture both celestial bodies,<sup>60</sup> etc. This was sufficient direct human intervention for producing this particular *Meteosat* image, similar to producing a photographic work, however, ESA denied the existence of natural persons behind such processes.

To the contrary, in the French case, no inputs were introduced by M Sat employees in the satellite program for the making of the *Landsat* photographs. *Landsat* images may be obtained in two ways: Landsat satellites are activated to gather images of certain areas of interest according to general civil uses' demands<sup>61</sup> or are activated on request of a paying customer. However, in both cases, *Landsat* satellites are pro-

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<sup>60</sup> Apparently, the Earth and the Moon were sensed separately. The separation between the Earth and Moon is not to scale to the (correct) relative size of both. Consequently, a mosaic with two or more images must have been produced to include both celestial bodies for the newspaper ad.

<sup>61</sup> In some special events, *Landsat* satellites may be activated to sense a particular place at a defined moment (e.g. a volcano eruption, the aftermath of a storm).

grammed to sense at the same local time of the day in order to take advantage of the best luminosity and contrast<sup>62</sup>. With this standard image gathering plan there is no individual selection of the perspective, inclination of the illumination, the time of exposure of the device and even the selection of the light source, the Sun.<sup>63</sup>

In the case of the image of the region of France, there is a question as to whether the satellite was programmed on M Sat request to take images of particular areas at a precise moment, or if the images resulted from a general systematical satellite task and were available from an archive. With the automation and standardization of so many inputs, it is highly questionable that there was direct human intervention in the creation of the *Landsat* images that were used to compose the photographs in dispute. If the traditional protection requirements for photographic works are considered, such remote sensing images do not qualify for protection under copyright.

### *C. Sufficient Intellectual Creativity in the Digital Image Processing*

As previously mentioned, it may be argued that the *Meteosat* image in the German case fulfilled some of the requirements for protection under the German copyright formula for photography. However, did the enlargement, coloring, and reduction of the image provide sufficient intellectual creativity to make the product qualify for copyright protection? Similar considerations were also reviewed by the French courts. M Sat submitted in both court procedures that sufficient intellectual creativity was introduced to transform the black and white *Landsat* digital images into color photographs.

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<sup>62</sup> *Landsat* satellites have circular/near-polar/sun-synchronous orbits. In such orbits, satellites sense the Earth's surface at the same local time of the day, between 9:30 and 10:30 hr in the morning, when the objects' shadows on the surface are optimal to detect such objects.

<sup>63</sup> "The USGS uses the maxim solar zenith angle as a threshold during scheduling. Daylight imaging will not be schedule if the solar zenith angle is equal to or greater than the maximum solar zenith angle value" Landsat Website, [http://landsat7.usgs.gov/technical\\_details/data\\_acquisition/LTAP.php](http://landsat7.usgs.gov/technical_details/data_acquisition/LTAP.php).

One must consider the value of effort and technical skills needed to transform satellite images into value-added products.<sup>64</sup> However, in the French case, if the same *Landsat* images used by M Sat are also used by another company to reproduce a color photograph of nature, the resulting products would not be different.

When analog photography was first introduced, the consideration of copyright as the proper legal formula to protect such items was polemic. Nevertheless, as time passed, criteria were established for distinguishing between "photographic works" (with direct human intervention and creativity) and other photographs. Finally, the copyright formula became solid in protecting photographic works.

Another formula that is available to protect satellite images, can be found in the "right to prevent unfair extraction" of the European Union Directive on the Legal Protection of Databases<sup>65</sup>. This Directive honors substantial financial investment, as well as organizational and technical skills rather than creativity, and has already been implemented by many of the national legislations of the European Union member-States. However, in the German and French cases, the courts examined photographs, not databases.

If image data are changed to reflect the spirit of the engineers and technicians, the resulting image does not resemble the actual landscape sensed. Computer software for imaging processing has become common and images reproducing natural landscapes are easy to manipulate. With the increase of such automated image processing for the production of satellite photographs, less intellectual creativity and direct human intervention are introduced to the same, therefore reducing the probability of copyright recognition.

By the introduction of digital photographs, in the special case of satellite remote sensing images, judges should not apply

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<sup>64</sup> "Analyzed information" "...means the information resulting from the interpretation of [minimal] processed data, inputs of data and knowledge from other sources". Principles, *supra* note 1, at Prin. I (d).

<sup>65</sup> Directive 96/9/EC of the European Parliament and of the Council on the Legal Protection of Databases (Mar. 11, 1996).

the traditional photographic criteria. When they apply the copyright formula, they need to consider the different levels of the digital image processing and apply innovative principles. If judges cannot set new criteria, legislators need to create a new legal formula to protect satellite photographs.

## Annex

## COURT OF APPEAL OF RIOM

[Excerpts<sup>66</sup>]

Riom, France, 14 May 2003

Appellant: Rubie's France

Appellee: M Sat Editions

Decision appealed: Tribunal of Commerce of Clermont-Ferrand, 4 Oct. 2001.

...In light of the fact

That the Tribunal of Clermont-Ferrand has confirmed that the company Rubie's France has committed acts of counterfeit to the detriment of the company M Sat Editions...

...and has condemned Rubie's France to

...pay 250,000 francs to M Sat Editions.

...to forbid to market Rubie's France counterfeit puzzles...

...to forbid Rubie's France to advertise for such puzzles,

...to publish this decision [of the Tribunal] in five newspapers or magazines of M Sat Editions choice, the costs of such publication to be charged to Rubie's France.

On the responsibility of Rubie's France.

...Considering,

...[that] company M Sat created and commercialized the satellite images and is the rightful owner and holder of the

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<sup>66</sup> Unofficial translation by the author.

rights of the sole satellite image of France in natural colors and of its regions...

...Considering,

that company M Sat exactly presents and renders documents derived from satellite photos, which are raw images, obscure and unidentifiable, [M Sat] proceeds with a geometric correction, creates a mosaic of tens of raw images, gives each of the elements its colors and harmonizes the ensemble;

that [M Sat] designs and creates a specific and original work, which displays particular color characteristics and unique features...

...Considering this, it is proven,

that the intervention of company M Sat in the products acquired from company Eurimage constitutes an intellectual work, which requires human initiative and creativity;

...there from results,

that the produced works are originals, result of an individualized application of a complex technology through a process of transformation and improvement, selection, notably of colors, contrast and luminosity, harmonization and added emphasis by fading the surroundings, etc.;

that, consequently, the geographical maps created by company M Sat Editions constitute intellectual works in the meaning of art. L. 112-2 of the intellectual property code...

...Considering,

...[that] some arguments forwarded by company Rubie's France denying an original creation by the company M Sat Editions for which it possesses a property right and a copyright, are not contradictory to this [court] analysis...

...Considering,

...that the company M Sat Editions is in no way a simple satellite image distributor...

...likewise company Eurimage has conventionally recognized this copyright ...

...Considering,

...that the lack of authorization was accepted in the hearing and was not contested,

...that, in order to stress this, these ["] authorizations of use ["] admitted by company M Sat Editions do exist in regard to other users, the payment of fees,...additionally proves the existence of property rights of company M Sat Editions over these products...

...Considering,

that the resemblance of the drawn maps on the puzzles and the maps edited by M Sat result in numerous observable similarities between the two

even when ignoring the unfortunate example used by the tribunal [of first instance], who had seen a cloud above the sea north of Corsica, identical on both maps, although this is a submarine reef ;

that the similarities result from the precision of the relief depicted on the puzzles;

that it is very certain that the drawers could not establish their own work based on geographic documentation of other origin than that of the appellant<sup>67</sup> company;

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<sup>67</sup> Remark of the translator: "appellant" should read "appellee".

that only the maps of M Sat have the reproduced precision;

that the reproductions of the M Sat maps published by the journals 'Le Point', 'Geo' etc. did not permit the reproduction of all maps edited by the company Rubie's France,

that certain regions are not depicted;

that, finally, company M Sat produced in the hearing, as evidence No. 9, the black and white film of the Auvergne region which was done on the basis of the data file of M Sat at the same scale as the puzzle, among them a super-imposable negative with the puzzle logos...

For these reasons...

...The court confirms the judgment [of the Tribunal of Clermont-Ferrand] in all its dispositions...

...the condemnation [for] damages and interest expresses in present currency [amounts to] 38,112.25 ...

# COMMENT: INTELLECTUAL PROPERTY IN OUTER SPACE: INTERNATIONAL LAW, NATIONAL JURISDICTION, AND EXCLUSIVE RIGHTS IN GEOSPATIAL DATA AND DATABASES

*Lee Ann W. Lockridge\**

The international law of outer space emphasizes nondiscriminatory access to outer space as between nations, as well as the absence of national sovereign rights in outer space, including the moon and other celestial bodies.<sup>1</sup> International intellectual property law, on the other hand, emphasizes private rights over public access.<sup>2</sup> The international law of outer space prohibits territorial claims to sovereignty in outer space. International intellectual property law operates under the assumption that each nation's laws apply territorially. Moreover, national laws protecting intellectual property derived from and utilized in outer space vary; in the case of data rights, the European approach radically departs from much of the rest of the world. Do these divergences lead to inexorable conflict?

With respect to the question of the international law of outer space versus national intellectual property laws, I argue that no international treaty or international custom restrains or

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<sup>1</sup> See generally 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, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

<sup>2</sup> Compare, for example, TRIPS Agreement Articles 9-12 & 14 (setting forth a broad scope of rights in copyrighted works) with Article 13 (allowing nations to create exceptions from copyright protection but only when the exceptions excuse "certain special cases which do not conflict with a normal exploitation of the work."). See Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS 320 (1999), 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994) [hereinafter TRIPS Agreement].

precludes the application of intellectual property rights to outer space activity. My analysis of the jurisdictional issues with respect to intellectual property laws in general, and European data rights in particular, demonstrates that when utilization of intellectual property, including data, occurs on Earth, no new jurisdictional difficulty arises. The European data right should be applied only to conduct occurring in a European member state, not to conduct occurring in other countries, and thus does not pose a true conflict of law, even in a transnational dispute. When utilization of data or other intellectual property occurs in outer space, however, new jurisdictional difficulties can arise, perhaps warranting consideration of a modified jurisdictional framework.

## I. INTRODUCTION

In the preceding article, Professor Julie Cromer presents two models for protecting geospatial databases and their underlying geospatial data, meaning data pertaining to geographic characteristics and boundaries, both of natural and man-made Earth-bound features. She contributes to the literature of outer space law by drawing attention to a divergence in treatment of what may be the most valuable form of intangible right currently generated in outer space ventures, namely geospatial and other outer-space-derived data. Her focus is on geospatial data collected via satellite-borne systems, much of which data is presented in mapped or photographic form.

Professor Cromer applies both copyright law, using United States copyright law as the demonstrative example,<sup>3</sup> and the *sui generis* European Union Database Directive (the "Database Di-

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<sup>3</sup> Although Prof. Cromer uses U.S. copyright law to illustrate the question of copyrightability, it is important to note that in many respects, the result will be the same or similar in many other jurisdictions, because the basic nature of a copyright-protected work, particularly the requirements of originality and fixation and the exclusion of underlying ideas or facts, does not vary greatly from nation to nation within the Berne Convention or the WTO. See generally TRIPS Agreement, *supra* note 2, and Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, revised July 24, 1971, S. TREATY DOC. NO. 27, 828 U.N.T.S. 221 (1986) [hereinafter Berne Convention]; Berne Convention Implementation Act, Public Law 100-568, 102 Stat. 2853, 1161 U.N.T.S. 30 (1988).

rective") to geospatial data and databases.<sup>4</sup> She exposes some of the theoretical weakness in using a copyright regime to protect the underlying photographic or mapped data, most particularly with respect to fixation and fair use,<sup>5</sup> but also the lack of clear originality and authorship of the resulting work.<sup>6</sup> She also suggests the possibility that geospatial data might not fall within the protection of the Database Directive due to the low investment in organization of the data (as compared to the high investment in data gathering).<sup>7</sup> Professor Cromer reminds us that U.S. copyright law may find its ultimate strength with respect to data protection not in traditional copyright but in the newer anti-circumvention provisions, which could be used to prevent access to legally unprotected data as long as the data are contained in a copyrightable database to which technological access-control measures have been applied.<sup>8</sup>

Following her presentation of the copyright and *sui generis* models of protection, Professor Cromer suggests, for our consideration, two international divergences that may raise legal conflicts in the treatment of geospatial data as intellectual property, both of which I address here. She proposes a conflict between *any* assertion of exclusive intellectual property rights in outer-space-derived geospatial data (including via copyright or data protection) and the overarching international legal principle applied to outer space, namely, *res communis*. She does note that the Outer Space Treaty "does not necessarily preclude intellectual property; its effect instead depends entirely upon the interpreter's viewpoint."<sup>9</sup>

I conclude that the international law of outer space most certainly does not preclude intellectual property.<sup>10</sup> In fact, one significant multinational agreement focused upon investigation

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<sup>4</sup> Julie D. Cromer, *How on Earth Terrestrial Laws Can Protect Geospatial Data*, 32 J. SPACE L. 253 (2006).

<sup>5</sup> *Id.* at 275-281.

<sup>6</sup> *Id.* at 270-274.

<sup>7</sup> *Id.* at 282-284.

<sup>8</sup> *Id.* at 274-275.

<sup>9</sup> *Id.* at 262.

<sup>10</sup> See *infra* Part II.

in outer space specifically provides for intellectual property.<sup>11</sup> The fact that there is no true conflict between the international law of outer-space activity and private rights in outer-space-derived data does not mean, of course, that all such data *should* be protected by exclusive rights as a matter of sound scientific and legal policy. Instead, it may mean that the affected communities should begin a conversation about the scope of exclusive rights currently available and whether that scope should be expanded or constricted.

Cromer also asks whether there is a conflict between the treatment of geospatial data under the Database Directive<sup>12</sup> (or other similar *sui generis* data protection regimes) and the treatment of geospatial data under United States copyright law<sup>13</sup> (or other jurisdictions without a *sui generis* data right).<sup>14</sup> She notes that "[b]ecause recognition of the Database Directive may be contrary to the policy interests of the United States, it would [be] surprising if a U.S. court determined that the Directive should be interpreted or enforced," thus acknowledging that this may be a policy conflict more than a true legal conflict.<sup>15</sup> More concerning with respect to transnational conflicts and the jurisdictional reach of national laws is Cromer's suggestion that a U.S. court could apply the Database Directive to find liability for appropriation of data occurring from within the U.S. (but presumably affecting an interest within the EU).<sup>16</sup>

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<sup>11</sup> See *infra* Part II.A.

<sup>12</sup> Council Directive 96/9/EC, 1996 (L 77 1996-03-27, pp 20 – 28) (of the European Parliament and of the Council of 11 March 1996 On the Legal Protection of Databases) [hereinafter Database Directive].

<sup>13</sup> See 17 U.S.C.S. § 102(b) (2006); *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991).

<sup>14</sup> The absence of a data right under a *sui generis* or other legal regime does not exclude data from all forms of legal protection. "Self-help" forms of legal protection for data continue to exist in all economically developed jurisdictions, including contract and trade secret. Such legal protection requires something more from the person asserting exclusive rights than preparation or collection of data or organization of a database. Legally enforceable rights only arise after implementation of reasonably effective secrecy measures or formation of a contract obligating the non-owning party with respect to the data.

<sup>15</sup> Cromer, *supra* note 4, at 285-287 (IV.B.2).

<sup>16</sup> *Id.* at 286-287.

I analyze the propriety of transnational application of data-protection laws in light of the traditional principles governing international intellectual property disputes. I conclude that any such application of a foreign data law to conduct occurring in the U.S. would be, quite simply, incorrect and unsupportable.<sup>17</sup> The ability of one nation's substantive copyright or database law to impose liability for actions done in another nation is clearly a minority view in the international community. Further, such an idea is contrary to the territorial principle generally underlying intellectual property law in most nations. As a result, while I agree with Professor Cromer that there is a divergence of policy between the EU and the U.S. in terms of treatment of factual data underlying a database, I do not find any real likelihood of a genuine conflict between their laws with respect to protection of geospatial data when unauthorized use occurs on Earth.

If unauthorized use of geospatial data or other intellectual property occurs in outer space, however, there appears to be a void within the standard choice-of-law doctrine of intellectual property, which relies on a presumption of territorial prescriptive jurisdiction. As set forth below, regardless of the substance of the relevant laws, if we do nothing to further mold jurisdictional law in this area, there is a risk of incoherency in the application of intellectual property rights to outer-space activity.

I do not argue here in favor of any particular substantive rights in space-related intangible property such as geospatial data, databases or other copyright-protected works, or inventions. Instead, I analyze the current status of copyright and database rights under the international law of outer space and the choice-of-law principles that may be used to support enforcement of the various substantive rights deemed desirable by individual nations. I conclude that national laws implementing the Database Directive, even without an express territorial limitation within those laws, should not be applied to reach extra-territorial conduct, at least when that conduct occurs within another nation's territory. Jurisdictional issues will remain im-

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<sup>17</sup> See *infra* Part III.

portant to the community of space-related producers and users of intangible information and works under any scheme of substantive law unless and until further international agreement is reached to alter jurisdictional principles in the outer-space environment or in transnational intellectual property disputes.

## II. OUTER SPACE INCLUSIVITY VERSUS DATA RIGHT EXCLUSIVITY

Analyzing the Outer Space Treaty under traditional principles of international law demonstrates the absence of a real, extant conflict between the international law of space and private rights in outer-space-derived data. Professor Cromer asks us to consider whether otherwise valid data and database rights are invalid as applied to geospatial data gathered from outer space, in light of the *res communis* status of outer space under relevant international treaties.<sup>18</sup> She leaves the question open to discussion. In my view, however, the only truly open question is not whether exclusive data rights conflict with current international law, but instead whether exclusive data rights conflict with the goals and policies that motivated the creation of international outer-space law.

In order to determine whether any legal conflict exists, we must first determine what position international law takes with respect to data or information gathered from outer space.<sup>19</sup> More generally, we can discern the status of intellectual property rights within the international law of outer space and then apply that categorical status to the specific case of rights in data derived from outer space.

Before moving into an examination of the relevant international law, it is worthwhile to recall Professor Kali Murray's reminder, in her article in this volume, that "property" is not merely three-dimensional, territorial property, whether on

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<sup>18</sup> Professor Cromer does not, of course, suggest that the EU's decision to protect data as such is an invalid exercise of the EU's legislative powers, but only that as to outer-space-derived data it may violate the international law of space.

<sup>19</sup> I focus my analysis on geospatial and other data gathered from equipment located in outer space, which I term generally data "derived" from outer space, rather than on data gathered from Earth regarding outer space itself because geospatial data gathered from outer-space-bound equipment is the focus of Professor Cromer's article.

Earth or in space. As a result, settling the issue of property rights in outer space is not simply a matter of denying their existence by disclaiming national claims to the three-dimensional space *qua* territorial space.<sup>20</sup> Instead, as Professor Murray argues, we must consider the differentiated aspects of property in order to construct a comprehensive and cohesive theory of what "property" exists or does not exist with respect to outer space and with respect to the indicia and fruits of human efforts in outer space.<sup>21</sup> These indicia and fruits include vehicles or other objects launched into space, remote sensing data gathered in space, and inventions practiced in space. She urges us to consider not only the model of territorial property but also personal chattel (whether moveable or fixed real chattel) and intangible property (including patentable inventions and copyrightable works).

As I demonstrate below, the relevant international law does not specifically address intellectual property. As a result, recalling and applying the differentiation between types of property rights is crucial to distilling the status of intellectual property under relevant international law.

#### *A. International Law Governing Outer Space*

Although international law governing outer space addresses, and rejects, national claims to three-dimensional outer space *qua* territorial space, no accepted source of international law governing outer space precludes intellectual property claims related to or derived from the exploration of outer space. The Statute of the International Court of Justice states that the Court will apply the following international law: (1) international treaties, (2) international custom, (3) widely accepted general legal principles, and (4) as a supplement, judicial deci-

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<sup>20</sup> See Outer Space Treaty, *supra* note 1, at art. II ("Outer 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.").

<sup>21</sup> Kali N. Murray, *Of Gardens and Streets: A Differentiated Model of Property in International and National Space Law*, 32 J. SPACE L. 361 (2006).

sions and the writings of highly qualified scholars.<sup>22</sup> Noted international legal scholar Ian Brownlie, among others, notes that while the statute applies specifically to the International Court of Justice (the "ICJ"), and does not actually refer to "sources" of international law, it is generally regarded as a comprehensive list of the sources of international law and states international tribunal practice as it existed at the time of formation of the ICJ.<sup>23</sup> As such, these four sources would indicate the propriety under international law of a nation's allowing exclusive capture of rights in geospatial data gathered from outer space, if any international law on the issue exists. My examination of these sources and the literature leads me to the conclusion that treaties and international custom arising from treaties form the extent of available international law on intellectual property rights in outer space.<sup>24</sup>

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<sup>22</sup> Statute of the International Court of Justice, June 26, 1945, art. 34(1), 59 Stat. 1031, 30 YEAR BOOK OF THE UNITED NATIONS 1052 (1976). The statute provides that the Court will apply:

- (a) international conventions, whether general or particular, establishing rules expressly recognized by the contesting States;
- (b) international custom, as evidence of a general practice accepted as law;
- (c) the general principles of law recognized by civilized nations; and
- (d) subject to the provisions of Article 59 [providing that Court decisions are not binding except as to the parties and in the particular case], judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of the rules of law.

Id.

<sup>23</sup> IAN BROWNLIE, *PRINCIPLES OF PUBLIC INTERNATIONAL LAW* 5 (6<sup>th</sup> ed. 2003). See also ANTHONY AUST, *HANDBOOK OF INTERNATIONAL LAW* 5-6 (2005).

<sup>24</sup> The first source of international law, namely international conventions or treaties, must be carefully considered: Brownlie cautions that international conventions, agreed upon as they are by only the contracting States, while clearly a source of obligations between individual states, are "not primarily a source of rules of general application, although treaties may provide evidence of the formation of custom." BROWNLIE, *supra* note 23, at 5. Non-treaty-derived international customary rules arise from the practice of states, when the practice is accompanied by state understanding of the practice as obligatory. See *id.* at 6-12; AUST, *supra* note 23, at 6-7. The "general principles of law" referred to in part (c) of article 34(1) of the ICJ statute are those principles of domestic law that may be applied to relations between nations. See generally BROWNLIE, *supra* note 23, at 15-17; AUST, *supra* note 23, at 8-9. This is generally not substantive law, but instead procedural or evidentiary rules, or other concepts such as good faith or estoppel. See BROWNLIE, *supra* note 23, at 16 (rules of procedure and evidence); AUST, *supra* note 23, at 9 (good faith and estoppel). Due to the limited nature of these "general principles" within international law, they are inapplicable to the issue at hand. Simi-

Relevant treaty sources are themselves limited. The Outer Space Treaty and the Moon Treaty provide little explicit guidance for exploring the issue, as neither precludes or even specifically addresses intellectual property rights in or derived from outer space. The specific obligations of the U.S. and other signatories to the Outer Space Treaty to one another with respect to exclusive rights in outer space derive from Articles I, II and IX.<sup>25</sup> Examining the relevant language makes clear that while outer space is not to be claimed as territorial property,<sup>26</sup> and while outer space exploration and investigation are to remain free for all with cooperation and without discrimination,<sup>27</sup> there is no language in the treaty that provides any real guidance on

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larly, because there are currently no relevant international judicial decisions and scant attention paid to outer-space intellectual property issues within the "teachings of the most highly qualified publicists of the various nations," the sources of international law with respect to outer-space-derived intellectual property and data are limited.

<sup>25</sup> Articles I, II, and IX of the Outer Space Treaty provide:

Article I

The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation.

Article II

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.

Article IX

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty.

Outer Space Treaty, *supra* note 1, at arts. I, II, & IX.

<sup>26</sup> *Id.* at arts. I & II.

<sup>27</sup> *Id.* at arts. I & IX.

the issue of intangible intellectual property rights, including geospatial data rights.<sup>28</sup>

Article I focuses on access for purposes of exploration and on freedom of scientific investigation: "The exploration and use of outer space...shall be carried out for the benefit and in the interest of all countries.... Outer space shall be free for exploration and use by all States.... There shall be freedom of scientific investigation...."<sup>29</sup> Cooperation is encouraged in Article I as well as in Article IX: "States shall facilitate and encourage international co-operation [outer space scientific] investigation,"<sup>30</sup> and "In the exploration and use of outer space...States...shall be guided by the principle of co-operation and mutual assistance."<sup>31</sup> These goals do not inherently conflict with the existence of intellectual property rights. Article II prohibits the appropriation of outer space as sovereign territory, a prohibition focused on a real-property-rights analogy rather than an intangible-property-rights analogy: "Outer space...is not subject to national appropriation by claim of sovereignty, by means of use of occupation, or by any other means."<sup>32</sup> As between signatories to the Outer Space Treaty, then, no specific or general obligation exists with respect to intellectual property rights, nor is there any evidence of international custom.

The Moon Treaty, which has not gained many adherents, also addresses claims to outer space without covering intangible property rights.<sup>33</sup> Although the treaty has been in force since 1984, it has only 11 signatories and thus is best used merely as

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<sup>28</sup> Accord Dan Burk, *Application of United States Patent Law to Commercial Activity in Outer Space*, 6 SANTA CLARA COMPUTER & HIGH TECH L.J. 295, 314 (1991) ("[T]he Outer Space Treaty is not explicit about the applicability of this principle [of international policy against national territoriality in outer space] to intellectual property discoveries in outer space, as opposed to real property discoveries in outer space.")

<sup>29</sup> Outer Space Treaty, *supra* note 1, at art. I.

<sup>30</sup> *Id.* at art. I.

<sup>31</sup> *Id.* at art. IX.

<sup>32</sup> *Id.* at art. II. As Professor Cromer acknowledges, this language "does not necessarily preclude intellectual property." Cromer, *supra* note 4, at 262.

<sup>33</sup> Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, May 12, 1979, 1363 U.N.T.S. 21 [hereinafter Moon Treaty] (Participants: Austria, Chile, France, Guatemala, India, Morocco, the Netherlands, the Netherlands Antilles, the Philippines, Peru, Romania, and Uruguay).

a secondary reference point in seeking international custom on the issue of intellectual property rights.

Articles 4, 6, and 11 of the Moon Treaty address property and exploitation rights to the moon.<sup>34</sup> Article 11 states in par-

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<sup>34</sup> The relevant portions of Articles 4, 6, & 11 of the Moon Treaty provide:

Article 4

1. The exploration and use of the moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. ....

Article 6

1. There shall be freedom of scientific investigation on the moon by all States Parties without discrimination of any kind, on the basis of equality and in accordance with international law.

Article 11

1. The moon and its natural resources are the common heritage of mankind, which finds its expression in the provisions of this Agreement and in particular in paragraph 5 of this article.
2. The moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means.
3. Neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person. The placement of personnel, space vehicles, equipment, facilities, stations and installations on or below the surface of the moon, including structures connected with its surface or subsurface, shall not create a right of ownership over the surface or the subsurface of the moon or any areas thereof. The foregoing provisions are without prejudice to the international regime referred to in paragraph 5 of this article.
4. States Parties have the right to exploration and use of the moon without discrimination of any kind, on a basis of equality and in accordance with international law and the terms of this Agreement.
5. States Parties to this Agreement hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible. This provision shall be implemented in accordance with article 18 of this Agreement.
6. In order to facilitate the establishment of the international regime referred to in paragraph 5 of this article, States Parties shall inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of any natural resources they may discover on the moon.
7. The main purposes of the international regime to be established shall include:

ticular that neither the "surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become property."<sup>35</sup> The relevant provisions throughout the treaty point to freedom of investigation and exploration on the moon,<sup>36</sup> absence of national appropriation of the moon,<sup>37</sup> and the surface, subsurface, and natural resources of the moon.<sup>38</sup> Reference to national appropriation and the surface and subsurface of the moon clearly implicate real-property analogies, as does the term "natural resources." "Natural resources" do not include information or intellectual property rights under any standard definition of the term. In sum, the Moon Treaty fails to address intellectual property or other intangible rights, much like the Outer Space Treaty.

At the time the Moon Treaty was drafted, intellectual property rights had been for many years discussed and included in formal international agreements, including provisions considering the differing economic and developmental stages of various nations.<sup>39</sup> In light of the then-contemporaneous focus on developmental inequity in intellectual property rights, the failure of the Moon Treaty, which did include at least nominal consideration for developing nations, to address intellectual property

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- (a) The orderly and safe development of the natural resources of the moon;
  - (b) The rational management of those resources;
  - (c) The expansion of opportunities in the use of those resources;
  - (d) An equitable sharing by all States Parties in the benefits derived from those 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.

*Id.* at arts. 4, 6, & 11.

<sup>35</sup> *Id.* at art. 11(3).

<sup>36</sup> *See id.* at arts. 6 & 11(4).

<sup>37</sup> *See id.* at art. 11(2).

<sup>38</sup> *See id.* at art. 11(3).

<sup>39</sup> The Moon Treaty, completed in 1979, found its current form just 8 years after the 1971 Acts of the Berne and Universal Copyright Conventions attempted to quell concerns of developing nations by allowing those nations to adjust certain copyright protections in light of a nation's stage of development. *See, e.g.,* PAUL GOLDSTEIN, INTERNATIONAL COPYRIGHT §§ 2.1.2.2.A and 5.5.1.6.C (2001) (referencing the Berne Convention, *supra* note 3, and the Universal Copyright Convention, 25 U.S.T. 1341, T.I.A.S. 7868, (1971 Paris Text), Appendix Declaration Relating to Article XVII).

rights indicates that no international consensus, and thus certainly no international customary law, existed at that time with respect to outer-space-derived intellectual property rights.

Other international agreements regarding the exploration and use of outer space include the Convention on Registration of Objects Launched into Outer Space (1975),<sup>40</sup> which is an expansion upon Article VIII of the Outer Space Treaty; the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968),<sup>41</sup> which augments Articles V and VIII of the Outer Space Treaty; and the Convention on International Liability for Damage Caused by Space Objects (1972),<sup>42</sup> which adds to Article VII of the Outer Space Treaty. None contains any provision directly applicable to the question of intangible intellectual property rights, including rights in outer-space-derived data.

It is thus clear that the Outer Space Treaty, the Moon Treaty, and the other broad international agreements regarding outer space exploration and exploitation do not contain any specific binding obligation between signatory nations as to outer-space-derived intellectual property rights, including data rights. The absence of specific obligations does not conclude the analysis of international treaties: treaties and agreements demonstrating a pattern in the same form can evidence international custom, another recognized source of international law.<sup>43</sup> As such, the agreements might theoretically provide evidence of a more general international custom that could be applied to the issue of exclusive intellectual property rights.

The pattern found here, however, is in a form indicating only that the three-dimensional airspace of outer space and any real-property-like surfaces, subsurfaces, and resources are not

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<sup>40</sup> Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975, 28 U.S.T. 695, T.I.A.S. No. 8480, 1023 U.N.T.S. 15 [hereinafter *Registration Convention*].

<sup>41</sup> Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, April 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119.

<sup>42</sup> Convention on International Liability for Damage Caused by Space Objects, March 29, 1972, 24 U.S.T. 2389, T.I.A.S. No. 7762, 961 U.N.T.S. 187.

<sup>43</sup> See BROWNIE, *supra* note 23, at 3-7.

to be claimed as sovereign territory or as nationally exclusive resources in the way that nations claim terrestrial surface and subsurface territory and resources and the airspace above the terrestrial surfaces. Moreover, space objects may be, and may even be required to be, claimed as "territory" of a sort by the nation of registration.<sup>44</sup> There is simply no pattern with respect to intangible, intellectual property rights. As a result, I conclude that neither the Outer Space Treaty nor the Moon Treaty, nor any other broad international treaty, evidences any international custom to restrain or preclude intellectual property rights related to outer space activity, including data rights.

A limited-scope, yet highly relevant multinational agreement to which the United States and European Union space agencies are parties is the intergovernmental agreement concerning the International Space Station (the Space Station Agreement).<sup>45</sup> The Space Station Agreement is the agreement undergirding the operation of the international space station, which is, in rough terms, a joint venture of the United States, Russia, Canada, Japan, and the European Union. And that agreement arguably *encourages* claims of intellectual property rights related to outer space investigation and experimentation. It provides in detail for protection of data and other intellectual property rights within the environment of the international space station.<sup>46</sup>

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<sup>44</sup> See Registration Convention, *supra* note 40, at art. 2; Outer Space Treaty, *supra* note 1, at art. VIII.

<sup>45</sup> Agreement among the Government of Canada, Government of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station, Jan. 29, 1998, 1998 U.S.T. LEXIS 212 [hereinafter Space Station Agreement].

<sup>46</sup> Articles 6, 12, and 21 of the Space Station Agreement provide in relevant part:

Article 6

Ownership of Elements and Equipment

1. [The space agency of each participating country] shall own the elements listed in the Annex that they respectively provide, except as otherwise provided for in this Agreement. The Partners, acting through their Cooperating Agencies, shall notify each other regarding the ownership of any equipment in or on the Space Station.

....

6. The ownership or registration of elements or the ownership of equipment shall in no way be deemed to be an indication of ownership of material or data resulting from the conduct of activities in or on the Space Station.

#### Article 12

##### Transportation

4. Each Partner shall respect the proprietary rights in and the confidentiality of appropriately marked data and goods to be transported on its space transportation system.

#### Article 21

##### Intellectual Property

1. For the purposes of this Agreement, "intellectual property" is understood to have the meaning of Article 2 of the Convention Establishing the World Intellectual Property Organization, done at Stockholm on 14 July 1967.

2. Subject to the provisions of this Article, for purposes of intellectual property law, an activity occurring in or on a Space Station flight element shall be deemed to have occurred only in the territory of the Partner State of that element's registry, except that for ESA-registered elements any European Partner State may deem the activity to have occurred within its territory. For avoidance of doubt, participation by a Partner State, its Cooperating Agency, or its related entities in an activity occurring in or on any other Partner's Space Station flight element shall not in and of itself alter or affect the jurisdiction over such activity provided for in the previous sentence.

3. In respect of an invention made in or on any Space Station flight element by a person who is not its national or resident, a Partner State shall not apply its laws concerning secrecy of inventions so as to prevent the filing of a patent application (for example, by imposing a delay or requiring prior authorization) in any other Partner State that provides for the protection of the secrecy of patent applications containing information that is classified or otherwise protected for national security purposes. ....

4. Where a person or entity owns intellectual property which is protected in more than one European Partner State, that person or entity may not recover in more than one such State for the same act of infringement of the same rights in such intellectual property which occurs in or on an ESA-registered element. ....

.....

6. The temporary presence in the territory of a Partner State of any articles, including the components of a flight element, in transit between any place on Earth and any flight element of the Space Station registered by another Partner State or ESA shall not in itself form the basis for any proceedings in the first Partner State for patent infringement.

*Id.* at arts. 6, 12, & 21. The Convention referenced in Art. 21(1) of the Space Station Agreement includes within intellectual property:

- literary, artistic and scientific works,
- performance of performing artists, phonograms, and broadcasts,

As to patent rights, Article 21 of the Space Station Agreement could hardly be clearer in its anticipation and approval of national laws providing for both creation and infringement of patent rights within the international space station environment. And although it is more explicitly focused on patent rights,<sup>47</sup> with no express mention of copyright, the agreement certainly addresses trade secret and data rights. For instance, Article 6(6) implies that "data resulting from the conduct of activities in or on the Space Station" may be owned by the agency conducting those activities,<sup>48</sup> while Article 12 requires "respect" for "proprietary rights in and confidentiality of appropriately marked data."<sup>49</sup>

As between Space Station partners, there is certainly acknowledgment of and agreement upon the possibility of both creation and infringement of intellectual rights in outer space. In addition, the territorial basis of intellectual property rights<sup>50</sup> survives in outer space under Article 21(2), which states that "for purposes of intellectual property law, an activity occurring in or on a Space Station flight element shall be deemed to have occurred only in the territory of the Partner State of that element's registry." This provision constructively extends a Partner State's territory for intellectual property purposes. By doing so it acknowledges both the validity of intellectual property rights in outer space and the continued acceptance of territoriality as the primary jurisdictional basis for the prescriptive reach of a nation's intellectual property laws.

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- inventions in all fields of human endeavor,
  - scientific discoveries,
  - industrial designs,
  - trademarks, service marks, and commercial names and designations,
  - protection against unfair competition,
  - and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.

Convention Establishing the World Intellectual Property Organization (WIPO) art. 2, July 14, 1967 and amended on September 28, 1979, 828 U.N.T.S. 3.

<sup>47</sup> *Id.* at art. 21(3).

<sup>48</sup> *Id.* at art. 6(6).

<sup>49</sup> *Id.* at art. 12.

<sup>50</sup> *See infra* Part III.A.

### *B. International Law of Intellectual Property*

The cornerstone of modern international intellectual property law is the TRIPS Agreement.<sup>51</sup> The TRIPS Agreement, one of the three major substantive agreements required of all members of the World Trade Organization,<sup>52</sup> provides an overarching framework of international intellectual property obligations, including copyright, trademark, patent and trade secret. By incorporating the substantive provisions of both the Berne Convention and the Paris Convention, the TRIPS Agreement has both eclipsed and reinforced those conventions, which had previously been the preeminent intellectual property treaties. The TRIPS Agreement broadened international treaty coverage by adding trade secrets to the subject matter to be protected. In addition, it required countries to extend copyright protection to computer programs and compilations of data, which the Berne Convention arguably did not cover.

If the members of the World Trade Organization had any specific obligation to one another with respect to intangible rights in outer-space-derived information, creations, or inventions, one would expect it to have been addressed within the TRIPS Agreement. That agreement dates only from 1994, well after the concerned states were aware of potential applicability (or inapplicability) of intellectual property rights in outer space.<sup>53</sup> The absence of any mention of outer-space-derived intellectual property in the TRIPS Agreement suggests, if it does not conclusively demonstrate, that there is no international obligation either to include those rights within or to exclude those rights from national intellectual property laws of general applicability.

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<sup>51</sup> See generally TRIPS Agreement, *supra* note 2.

<sup>52</sup> The World Trade Organization's current membership stands at 150 nations (following Vietnam's accession in January 2007). At the time the TRIPS Agreement came into effect in January 1995, it had around 75 adherents (although adherence to TRIPS was subject to different transition periods for different countries before full compliance with all provisions was required).

<sup>53</sup> In fact, the United States added § 105, governing inventions in outer space, to the Patent Act only four years before the TRIPS agreement was concluded in 1994 (See Pub. L. No. 101-580, 104 Stat. 2863 (1990)). In addition, the first multinational agreement regarding the planned international space station was concluded in 1988.

*C. Application of International Law to Geospatial Data Rights*

With no international law to control outer-space-derived intellectual property rights, as to geospatial data, I contend that each country is free to choose for itself whether to recognize legal rights in such data. Ownership of an intangible right in an expression or embodiment of geospatial data, as long as the legal protection provided does not preclude legal independent creation by others, does not offend the cooperation and non-discriminatory access principles of space law because such intangible rights are non-rivalrous. Even if one entity claims exclusive data rights, the same geospatial data or other outer-space-derived information remains available for others to capture, on a nondiscriminatory basis. The danger existing in such protection may be in the protection potentially available through copyright law, rather than in the data right set out in the Database Directive. This is so because the Database Directive provides that only extraction or utilization of data from a protected database gives rise to liability, while in copyright law, although independent creation is non-infringing, that independent creation may be difficult to prove if an inference of access may be made.

Concerns regarding the functional capacity of developing nations to gather geospatial or other outer-space-derived data are valid, and if developing nations do not have the functional capacity to gather the data, non-discriminatory access to outer space is cold comfort.<sup>54</sup> In light of the absence of an international obligation to protect private rights in factual data (as opposed to databases as original compilations),<sup>55</sup> on the other hand, nations who do not wish to allow exclusive rights in data

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<sup>54</sup> Without the capacity to gather the data anew and without the right to demand access to the data as gathered by others, developing nations might wonder what had become of the benefit and interest of developing nations that had at least been given lip service in the Outer Space Treaty. See Outer Space Treaty, *supra* note 1, at arts. I, & IX. See also Moon Treaty, *supra* note 33, at arts. 4 & 11(7).

<sup>55</sup> See TRIPS Agreement, *supra* note 2, at art. 10(2): "Compilations of data or other material, whether in machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected as such. Such protection, which shall not extend to the data or material itself, shall be without prejudice to any copyright subsisting in the data or material itself."

to be enforced within their territories can simply choose to exclude factual data from copyright protection. Professor Cromer's article correctly notes that the element of originality, i.e. creativity, underlying certain tangible expressions or embodiments of geospatial data is either weak or nonexistent, including when considered either as a photograph or a map.<sup>56</sup> As a result, any nation, including a developing one, has a valid argument for excluding geospatial data and any non-original embodiments of that data, including unenhanced mapped or photographic data, from national copyright protection.<sup>57</sup> This exclusion would not ensure access to the data gathered by other nations and their nationals, of course, but neither would denying database copyright or data rights as a matter of international law. Databases and data can be protected through contract and trade secret law, and these protections may even be more commonly used today than other legal protection. Contract and trade secret are more detrimental to developing nation access than data or copyright protection.<sup>58</sup>

In sum, despite the overarching ideal of freedom for all in the exploration and use of outer space, outer-space-derived data remain subject to national protection. Nothing in current international law poses an impediment to national laws allowing for the creation and application of intellectual property rights in the outer space environment. National protection may incentivize advances in the capture and use of such data. On the other hand, the application of national intellectual property laws to outer-space-derived data may not be optimal for all who are interested in outer space, including developing nations. Identify-

<sup>56</sup> See Cromer, *supra* note 4, at 270-274.

<sup>57</sup> For example, the U.S. clearly excludes facts from copyright protection, see *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991), and I am unaware of any complaint that such exclusion violates any international obligation.

<sup>58</sup> Accord Leo P. 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, 349 (1999) ("The lack of [an intellectual property rights regime for space activities] impedes the efficient international cooperation among states and other entities engaged in space research. . . . [Intellectual property] protection likewise 'encourages the publication, distribution, and disclosure of the creation to the public, rather than keeping it secret . . .'" (quoting Albert Trampusch, *Importance of Intellectual Property Rights for Space Activities in General*, in PROCEEDINGS OF THE FIRST ECSL/SPANISH CENTRE FOR SPACE LAW WORKSHOP ON INTELLECTUAL PROPERTY RIGHTS IN OUTER SPACE 15 (1993)).

ing a normative means or level of protection is beyond the scope of these comments. If the international community wants the law of outer space to prohibit the application of national intellectual property laws to outer-space-derived data, it cannot rely on existing treaties or current international custom.

### III. JURISDICTIONAL ISSUES IN TRANSNATIONAL DATA DISPUTES

As set forth in the introduction, Professor Cromer suggests that a U.S. court could apply a European national law implementing the Database Directive to find a U.S. actor liable for actions taken within the U.S. to extract or reutilize geospatial data contained within a database owned by an EU national.<sup>59</sup> I disagree. Current intellectual property choice-of-law and jurisdictional principles generally result in the application of the law of the nation in which the unauthorized use occurred. Accordingly, it seems highly unlikely that a U.S. court would ever have occasion to apply a national law implementing the Database Directive to activities occurring in the U.S. Similarly, it would violate a basic principle of international intellectual property law for a court within the EU to apply a European national database law to U.S. activities, regardless of the nature of the data.

This inquiry raises, however, an important issue that has not yet been squarely addressed by the space law community: the extreme difficulty of applying traditional intellectual property choice-of-law principles, based on territoriality, to conduct occurring in outer space, particularly where the conduct is relatively unmoored to other Earth-based conduct. Allegedly infringing conduct occurring in outer space raises a true jurisdictional conundrum that eludes traditional analysis within intellectual property law.

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<sup>59</sup> In this article I leave questions of personal jurisdiction largely to the side, focusing instead on the proper prescriptive reach of a nation's substantive intellectual property laws and the related choice of law analysis. In doing so, particularly with respect to the proposition that a U.S. court might choose to apply the Database Directive to conduct occurring in the U.S., I limit my discussion to conduct by an actor whose appropriation or other unauthorized use of data occurs through actions wholly outside the territorial confines of the EU.

### A. Territorial Limitations of Intellectual Property Laws

In international civil law, the basic jurisdictional principle is that of territoriality, meaning a national government has legislative or prescriptive competence within the geographic scope of its territory.<sup>60</sup> The territoriality principle is not always abso-

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<sup>60</sup> See BROWNLEE, *supra* note 23, at 298. Brownlie reviews six bases for criminal jurisdiction in particular, and then notes that there are no important differences between criminal and civil jurisdiction with respect to extraterritorial application of a state's law. *Id.* at 308.

(a) *The territorial principle.* The principle that the courts of the place where the crime is committed may exercise jurisdiction . . . [is] a single application of the essential territoriality of the sovereignty, the sum of legal competences, which a state has. . . .

. . . .

(b) *The nationality principle.* Nationality, as a mark of allegiance and an aspect of sovereignty, is also generally recognized as a basis for jurisdiction over extra-territorial acts. . . . [M]any states place limitations on the nationality principle and it is often confined to serious offences. In any event nationality provides a necessary criterion in such cases as the commission of criminal acts in locations such as Antarctica, where the 'territorial' criterion is inappropriate.

(c) *The passive personality principle.* According to this principle aliens may be punished for acts abroad harmful to nationals of the forum. . . . [C]ertain of its applications fall under the principles of protection and universality considered below. . . .

. . . .

(d) *The protective or security principle.* Nearly all states assume jurisdiction over aliens for acts done abroad which affect the security of the state, a concept which takes in a variety of political offences, but is not necessarily confined to political acts. Currency, immigration, and economic offences are frequently punished. . . . In so far as the protective principle rests on the protection of concrete interests, it is sensible enough; however, it is obvious that the interpretation of the concept of protection may vary widely.

(e) *The universality principle.* A considerable number of states have adopted, usually with limitations, a principle allowing jurisdiction over acts of non-nationals where the circumstances, including the nature of the crime, justify the repression of some types of crime as a matter of international public policy. Instances are . . . crimes by stateless persons in areas not subject to the jurisdiction of any state, i.e. *a res nullis* or *res communis*. Anglo-American opinion is hostile to the general principle involved. . . .

(f) *Crimes under international law.* It is now generally accepted that breaches of the laws of war, and especially of the Hague convention of 1907 and the Geneva Convention of 1949, may be punished by any state which obtains custody of persons suspected of responsibility. This is often expressed as an acceptance of the principle of universality, but this is not strictly correct, since what is punished is the breach of international law; and the case is thus different

lute, particularly when transnational activities are involved, but at root it remains the backdrop of international lawmaking and dispute resolution.

The effects doctrine, whereby a nation asserts prescriptive jurisdiction over extraterritorial activities causing a significant deleterious effect within the nation's territory, modifies the territoriality doctrine. The effects doctrine is not a true departure from territoriality, however, since it governs extraterritorial conduct by reference to significant intra-territorial effects. Thus the effects doctrine departs from and yet simultaneously reinforces the limited territorial legitimacy of the exercise of a sovereign's prescriptive power.<sup>61</sup>

The primary use of the effects doctrine within the U.S. has been to expand the prescriptive reach of national laws in the area of antitrust law. U.S. antitrust law has been applied for more than fifty years to conduct occurring abroad that causes a substantial effect within the U.S.<sup>62</sup> At one time other nations resisted this extraterritorial application of U.S. domestic law, finding it to be a breach of comity.<sup>63</sup> Recently, however, other countries have also begun to apply certain of their laws against anticompetitive activities in an extraterritorial manner. Notably, the European Court of Justice, without expressly utilizing

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from the punishment, under national law, of acts in respect of which international law gives a liberty to all states to punish, but does not itself declare criminal.

*Id.* at 299-305 (internal citations omitted). See also RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES §§ 402, 404 (1986) (characterizing the four bases of jurisdiction as territoriality, nationality, protective, and universality). The nature of the passive personality, protective, universality, and crimes under international law principles as set forth above makes clear that these principles have no relevance to intellectual property laws. Accord Glenn H. Reynolds, *Legislative Comment: The Patents in Space Act*, 3 HARV. J.L. & TECH. 13, 18 (1990).

<sup>61</sup> Accord Harold G. Maier, *Jurisdictional Rules in Customary International Law*, in EXTRATERRITORIAL JURISDICTION IN THEORY AND PRACTICE 65-66 (Karl M. Meessen ed., Kluwer Law Int'l 1996) ("Although the presumed limitation of governmental authority to a nation's territorial boundaries flows from the historic concept of the modern nation state, the proposition that a state may on occasion exercise authority over events beyond its borders also flows, paradoxically, from the principle that the interests of the people that make up the state's population are territorially defined.")

<sup>62</sup> See *United States v. Aluminum Co. of America*, 148 F.2d 416, 444 (2d Cir. 1945); see also *Hartford Fire Ins. Co. v. California*, 509 U.S. 764, 796 (1993).

<sup>63</sup> See BROWNLIE, *supra* note 23, at 306-307.

the "effects doctrine," has ruled that EU regulations may be applied to anticompetitive conduct having a significant deleterious effect within the EU's common market.<sup>64</sup> And although a limited extension of the effects doctrine can be found in trademark law, a species of unfair competition law,<sup>65</sup> use of the effects doc-

<sup>64</sup> *Id.*; see also SYMEON C. SYMEONIDES, ET AL., CONFLICT OF LAWS: AMERICAN, COMPARATIVE, INTERNATIONAL: CASES AND MATERIALS 554-555 (2d ed. 2003) (noting that German antitrust law expressly extends its jurisdiction to "all restraints on competition that have effect within the [German] territory . . . even if they are caused outside of this territory," and that Article 81 of the Treaty of Rome, an EU treaty, regulates activities that "have as their object or effect the prevention, restriction, or distortion of competition within the [European Union].")

<sup>65</sup> Some domestic courts, in limited situations, are willing to adjudicate claims related to extraterritorial conduct when that conduct affects a trademark interest within the domestic territory. For example, in *Steele v. Bulova Watch Co.*, 344 U.S. 280 (1952), the U.S. Supreme Court held that U.S. trademark laws could, in certain circumstances, be applied to reach conduct occurring in foreign nations. It relied on many factors, however, not only on the "effect" of the defendant's commerce within the U.S. In addition to the effect of defendant's conduct on plaintiff Bulova's trade reputation in the U.S. through the confusion of U.S. customers, the Court discussed the Lanham Act's broad jurisdictional grant including all commerce between the U.S. and foreign nations, the defendant's U.S. citizenship, defendant's purchases of component parts within the U.S., and the fact that defendant's goods had ultimately crossed the Mexican border into the U.S. It also stressed the fact that reaching defendant's conduct would not conflict with any rights established under foreign law.

The New York domicile of the owner of the infringed mark, and thus the possible "effect" of the infringement in New York, did not determine the outcome of the case. Confusion in the U.S. formed the relevant effect – a logical analysis in light of the fact that trademark rights exist only in the jurisdiction or jurisdictions where consumer associations exist (or the mark has been registered), not where the mark owner is domiciled. Possible U.S. confusion alone did not suffice.

Subsequent federal appellate decisions have followed *Bulova* in requiring more than a moderate effect in U.S. commerce, and indeed more than a substantial effect, before exerting jurisdiction over extraterritorial acts alleged to infringe U.S. trademarks. See, e.g., *Vanity Fair Mills, Inc. v. T. Eaton Co.*, 234 F.2d 633 (2d Cir. 1956); *Totalplan Corp. of Am. v. Colborne*, 14 F.3d 824 (2d Cir. 1984); see also *Ocean Garden, Inc. v. Marktrade Co.*, 953 F.2d 500 (9th Cir. 1991) (recognizing *Bulova* as well as applying an expanded analysis, which includes multiple factors relevant to the strength of the links to American foreign commerce compared to the strength of links to other nations); but see *Sterling Drug, Inc. v. Bayer AG*, 14 F.3d 733 (2d Cir. 1994) (emphasizing substantial effects in U.S. commerce rather than the more extensive analysis drawn from *Bulova* and *Vanity Fair*).

Similarly, a British court has relied on the existence of trademark goodwill within England, acts of a foreign defendant targeted toward English consumers, and damage within England to the goodwill of plaintiffs before finding that the plaintiffs had stated a valid cause of action under English trademark law. See *Mecklermedia Corp. v. DC Congress GmbH*, [1998] Ch. 40 (1997). The location of plaintiffs' goodwill and thus the location of harm to that goodwill, rather than plaintiffs' domicile, when coupled with the sending of targeted mailings by the foreign defendant to plaintiffs' English customers,

trine to expand the prescriptive reach of domestic law has largely been limited to the field of antitrust and competition law in both the U.S. and the EU.

The second common basis of prescriptive jurisdiction for both lawmaking and legal enforcement is the nationality principle, which relies on the nationality of the actor.<sup>66</sup> Nationality can be an important adjunct to territoriality when conduct occurs in a territory that is *res communis*, such as outer space, or for which the territoriality principle is otherwise inapplicable, such as Antarctica.<sup>67</sup> Other than this embellishment and the effects-doctrine adjunct to the territoriality principle, domestic civil laws, such as intellectual property laws, do not typically purport to prescribe extraterritorial conduct.<sup>68</sup>

Deciding which country's law applies to particular conduct is an exercise in analyzing the extent of prescriptive jurisdiction for national laws governing the conduct in question. Most countries apply territoriality as the primary, if not exclusive, basis for their prescriptive jurisdiction for intellectual property infringement.<sup>69</sup> Accordingly, territorial boundaries determine the

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justified application of English trademark law to the admittedly extraterritorial activities of the foreign defendant.

<sup>66</sup> See BROWNLEE, *supra* note 233, at 310.

<sup>67</sup> *Id.* at 302. See also Space Station Agreement, *supra* note 455, at art. 5 (utilizing the territoriality and nationality principles for determinations of jurisdiction and control within the group of Partner States).

<sup>68</sup> See, e.g., *EEOC v. Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991) ("Congress legislates against the backdrop of the presumption against extraterritoriality.").

<sup>69</sup> See, e.g., INTELLECTUAL PROPERTY: PRINCIPLES GOVERNING JURISDICTION, CHOICE OF LAW, AND JUDGMENTS IN TRANSNATIONAL DISPUTES §§ 183,188 (American Law Institute, Discussion Draft No. 1, April 10, 2006); International Association for the Protection of Intellectual Property, Summary Report from the Executive Committee Meeting in Lucerne, Switzerland (2003) (Question Q174), available at [http://www.aippi.org/reports/q174/Q174\\_summary\\_e.pdf](http://www.aippi.org/reports/q174/Q174_summary_e.pdf) [hereinafter Summary Report Q174] (summarizing reports from 39 national and regional groups with respect to jurisdiction in intellectual property matters and reporting that aside from the Chinese, Colombian and Bulgarian reporting groups, "The Groups in their majority believed that the applicable law for judging the basis of the litigation is the law of the country where the infringement took place."); see also Summary Report Q174 of the French group, *id.* at pp. 6-7, available at [http://www.aippi.org/reports/q174/q174\\_france.pdf](http://www.aippi.org/reports/q174/q174_france.pdf) (stating that for copyright (or author's rights) the tribunal will apply the law of the country in which the infringing act is committed and that for industrial property (e.g., patents and trademarks), the French choice of law similarly conforms to the principle of territoriality); Summary Report Q174 for the Italian Group, *id.* at p. 3, available at [http://www.aippi.org/reports/q174/q174\\_italy.pdf](http://www.aippi.org/reports/q174/q174_italy.pdf) (reporting that the law of the place of

choice of law in judicial enforcement of all major proprietary categories within intellectual property<sup>70</sup> in most countries.<sup>71</sup>

alleged infringement is to be applied to determine the legality or illegality of the acts in question); Summary Report Q174 of the U.K. Group, *id.* at p. 2, available at [http://www.aippi.org/reports/q174/q174\\_uk.pdf](http://www.aippi.org/reports/q174/q174_uk.pdf) (noting that infringement must take place within the UK in order for the UK copyright statutes to apply); Summary Report Q174 of the Canadian Group, *id.* at p. 3, available at [http://www.aippi.org/reports/q174/q174\\_canada.pdf](http://www.aippi.org/reports/q174/q174_canada.pdf) (stating that *lex loci delicti* would be applied by a Canadian court to judge alleged infringement abroad, with the caveat at page 1 that most such actions would likely be declined on the basis of *forum non conveniens*). The Canadian Group also reported that some Canadian courts have allowed the recovery of all damages resulting from infringement of a Canadian intellectual property right, even when some of those damages accrued with respect to sales of an infringing product abroad; Summary Report Q174 of the Spanish Group, *id.* at p. 5, available at [http://www.aippi.org/reports/q174/q174\\_spain.pdf](http://www.aippi.org/reports/q174/q174_spain.pdf) (concluding that the law of the country in which the infringing acts take place is the appropriate law to judge the existence of infringement).

<sup>70</sup> *I.e.*, copyright, patent, trademark, and trade secret.

<sup>71</sup> The recent discussion draft of the American Law Institute regarding jurisdiction and choice of law in transnational intellectual property disputes includes a provision that separates unfair competition actions from other intellectual property actions for purposes of choice of law. The proposed unfair-competition provision recommends that the "law applicable to a noncontractual obligation arising out of an act of unfair competition is the law of each State in which direct and substantial damage arises or is likely to arise, irrespective of the State or States in which the event giving rise to the damage occurred." INTELLECTUAL PROPERTY, *supra* note 69, at § 301. The choice-of-law provision for other intellectual property rights, including copyright, is recommended to be "the law of each State for which protection is sought." *Id.*

The suggested expansion of the effects doctrine to apply to private unfair competition actions rather than only antitrust law is significant and, if adopted widely, could affect the analysis herein if the data right is considered to be a right against unfair competition rather than a right related to copyright. The discussion draft notes that the characterization of trade secrets and of certain non-copyright protected databases varies from country to country, with some characterizing the claims as intellectual property claims and other grouping the claims with unfair competition. A characterization of the data right as unfair competition would, under the draft, change the choice of law from the law of the location of use to the law of the location in which damage is likely to occur, which might be the home nation of the database owner.

On the other hand, the discussion draft expressly limits the effects doctrine with respect to unfair competition actions to those acts causing "direct and substantial damage" within the State whose law would be applied. Not all damage from database misappropriation would rise to the level of "direct and substantial damage." In addition, the Comments to the draft provision imply that competition between the parties must be occurring in the state whose law is applied, even if certain actions of the defendant do not occur within that state. *See id.*, comment g, including the illustration to comment g. As such, even this proposed unfair competition choice-of-law principle would not affect the situation where Y, the owner of a database right, is located in Country A, and an unauthorized use by Z occurs in Country B, with no acts by Z taking place in Country A, including no competition by Z with Y in Country A. In that scenario, the Comment, despite its broad language, appears to contemplate that only Country B's law would

This emphasis on territoriality means that in almost all instances, the law of the nation in which the unauthorized use of intellectual property occurred is the law that will be applied to judge whether the use infringed the asserted intellectual property right.

With respect to copyright, the Berne Convention and the TRIPS Agreement provide for the independence of national rights: "the extent of protection, as well as the means of redress afforded to the author to protect his rights, shall be governed exclusively by the laws of the country where protection is claimed."<sup>72</sup> Under the national treatment principle of Berne and TRIPS, domestic laws may not discriminate against non-nationals domiciled in a treaty party with respect to works protected under the treaties.<sup>73</sup> Neither the mandate of national treatment nor the reference to "laws of the country where protection is claimed," nor any other provision of Berne or TRIPS expressly provides for application of territoriality in choice-of-law determinations. As set forth above, however, territoriality has long been the basis of prescriptive jurisdiction in intellectual property for most nations.<sup>74</sup> Accordingly, these Berne Convention and TRIPS Agreement provisions are generally applied in such a way that the law of the nation in which the unauthorized use of a work occurred is the law chosen to determine the existence of copyright protection for the work as well as the infringing or non-infringing nature of the unauthorized use.<sup>75</sup> Courts do not reference the domicile of the owner of the copyrighted work in choosing the law to apply to allegedly infringing activity. Each nation's copyright laws only extend to the borders of the nation. The territorial limitation of intellectual prop-

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apply to Z's activity, even if financial effects were felt by Y within Country A (such as a lowered foreign income stream).

<sup>72</sup> Berne Convention, *supra* note 3, at art. 5.2; TRIPS Agreement, *supra* note 2, at art. 9(1) (incorporating Articles 1-21 of the Berne Convention).

<sup>73</sup> See Berne Convention, *supra* note 3, at art. 5.1; TRIPS Agreement, *supra* note 2, at art. 3.

<sup>74</sup> See, e.g., sources cited *supra* note 69.

<sup>75</sup> See Graeme W. Austin, *Domestic Laws and Foreign Rights: Choice of Law in Transnational Copyright Infringement Litigation*, 23 COLUM.-VLA J.L. & ARTS 1, 24-25 (1999).

erty laws leads to some difficulty, but not impossibility, in applying the laws to conduct that crosses territorial boundaries.

### *B. Extraterritorial Extensions of U.S. Intellectual Property Laws*

When extraterritorial conduct is tied strongly to additional or supporting activity within the territory of a particular nation, courts may elect to extend that nation's intellectual property laws to include the entirety of the conduct, even though some elements of the activity are extraterritorial. For instance, in patent law, U.S. courts have occasionally held that a system patented in the U.S. may be infringed, in certain circumstances, even when not all elements of the claimed system are located in the U.S. In *Decca Ltd. v. United States*,<sup>76</sup> the court determined that a patented radio navigation system was used within the U.S. despite the fact that one segment of the system was located in Norway, on the logic that "although the Norwegian station is located on Norwegian soil, a navigator employing signals from that station is, in fact, 'using' that station and such use occurs wherever the signals are received and used in the manner claimed."<sup>77</sup> In *NTP, Inc. v. Research in Motion, Ltd.*,<sup>78</sup> the Federal Circuit held that a claimed system is used, for purposes of patent infringement, where 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. . . . RIM's customers located within the United States controlled the transmission of the originated information and also benefited from such an exchange of information. Thus, the location of the Relay in Canada did not, as a matter of law, preclude infringement of the asserted system claims in this case."<sup>79</sup>

Section 105 to the Patent Act provides expressly for application of U.S. patent law to infringing activity occurring on a space object under the jurisdiction or control of the United

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<sup>76</sup> *Decca Ltd. v. United States*, 544 F.2d 1070 (Ct. Cl. 1976).

<sup>77</sup> *Id.* at 1083.

<sup>78</sup> *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005).

<sup>79</sup> *Id.* at 1317.

States.<sup>80</sup> As a result, the question of applying U.S. patent law in outer space has already been decided with respect to unauthorized use of an invention patented in the U.S. on a U.S.-registered space object, regardless of whether that use is connected to other use of the invention within U.S. territory.<sup>81</sup> Like the Space Station Agreement, section 105 constructively extends U.S. territory to include U.S.-registered space objects, so that the territorially bounded law will apply to activities on or in those space objects. Patent law, despite being territorially limited, has thus accommodated certain limited modifications to deal with cross-border activity, including outer space activity.

U.S. copyright law has also been open to modification in light of cross-border activity. In *Los Angeles News Serv. v. Reuters TV Int'l*,<sup>82</sup> the Ninth Circuit ruled that proof of a predicate infringing copy made in the U.S., which made possible the infringing activity abroad, enabled the court to award damages based on compensation for both the domestic infringing activity and the foreign infringing activity.<sup>83</sup> On the other hand, in *Subafilms, Ltd. v. MGM-Pathe Communications Co.*,<sup>84</sup> when allegedly infringing activities occurred solely extraterritorially, the Ninth Circuit denied relief, under U.S. copyright law, to a plaintiff claiming infringement in the U.S. solely on the basis of the defendant's authorization of those extraterritorial activities from within the U.S.<sup>85</sup>

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<sup>80</sup> See 35 U.S.C.S. § 105 (2006). Under the Registration Convention, such space objects would likely include all space objects on the U.S. registry, although the Convention refers to "jurisdiction and control" rather than "jurisdiction or control." Registration Convention, *supra* note 40. In addition, § 105 provides that if an international agreement with the registry state so provides, a space object registered by a foreign state may also be treated as U.S. territory for purposes of U.S. patent law.

<sup>81</sup> Interestingly, the legislative history indicates Congress's view that § 105 was a clarification, rather than a change, of the law. See GLENN H. REYNOLDS & ROBERT P. MERGES, *OUTER SPACE: PROBLEMS OF LAW AND POLICY* 346 (2d ed. 1997) (excerpting Senate Report 101-266, 1990).

<sup>82</sup> *Los Angeles News Serv. v. Reuters TV Int'l*, 149 F.3d 987 (9<sup>th</sup> Cir. 1998).

<sup>83</sup> See also *Update Art, Inc. v. Modiin Publishing, Ltd.*, 843 F.2d 67 (2d Cir. 1988).

<sup>84</sup> *Subafilms, Ltd. v. MGM-Pathe Communications Co.*, 24 F.3d 1088 (9<sup>th</sup> Cir. 1994).

<sup>85</sup> See *id.* at 1090. Accord *Update Art*, 843 F.2d at 73.

*C. Extension of Copyright Law to Outer-Space Activity*

Without a predicate act of infringement within U.S. territory, it would seem unlikely that a U.S. court would extend U.S. copyright protection to unauthorized uses of copyright-protected works in outer space, unless the court were willing to engage in a bit of territorial fiction *and* the unauthorized use occurred on a U.S.-registered space object. The court would need to determine that the territorial jurisdiction of U.S. copyright law could extend to the U.S.-registered object by virtue of its registration, a determination that constructively extends U.S. territory. If the unauthorized use of the work were to occur exclusively on a foreign-registered object, however, I predict that a court would be unlikely to extend U.S. copyright law to that activity, even if that court were inclined to engage in the "territorial fiction." It would be more likely that a court willing to find that a space object is an extension of national territory on Earth would choose to apply the law of the foreign country in which the object had been registered. Without resort to the registry system, constructive territorial extensions to include space objects would know no bounds, a result greatly at odds with the territorial limitation of U.S. and foreign copyright law.

The use of "territorial fiction" to include U.S.-registered space objects within the reach of U.S. law would be uncharted territory for a court ruling on a copyright matter. As a result, an express extension of U.S. copyright protection to U.S.-registered space objects may be needed, much like the extension provided by Section 105 of the Patent Act. Without that statutory authority, a U.S. court may be reluctant to find that unauthorized use of a copyright-protected work on a U.S.-registered space object, unconnected to unauthorized use on U.S. territory, would constitute infringement of the U.S. copyright in the work.

## IV. JURISDICTIONAL ANALYSIS OF DATABASE AND DATA RIGHTS

In order to apply the traditional territorial jurisdictional principle of intellectual property law to database and data rights, the nature of those rights should be compared to the more familiar intellectual property rights in order to determine whether the traditional approach is appropriate or whether a

modification such as the effects doctrine should be applied. Without an international consensus on the proper approach to choice-of-law questions related to a *sui generis* data or database right, the only logical analysis proceeds by way of carefully considered comparison.

*A. The Nature of Data Rights for Purposes of Choice of Law*

Is European protection of data rights truly analogous to intellectual property protection such that choice-of-law principles drawn from traditional intellectual property law, rather than antitrust or unfair competition law, provide appropriate guidance? The Database Directive contains two different modes of protection: one obligating extension of copyright protection to databases "which, by reason of the selection and arrangement of their contents, constitute the author's own intellectual creation,"<sup>86</sup> and the other obligating the creation of a *sui generis* right "to prevent extraction and/or re-utilization of the whole or of a substantial part . . . of the contents" of a database in which "a substantial investment in either the obtaining, verification or presentations of the contents" has been made.<sup>87</sup> The first protection is not novel. Copyright protection of a database with original selection and arrangement is one of the obligations of a WTO member under the TRIPS Agreement.<sup>88</sup> As a result, protection of databases as a whole, rather than protection of contents, would not often give rise to a real conflict of policy reflected in different nations' substantive laws.

The *sui generis* right, on the other hand, provides broader protection than U.S. or European copyright laws as applied to facts and other data contained within a database. Inclusion of database contents within the scope of protected subject matter is where national laws within the EU, under the Database Directive, diverge from U.S. law and the laws of a number of other nations.<sup>89</sup> Properly analyzing the choice-of-law issue presented

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<sup>86</sup> Database Directive, *supra* note 12, at art. 3(1).

<sup>87</sup> *Id.* at art. 7(1).

<sup>88</sup> TRIPS Agreement, *supra* note 2, at art. 10(2).

<sup>89</sup> This is not to say that U.S. and other national laws provide no protection for any non-copyrightable database contents: on the contrary, trade secret law could be used to

by the divergence requires a determination of whether the *sui generis* data right is more akin to competition law or copyright. As discussed above in Part II.A., in certain areas of competition law, most particularly in antitrust law but also in some unfair competition (trademark) cases, the effects doctrine has been used to modify the application of strict territoriality in prescriptive jurisdiction. If the data right is analogized to the right to prevent unfair competition or anticompetitive conduct, that comparison might lead to use of the effects doctrine to modify strict territoriality and to reach extraterritorial conduct alleged to have significant deleterious effect within the territory. If the data right is more akin to copyright, however, the territorial choice-of-law principles dominant within copyright should prevail.

The European data right, wherein facts within certain databases gain limited exclusive rights, clearly contrasts with the unprotected status of factual data under U.S. copyright law. No judicial decisionmaker could miss the comparison, or the distinction. In its landmark case of *Feist Publications, Inc. v. Rural Telephone Service Co.*,<sup>90</sup> the Supreme Court stressed that the lack of copyright protection for facts is fundamental to the policies underlying U.S. copyright law and that the Copyright Act means exactly what it says when it excludes the facts in a compilation from the copyright protection extended to the compilation.<sup>91</sup> In fact, the Court held that exclusion of protection for factual information has a Constitutional dimension.<sup>92</sup> As a result, databases containing factual data are protected as compilations under U.S. copyright law, with that protection limited only to the originality, if any, in the selection and arrangement of the factual data within the database.

By analyzing U.S. law alone, noting the deep links between non-protection of facts and copyright protection of expression, a court should view the European data right as an adjunct to

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protect the contents of an undisclosed database, or the parties could contract for nondisclosure or non-extraction of the contents of the database as part of the consideration for initial disclosure of a database.

<sup>90</sup> *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991).

<sup>91</sup> *Id.* at 360.

<sup>92</sup> *Id.* at 346-347.

European copyright law, and not a separate right against unfair competition. As such, when faced with a claim based on action taken within the U.S. to extract or reutilize geospatial data contained within a database, a U.S. court should utilize its traditional territorial choice-of-law principle to determine which nation's copyright (and allied) laws would apply to the unauthorized use. It should choose U.S. law and find infringement only if the use of the geospatial data or database constitutes copyright infringement under the U.S. Copyright Act.

Were the U.S. court to dig deeper into the classification and nature of the data right within either the Database Directive or European national laws, I contend that it would reach the same conclusion. Although the Database Directive separates the *sui generis* data right from the copyright in the database as a compilation, the EU still classifies the data right as one "related" to copyright.<sup>93</sup> Many EU member states have codified the data right with national copyright law, rather than placing the data right with other provisions providing rights against unfair competition.<sup>94</sup> The right is still treated by those nations as a *sui generis* right, however, in order to prevent the right from becoming subject to the obligation of national treatment within the Berne Convention and the TRIPS Agreement.<sup>95</sup>

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<sup>93</sup> For example, copyright protection for databases and the *sui generis* right to prevent unauthorized extraction and reutilization of data appear in the same directive. That directive is listed on the EU's website as one covering "copyright and related rights." See European Union Website, <http://europa.eu/scadplus/leg/en/s06020.htm>.

<sup>94</sup> See, e.g., § 87 UrhG (implementing in German statutory copyright law the *sui generis* data right required by the Database Directive).

<sup>95</sup> This setting aside of an otherwise copyright-related right as *sui generis* in a way that eliminates international copyright treaty obligations is not uncommon. The United States added protection for semiconductor chip design to its law in 1984. Despite the similarities of that protection to copyright law and its codification in Title 17 of the United States Code with the Copyright Act, it was implemented as a *sui generis* right (rather than a copyright-based right for which the term was shorter, or some other distinction). See 17 U.S.C.S. §§ 901-914 (2006). By setting the right apart from copyright, the U.S. took the position that it was not obligated to provide national treatment to foreign nationals with respect to the right. This parallels the limitation in the Database Directive that excludes from *sui generis* protection any database not made or owned by EU nationals or habitual residents, or by companies or firms organized and based in the EU. See Database Directive, *supra* note 12. With the nationality limitation in the Directive and the Berne Convention obligation of national treatment for copyright, it is important for EU nations to characterize the right as *sui generis* within the national law.

The nature of the data right also more closely parallels copyright than unfair competition. The term of the protection of data against extraction or reutilization is time-limited, as is copyright, with the term set forth specifically in the relevant statute. The rights within unfair competition and trade secret law, on the other hand, are measured by propriety of conduct and resulting damage, whenever it may occur. These actions are not typically limited to a term of years. Moreover, both copyright law and the data right set forth specified acts that are deemed wrongful,<sup>96</sup> while unfair competition law does not specify particular wrongful acts. This leaves the meaning of "unfair" to be defined in each case. The Paris Convention defines unfair competition as "[a]ny act of competition contrary to honest practices in industrial or commercial matters."<sup>97</sup> Similarly, section 43(a) of the Lanham Act, the U.S. federal trademark and unfair competition law, provides in part: "Any person who...uses in commerce any word...or device...[or any] false or misleading description of fact, which...is likely to cause confusion, or to cause mistake, or to deceive...shall be liable in a civil action by any person who believes that he...is likely to be damaged by such act."<sup>98</sup> In unfair competition laws the propriety of conduct and resulting damage, rather than specific actions, are the keys to liability. In a number of ways, then, the European data right finds its structural parallel in copyright rather than unfair competition law.

Even with further review of the Database Directive and the relevant European national database law, therefore, a U.S. court should determine that the characteristics of the data

<sup>96</sup> See, e.g., 17 U.S.C.S. § 106 (2006); Database Directive, *supra* note 12, at arts. 7, 8, & 9. For a characterization of copyright law as law that is delineated in terms of specific rights and that does *not* govern propriety of conduct and resulting damage in the way that tort law does, see Austin, *supra* note 755, at 20-21 ("The nature of the property that comprises a copyright is delineated by the laws that create the right and which render wrongful a range of *specified* actions when they are performed without the copyright owner's authorization." (emphasis added)). The European data right is consistent with Austin's characterization of copyright in that it renders wrongful a range of specified actions, rather than relying on propriety of conduct and resulting damage.

<sup>97</sup> Paris Convention for the Protection of Industrial Property, as last revised at the Stockholm Revision Conference July 14, 1967, 21 U.S.T. 1583, 828 U.N.T.S. 303 art. 10*bis* [hereinafter Paris Convention].

<sup>98</sup> 15 U.S.C.S. § 1125(a) (2006).

rights claim make that claim more like a copyright claim than an unfair competition claim. With copyright as the model, the court should then conclude that a territorial choice-of-law analysis is appropriate for the data right. That analysis would lead to the conclusion that the data right provided by a European nation's law is enforceable only against activity occurring within that European nation, or perhaps within another EU nation, in light of the harmonization of data laws under the Database Directive. Extraterritorial conduct, such as U.S. activity, would not be included. Thus, when presented with a claim based on action taken within the U.S. to extract or reutilize geospatial data contained within a database, a U.S. court should apply U.S. copyright law, not a European national data rights law.

Further, a European national court should do the same, maintaining the traditional territorial principle.<sup>99</sup> The law of the forum understandably possesses a strong magnetism in transnational disputes, particularly when a national policy is, or appears to be, at stake. Comity, on the other hand, would counsel against such an approach without a thorough analysis. If the law of the place of use were to be set aside, the legitimacy of local uses would become unpredictable, damaging the public interest accommodated through those laws. As a European copyright choice-of-law scholar has argued, maintaining the law of the nation of use as the governing law for existence, duration, and scope of copyright is necessary and vital for maintaining the balance struck in each nation between the interests of creators and the interests of the public.<sup>100</sup> Because public and private economic interests in the database industry motivated the addi-

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<sup>99</sup> Not all national courts may be willing to apply foreign intellectual property law, preferring (or feeling required) instead to dismiss the case for lack of jurisdiction (or under the discretionary common law doctrine of *forum non conveniens*). See sources cited *supra* note 69 and *infra* note 112; see also *London Film Productions, Ltd. v. Intercontinental Communications, Inc.*, 580 F. Supp. 47, 50 (S.D.N.Y. 1984) (discussing the appropriate application of *forum non conveniens*). Claims under foreign (non-forum) patent and trademark law have traditionally fallen outside the jurisdiction of national courts, while a foreign copyright claim has instead been considered a "transitory" cause of action, *i.e.*, one that can be adjudicated in a national court.

<sup>100</sup> MIREILLE M.M. VAN EECHOU, CHOICE OF LAW IN COPYRIGHT AND RELATED RIGHTS: ALTERNATIVES TO THE LEX PROTECTIONIS 226 (2003).

tion of data protection to EU law,<sup>101</sup> a court in the EU should acknowledge that balance was struck only within the EU and not for the whole world. With that acknowledgement made, even a European national court should resist the urge to apply the law of the forum to conduct outside the EU. Instead, the court should restrict the data right's prescriptive reach only to conduct occurring within the EU, leaving U.S. and other extra-territorial conduct outside the scope of the European data right.

*B. Application of Territorial Choice of Law to Outer-Space-Derived Data Rights*

1. Databases created in and data derived from outer space

The Database Directive expressly restricts the availability of the *sui generis* data right to "databases whose makers or rightholders are nationals of a Member State or who have their habitual residence in the territory of the Community," in addition to databases owned by certain EU-based companies and firms.<sup>102</sup> The Database Directive does not, however, restrict protection based on the location where the database was created or from where the contents derive. Creating a database in outer space or including outer-space-derived data should not, therefore, restrict an EU national's ability to obtain data rights.

In copyright, either the author's nationality or country of habitual residence, or the nation of first publication, provides a point of attachment for protection under the Berne Convention or the TRIPS Agreement.<sup>103</sup> Each treaty provides protection under the doctrine of national treatment, meaning each member nation to those international agreements will provide authors of Berne or TRIPS-protected works with the same substantive

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<sup>101</sup> See Database Directive, *supra* note 12, at recitals 11 & 12; DG Internal Market and Services Working Paper: First Evaluation of Directive 96/9/EC on the legal protection of databases 2.2-2.4 (Dec. 12, 2005), available at [http://ec.europa.eu/internal\\_market/copyright/docs/databases/evaluation\\_report\\_en.pdf](http://ec.europa.eu/internal_market/copyright/docs/databases/evaluation_report_en.pdf).

<sup>102</sup> Database Directive, *supra* note 12, at art. 11.

<sup>103</sup> See Berne Convention, *supra* note 3, at art. 3; TRIPS Agreement, *supra* note 2, at art. 9(1) (incorporating Articles 1-21 of the Berne Convention).

rights as authors who are nationals of the member states.<sup>104</sup> Location of fixation or creation, as contrasted with location of publication, does not play a role in determining existence of protection for the work under the Berne Convention, the TRIPS Agreement, or the laws of most nations. Thus, as to the existence or creation of copyrightable works, including databases and mapped or photographic geospatial data, the addition of outer space as a location for creation and fixation of works creates no serious international jurisdictional dilemma. Because the existence of both copyright and *sui generis* data protection depends largely on nationality, rather than location of creation or fixation, the non-existence of national territory in outer space is no impediment to copyright and related-rights protection of outer-space-derived data, including data protection under the Database Directive.<sup>105</sup>

## 2. Unauthorized use of outer-space-derived data on Earth

Regardless of the location of creation, derivation, fixation, or publication of the data or database, when the location of unauthorized use is on Earth no new problems should arise. Transnational copyright disputes have already challenged territorial jurisdictional and choice-of-law precepts. While courts have generally refused to apply U.S. copyright law to foreign

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<sup>104</sup> See Berne Convention, *supra* note 3, at art. 5.1; TRIPS Agreement, *supra* note 2, at art. 3(1) (expressly providing for national treatment) & art. 9(1) (incorporating Articles 1-21 of the Berne Convention).

<sup>105</sup> Similarly, eligibility for patent and trademark protection in the international arena rely largely on nationality of the owner and the owner's proper registration of rights, rather than location of creation of the subject matter of the right. The TRIPS Agreement and Article 2 of the Paris Convention obligate signatories to provide national treatment to nationals of all signatory nations with respect to patent and trademark rights. See TRIPS Agreement, *supra* note 2, at art. 3(1); Paris Convention, *supra* note 977. In the law of most, if not all, countries, the physical location of the inventor at the time of invention does not create any serious impediment to patentability in that country (although certain U.S. rules discriminate against foreign knowledge or use in favor of knowledge or use in the United States for purposes of determining when prior public use is a bar to patentability, see 35 U.S.C.S § 102(a) & (b) (2006), and against foreign inventive activity in favor of domestic activity, such as when the claims of two inventors to the same invention conflict in the context of an interference, see 35 U.S.C.S 102(g) (2006)). Trade secrets form part of the spectrum of intellectual property protected under TRIPS, see TRIPS Agreement, *supra* note 2, at art. 39, and the national treatment principle within TRIPS also applies to trade secret rights.

activity,<sup>106</sup> they have shown some willingness to provide a remedy for foreign infringement in cases where foreign and U.S. infringing activities are linked. But when foreign activity is not linked to domestic infringing acts, the courts have ruled that the foreign activity should be governed by foreign copyright law alone.<sup>107</sup> And as I argue in Part III above, the same territorial jurisdictional analysis should apply to the European data right when unauthorized use is on Earth. With respect to unauthorized use of works protected by the data right or copyright, however, outer space as a location for the unauthorized use may pose additional challenges.

### 3. Unauthorized use of outer-space-derived data in outer space

Unauthorized use of outer-space-derived data in outer space could occur on a registered space object, including an object that has been fixed to a celestial body. The focus on territoriality within intellectual property's jurisdictional and choice-of-law analyses does not create a true conflict with outer-space international law or policy insofar as infringement occurs on a space object for which national registration is made,<sup>108</sup> a conclusion that is bolstered by the language of the Space Station Agreement, discussed in Part II.A. above.<sup>109</sup>

Unauthorized use of intellectual property could also occur, perhaps in the future, outside a space object, such as the interception of a data stream being sent from a space object to Earth. It is also conceivable that unauthorized use could occur on the

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<sup>106</sup> See, e.g., *London Film Productions, Ltd. v. Intercontinental Communications, Inc.*, 580 F. Supp. 47 (S.D.N.Y. 1984); *Subafilms, Ltd. v. MGM-Pathe Communications Co.*, 24 F.3d 1088 (9<sup>th</sup> Cir. 1994).

<sup>107</sup> See, e.g., *id.* Not all courts may be as willing as the *London Film* court to consider copyright to be a transitory cause of action appropriate for adjudication in a foreign court. See *supra* note 99.

<sup>108</sup> Accord Burk, *supra* note 28, at 316. ("Under a 'free space' reading of the international space treaties, it appears that the United States may validly assert jurisdiction over United States flag spacecraft and United States nationals. The determination must still be made whether Congress has in fact asserted such jurisdiction.").

<sup>109</sup> Even without national registration of a space object, a similar jurisdictional analysis could occur, although there is the distinct possibility that an unregistered space object could possess attributes of crew, construction, launch, and control that would lead to possible jurisdiction under the laws of multiple nations.

non-sovereign territory of a celestial body such as another planet or the Moon, and yet not occur in or on a space object. Extending the laws of any one nation to activity occurring on a celestial body outside a registered space object could begin to infringe upon the declaration within the Outer Space Treaty that no celestial body may be claimed as the sovereign territory of any nation. Without a territorial claim, or the constructive extension of territoriality provided by registration, the jurisdictional principles governing international choice of law within intellectual property will be upset. If extraction or reutilization of data occurs within outer space but not in or on a registered space object, traditional jurisdictional principles provide little guidance. In the same way, current analysis provides no answer in a situation where a database owner alleges copyright infringement based on outer space activity not on or in a space object.

The real jurisdictional conundrum at the intersection of outer-space-derived data rights and activities in outer space arises, then, when considering not creation in or derivation from outer space,<sup>110</sup> but instead utilization, extraction, appropriation, or other unauthorized activity in outer space. With systems of copyright and data rights that are domestically enforceable, to what domestic legal system does an aggrieved data or database owner look for recourse with respect to unauthorized uses in outer space? The difficulty in territorially locating an infringement is not exclusive to outer space – in fact, satellite broadcast signals and internet-based transmissions have already challenged jurisdictional analyses within intellectual property and other areas of the law. In the case of terrestrially based human activity conducted via satellite or internet, however, there is still an actor and his unauthorized activity, closely linked to the non-territorial activity, located within at least one national territory. As such, territoriality can still be of use in choosing the law to apply to the activity, although it may not be entirely satisfactory.<sup>111</sup> With interception or utilization by an actor not ter-

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<sup>110</sup> See *supra* Part IV.B.1.

<sup>111</sup> Graeme Dinwoodie, for example, has concluded that "The façade of copyright rules based upon territoriality needs to be stripped away, and a new approach con-

restrially located or linked at the time of interception or utilization, however, such as might occur on a celestial body, using territoriality as the basis for jurisdiction would become difficult or impossible.

## V. CONCLUSION

Professor Cromer has demonstrated that copyright and data rights can be applied to protect geospatial data gathered remotely from outer space. I have argued above that national laws providing for these exclusive rights do not violate any international treaty or custom. In addition, I have argued that current choice-of-law principles suffice to address the utilization on Earth of outer-space-derived data and databases as well as most uses of such data and databases in or on space objects, regardless of the presence of those objects within space or on another celestial body. Although workable and consistent, however, reference to registration of space objects as the basis for choice of law may prove undesirable as a normative matter. The possibility of non-object-based use of data and databases in outer space also poses serious difficulty for the territorial basis of jurisdiction and choice of law.

Foreign litigation may be inconvenient for the owner of an intellectual property right that has been used without authorization in outer space by a person or entity over which the owner's domestic courts do not have personal jurisdiction, but that inconvenience is present today in light of the ease of cross-border infringement. Similarly, the intellectual and practical difficulty of a domestic court's application of a foreign nation's laws to unauthorized uses occurring in that foreign nation does not seem a sufficient reason to alter the established norm of territorial application of intellectual property laws.<sup>112</sup> There have

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structed. Some uncertainty is an inevitable, but worthwhile, short-term cost." Graeme B. Dinwoodie, *A New Copyright Order: Why National Courts Should Create Global Norms*, 149 U. PA. L. REV. 469, 573 (2000).

<sup>112</sup> There may, however, be an issue as to subject-matter jurisdictional competency of national courts. See, e.g., 28 U.S.C.S. § 1338 (2006); William Patry, *Choice of Law and International Copyright*, 48 AM. J. COMP. L. 383, 468-469 (2000) (agreeing that U.S. copyright law is strictly territorial but arguing that a U.S. federal court has no subject matter jurisdiction over a claim of infringement under foreign copyright law); Austin,

been numerous calls for change in the territorial principle currently governing copyright choice of law, even without the added complication of the outer-space environment. One recommendation calls for courts to consider the laws and policies of various nations in connection with transnational copyright disputes,<sup>113</sup> and another argues that copyright infringement should be located in the U.S. if planning and preparation for the infringement take place in the U.S., even if infringing copies are never made here.<sup>114</sup>

If the space-research producing and using communities feel strongly that uniform substantive law and predictability are paramount in their field, change may be in order. Professor Cromer's paper has demonstrated divergent approaches to geospatial data protection, and I have argued, in turn, that under current jurisdictional principles multiple national laws should be applied in the case of multinational unauthorized use of geospatial and other outer-space-derived data. If the affected communities desire a different approach to choice of law or ju-

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*supra* note 755, at 29 (arguing in favor of a U.S. court's application of foreign copyright law to foreign infringing activities although noting that "[t]he authority for the availability of subject matter jurisdiction over infringement of foreign copyright laws is somewhat thin."). This issue does not arise in the outer-space environment alone; any application by a domestic court of another nation's intellectual-property laws could raise this concern.

Jane Ginsburg has noted that if there is complete diversity, as would be the case with a U.S. defendant and a foreign plaintiff (and assuming the requisite amount is indeed in controversy), a federal court would have jurisdiction over the foreign copyright infringement claim. See Jane C. Ginsberg, *Extraterritoriality and Multiterritoriality in Copyright Infringement*, 37 VA. J. INT'L L. 587, 601 (1997); 28 U.S.C.S. § 1332 (2006). She also argues that even if there is incomplete diversity between the parties, if a federal court has initially retained jurisdiction over a case as the result of its original jurisdiction over a good-faith U.S. copyright claim, it should retain the case even if the U.S. claim is dismissed and only foreign copyright claims remain, on the basis of supplemental jurisdiction. *Id.* at 602.

<sup>113</sup> See Dinwoodie, *supra* note 111, at 543 ("proposing a "substantive law" approach to international copyright disputes, wherein a court "would consider whether the international dimension implicated policies of other states or the international copyright system, and develop (and apply) a substantive rule of copyright law that best effectuates this range of policies").

<sup>114</sup> See Ginsberg, *supra* note 112, at 599 (arguing that the difficulty of physically locating where an infringing copy is made counsels in favor of moving away from strictly applying territoriality to infringing acts, and stating that "[i]t makes more sense to identify the place where the plan to engage in unauthorized dissemination was devised, and then to consider the application of that country's law.").

risdiction for normative reasons, they can and should take affirmative action to mold the law at this relatively early stage in the exploration and utilization of the outer space environment. If action is taken now, those communities could conceivably install a sound, cohesive framework for space-related and space-derived information and creations, which framework should attend to jurisdictional conflicts arising from the *res communis* status of outer space as well as substantive rights. Even when laws are relatively uniform, such as within the economic rights of copyright, national variation in procedures and remedial judicial powers may exist and may greatly affect outcomes if jurisdictional matters are not addressed. Addressing substantive rights related to space-derived intellectual property would be insufficient. With outer space being, by definition, extraterritorial to all nations, an international legal regime governing intellectual property rights in outer-space-derived information and creations could be useless if it did not carefully consider jurisdictional issues, choice of law, and choice of forum. Whether and how a cooperative system of territorial national rights can effectively function in the non-territorial zone of outer space continues to warrant serious consideration.

# 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-

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\* 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;<sup>1</sup> the items contained in the garden such as flowers and trees are chattels;<sup>2</sup> and the subsequent accounts could be copyrighted and are thus, fall within the category of intangible or intellectual property.<sup>3</sup> 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.<sup>4</sup> This so-called "bundle of rights" can have

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<sup>1</sup> 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).

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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*<sup>5</sup>:

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.<sup>6</sup>

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.

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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).

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

<sup>6</sup> *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 treaties<sup>7</sup>, which constitute binding law and over seventy associ-

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<sup>7</sup> 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.<sup>8</sup> 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."<sup>9</sup> 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

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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).

<sup>8</sup> 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).

<sup>9</sup> See Outer Space Treaty, *supra* note 7 at art.11.

difficult, and therefore, use and access is open to all.<sup>10</sup> 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 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.<sup>11</sup> 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.<sup>12</sup> Second, the "common heritage" principle dictates that any resource allocation must be conducted on an equitable basis by an international governing regime.<sup>13</sup> The "common heritage" principle, thus, goes

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<sup>10</sup> 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).

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

<sup>12</sup> 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 29<sup>TH</sup> COLLOQUIUM OF THE LAW OF OUTER SPACE 58-61 (1986).

<sup>13</sup> 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.<sup>14</sup> 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" clause<sup>15</sup>; (2) allowing governmental entities to issue land grants or other similar grants of interests in territorial space<sup>16</sup>; (3) creating a system to register and license territorial claims<sup>17</sup>; (4) adopting a free market approach undertaken limited by a defined regula-

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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).

<sup>14</sup> 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)).

<sup>15</sup> Twibell, *supra* note 8, at 638.

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

<sup>17</sup> 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 umbrella<sup>18</sup>; and (5) adopting common-law possessory concepts.<sup>19</sup>

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.”<sup>20</sup> 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.

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<sup>18</sup> 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).

<sup>19</sup> 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).

<sup>20</sup> 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.<sup>21</sup>

#### 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.<sup>22</sup> Article VIII outlines a method of registering those objects.<sup>23</sup> 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.<sup>24</sup> Later treaties have expanded upon these initial definitions. For instance, the Liability Convention and the Registration Convention define the term "space object" as "in-

<sup>21</sup> 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).

<sup>22</sup> 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.

<sup>23</sup> 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.

<sup>24</sup> *Id.*

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

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."<sup>28</sup> 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.<sup>29</sup> 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

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<sup>25</sup> 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).

<sup>26</sup> 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 2<sup>nd</sup> 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").

<sup>27</sup> 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").

<sup>28</sup> See Outer Space Treaty, *supra* note 7, at article XI.

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

that may protect the naming of space projects and satellites.<sup>30</sup> 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.<sup>31</sup> 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."<sup>32</sup> 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

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<sup>30</sup> 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).

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

<sup>32</sup> *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.<sup>33</sup> 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."<sup>34</sup> 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")<sup>35</sup> which referenced the definition of "primary data" contained in Principle I(b) of the Remote Sensing Principles in its definition of "unenhanced" data.<sup>36</sup> By

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<sup>33</sup> 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.

<sup>34</sup> 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).

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

<sup>36</sup> 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.<sup>37</sup>

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-

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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).

<sup>37</sup> 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")<sup>38</sup> since TRIPS requires a minimum standard for intellectual property rights protection.<sup>39</sup> 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.<sup>40</sup> 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

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<sup>38</sup> 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].

<sup>39</sup> *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).

<sup>40</sup> 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."<sup>41</sup> 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."<sup>42</sup> An operative conception then accords less power to any individual property right, by incorporating collective rights into the initial allocation of property rights.<sup>43</sup> 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.<sup>44</sup> 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.<sup>45</sup> 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

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<sup>41</sup> See UNDERKUFFLER, *THE IDEA OF PROPERTY*, *supra* note 40, at 132.

<sup>42</sup> *Id.* at 41.

<sup>43</sup> *Id.* at 62.

<sup>44</sup> See Outer Space Treaty, *supra* note 7, at art. I.

<sup>45</sup> 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.<sup>46</sup> 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.<sup>47</sup>

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.<sup>48</sup> 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.<sup>49</sup> 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-

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<sup>46</sup> 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).

<sup>47</sup> 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.

<sup>48</sup> See Outer Space Treaty, *supra* note 7, at art. XII.

<sup>49</sup> *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.<sup>50</sup> 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.<sup>51</sup> 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

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<sup>50</sup> 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).

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

non-governmental actors.<sup>52</sup> 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.<sup>53</sup> While protecting such a wide of range of objects has created intense criticism<sup>54</sup>, 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."<sup>55</sup> 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."<sup>56</sup> Other articles are to be interpreted in lights of these general principles; therefore, these principles can be said to

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<sup>52</sup> *Id.* at art. VIII.

<sup>53</sup> 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).

<sup>54</sup> 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).

<sup>55</sup> TRIPS, *supra* note 38, at art. 8(1).

<sup>56</sup> *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."<sup>57</sup> 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."<sup>58</sup> 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.<sup>59</sup> 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

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

<sup>58</sup> Compare *id.* at arts. 13 & 30.

<sup>59</sup> 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.<sup>60</sup> 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.<sup>61</sup> Recently, Federal Circuit considerably expanded the extra-territorial scope of Section 271(a) in *NTP, Inc. v. Research in Motion, Ltd.*,<sup>62</sup> 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

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<sup>60</sup> 35 U.S.C. §105(a).

<sup>61</sup> Burk, *supra* note 34 at 342-43.

<sup>62</sup> *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.<sup>63</sup> 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.<sup>64</sup> 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.<sup>65</sup> 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.

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<sup>63</sup> *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.")

<sup>64</sup> The United States is not the only nation that appears to be broadening its extra-territoriality 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.*

<sup>65</sup> 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.<sup>66</sup> 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.<sup>67</sup> Arguably, Article II could be used to play a similar role within the international and national space law regime in two significant ways.<sup>68</sup> 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.

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<sup>66</sup> Chon, *supra* note 13, at 2885-86.

<sup>67</sup> *Id.*

<sup>68</sup> 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.

**SYMPOSIUM TRANSCRIPT:  
OPENING AND CLOSING STATEMENTS;  
PRACTITIONER'S PANEL**

**INTELLECTUAL PROPERTY RESOURCES  
IN AND FOR SPACE: THE PRACTITIONER'S  
EXPERIENCE**

**OPENING STATEMENTS**

PROF. JOANNE IRENE GABRYNOWICZ: Welcome and thank you for coming today. Welcome to our speakers, students, and participants here in Oxford and out in the world via the real-time webcast. Today we have a first of its kind event: a symposium that will consider the interface of two important bodies of law: space law and intellectual property law. Space law, as a body of law, began during a time when the strategic, military and peaceful uses of space were the focus of the law. Although intellectual property has been a part of space law from the beginning it has not been as a major component. Initially, little thought was given to space as a commercial or creative environment. Today, our inquiry is timely because, increasingly, intellectual property law is becoming more important in space activities. The increasing sophistication of international cooperation and the growth of commercial and private space activities have brought intellectual property issues to greater prominence. For example, the intellectual property provisions of the International Space Station Agreement were among the most challenging provisions to be negotiated and a major feature of NASA's Commercial Orbital Transportation Services competi-

tion is the right of the winners to own the intellectual property generated by them as they provide NASA with goods and services. More mature Cold War technologies like satellites and launch vehicles have long been rich sources of intellectual property issues. Now, in the era of globalization these issues are being augmented with new issues catalyzed by commercial satellite imagery and even orbits. The fact that space itself is a global commons not subject to sovereignty but the human creativity and efforts occur on Earth in sovereign nations and often by global entities presents a challenging context in which to address intellectual property issues generated by space activities. Today, we will begin to do that. I will now turn the podium over to my friend and colleague, Prof. Gary Myers.

PROF. GARY MYERS: The main intellectual property protection in the satellite technology area deals with how to protect the data that is produced in remote sensing and the added value that a variety of people bring to this raw data. That presents some serious intellectual property challenges.

I would begin with a phonebook case. I brought my local telephone directory. This is the Oxford phone directory and, as you can see, Oxford is a small town. The reason I brought the phone directory is to give you that visual of a case called *Feist*<sup>1</sup> versus Rural Telephone. I think of *Feist* as presenting some of the main challenges for intellectual property in remote sensing.

*Feist* was a case that involved phonebooks. Rural Telephone was a local Kansas telephone company. Like all phone companies, it laboriously and assiduously gathered telephone data; everybody by name, address and telephone number is in that directory. A lot of labor went into it. In the view of Rural, it had a copyrightable work. *Feist* is one of those regional phone companies that tries to put together data from a variety of different phonebooks. They basically copied the Rural Telephone database wholesale—all the names, all the numbers, all the addresses. They did that in part because Rural refused to license it.

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<sup>1</sup> *Feist Publications Inc. v. Rural Telephone Servs. Corp.*, 499 U.S. 340 (1991).

But that is neither here nor there. The real issue in the case was whether this raw data, assembled at great expense by Rural, was copyrightable. The Supreme Court, addressing that issue in 1991, held that the information which was factual in nature, and therefore not copyrightable in and of itself, was assembled in such an ordinary way that it lacked sufficient creativity to be protectable under the Copyright Act of 1976<sup>2</sup> under U.S. law. Therefore, that it was essentially free to be copied and in the public domain.

So this ruling, which on its face perhaps we might think, "Well, what are the implications for space law?" My first thought on that is much of the raw data that might be assembled faces the same kind of difficulty, namely that it is factual information. Though it involves labor and effort, the Supreme Court found that that kind of sweat of the brow effort was not sufficient to entitle someone to copyright protection under U.S. law.

So what more do we have to do? How much value must we add to have copyright protection? That is a question others will address in much more detail than I will. In basic terms, we know that it has to involve some creativity in the selection and arrangement of that data. How we define that is something that is still unsettled under U.S. law.

Two cases, to me, illustrate this. The first one is a case called *Mason v. Montgomery Data*<sup>3</sup>, which involved protectability of maps. If you think about a map, this presents the very kind of problem that I think is highly relevant. The second case that I would use to illustrate that point is a case that involves photographs and photographic reproduction. It is a case called *Corel versus Bridgeman*. In this case Bridgeman was the producer of exact photographic reproductions of works of art, including public domain works. I got my Monet painting from their website. Their task and their role were to try to capture the Monet as completely and perfectly as possible, and therein was the problem. The court in this case found that an exact photographic reproduction, though it might involve great labor, was

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<sup>2</sup> Copyright Act, 17 U.S.C. §§ 101-1332 (2006).

<sup>3</sup> *Mason v. Montgomery Data, Inc.*, 967 F. 2d 135 (5<sup>th</sup> Cir. 1992).

not the type of creativity that would entitle Bridgeman to copyright protection for its reproduction.

So, to the extent that we have raw data that is translated in such an exact way, we have a problem of unprotectability that can arise, I think, in the remote sensing area. My point is that copyright offers uncertain protection. We certainly will have to look at that issue in more detail as some of the speakers today will do.

Can we have other alternative avenues of protection for remote sensing information? Yes. There are a number of other avenues. They all present both advantages and pitfalls. An example would be protection through trade secret law. Trade secret law, which is primarily a vehicle of state law, offers some very valuable protection. But, in my mind, trade secret law is a bit of a misnomer because it is not really law, it is self-help. Trade secret law is really about taking steps, secrecy measures, reasonable in the circumstances, to protect your information and to keep it from becoming public, or to keep others from gaining access to it.

In some areas, this will be a serious problem. How do you maintain the secrecy of the information? How do you allow others to use it while maintaining confidentiality? Of course, there is also the problem that reverse engineering is a complete defense to a trade secret case. Somebody who comes along and independently develops similar information will be free to use that information without any liability. So trade secret is one avenue, but an imperfect one.

What else is there? Contract, certainly contract law and licensing, confidentiality agreements. Like trade secret, they offer a kind of self-help avenue for preventing the disclosure of confidential data. In some circumstances this can be a valuable protective measure, and it can be enforceable in court. Lastly, there are technological measures: various means by which data can be secured online and otherwise, encryption and other methods of preventing people from gaining access to information. This, too, is a form of protection.

Is this enough? I think one of the questions we face in U.S. law is the issue of whether there should be some particular protection for laboriously maintained databases. The European Un-

ion database directive is an example of the type of protection that might be brought into play. There is no counterpart in U.S. law. Certainly, that is one of the issues that is debated in political circles today. I am sure we'll hear more on that subject as well. But there is the question of whether a database type protection would offer an alternative avenue that would protect the creative efforts of people in the remote sensing industry. I think that is an issue that we should talk about further.

PROF. JOANNE IRENE GABRYNOWICZ: Thank you. So that is a broad overview of these two bodies of law that are coming together and we are going to be discussing for the rest of the day. With that, I am going to ask our first presenter and commentator to come up and have a seat. Before I do, are there any questions or comments anybody would like to ask either of us? I do not know if they are coming in from outside, but they will let us know from the control booth. If not, we will just proceed.

### PANEL THREE: A PRACTITIONERS' PANEL

PROF. GABRYNOWICZ: Welcome back to the second half of the Symposium for Intellectual Property and Space Law.

This afternoon is about practice, being in the trenches, and realistically dealing with a lot of the questions, issues and concepts we raised this morning. I am going to introduce everybody from my left to right, and then each speaker will come up individually.

The first person to my immediate left is Gary G. Borda. Gary is the Agency Counsel for Intellectual Property in the Office of General Counsel at NASA Headquarters in Washington, D.C. He joined NASA in 1997 and began his legal career as a patent attorney with the Navy in the Office of General Counsel. Obviously, he has strong experience in government and intellectual property issues. Gary received his J.D. degree *cum laude* from the University of Baltimore in 1990 and his Bachelor's Degree from Virginia Tech.

To his left is Pamela L. Meredith.

Pam is a rare breed in space law. She is one of the very few people who have set out a shingle in space law practice and actually has been succeeding at it. Pam has a very diverse career.

She advises clients in commercial space project planning and implementation, risk management and other aspects of commercial space activities. Pam is a frequent speaker in the space law community. She is also an Adjunct Professor of Satellite Communications and Space Law at American University in Washington.

The next person who will speak is Brad Smith. He is a European patent attorney and Senior Consultant in International Intellectual Property Law. He's currently working for the largest satellite manufacturer in Europe and the third largest in the world. He's a fascinating person to talk to. He has degrees in nuclear physics, particle physics, biophysics and neurophysics. He has been a lawyer in Europe for over 25 years or so.

The last person to my left, last but certainly not least, is Will Wilkins. Will is the intellectual property lawyer for the University of Mississippi and he is the director of the Mississippi Law Research Institute.

Without further ado, I will hand this over to Gary.

MR. GARY G. BORDA: Thank you professor. I just want to say it is an exciting time at NASA right now. We are in a new era of technology development under the *Vision for Space Exploration*. We are also getting involved in a lot of new commercial initiatives. I am going to go off-subject from what has been discussed today. I am not going to talk about space law *per se*, or remote sensing, or databases. I am not a space law person. I am an intellectual property law person and Professor Gabrynowicz asked me to talk about any unique aspects we have in intellectual property at NASA and any new NASA initiatives.

In most respects, intellectual property issues and intellectual property law at NASA are really no different than at other government agencies and the private world. We face many of the same issues: patents, copyrights, trademarks, protection of sensitive, proprietary information, working with contractors and their Bayh-Dole<sup>4</sup> rights to inventions, things like that. However, we are different in some respects. Under our organic stat-

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<sup>4</sup> Bayh-Dole Act, 35 U.S.C. §§ 200-212 (1980).

ute, the National Aeronautics and Space Act of 1958,<sup>5</sup> we are what is called a title-taking agency and we do have authority to enter into what is called 'other transactions'. I will talk about those momentarily.

Also, as part of the U.S. Vision for Space Exploration, we are pursuing collaborations that will expand the commercial space sector while also simultaneously supporting our missions and the Vision for Space Exploration. By working with established commercial launch services providers and encouraging the development of an emerging launch sector we are, consistent with our mandate under the Space Act, seeking to accelerate the growth of the commercial space industry. This is going to ultimately reduce the cost to the public and to NASA in developing technology because ultimately the new space industry can develop space-related technologies that we can purchase commercially.

On January 14, 2004, the President set a new course for the U.S. Space Program and gave NASA a new *Vision for Space Exploration*. It was to build new ships to carry humans forward into the universe, to gain a new foothold on the moon, and to prepare for new journeys to worlds beyond our own. The primary goal of the *Vision* is, however, to advance U.S. scientific, security, and economic interest. It is not the destination but what we can accomplish along the journey.

An important element of the *Vision* is NASA's mandate to pursue commercial opportunities for providing transportation and other services in support of the *International Space Station* and our exploration mission beyond low earth orbit.

The President also chartered a national commission at the time he announced the *Vision* to recommend specific measures for implementing it. Some of those recommendations included that NASA aggressively use its contractual authority to reach out to the commercial and non-profit organizations to bring the best ideas, technology, and management resources to the mission.

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<sup>5</sup> National Aeronautics and Space Act of 1958, Pub. L. No. 85568, 72 Stat. 426-438 (July 29, 1988) [hereinafter Space Act].

Also, the Congress increased the potential for commercial opportunities related to the *Vision* by providing incentives for entrepreneurial investments in space, creating significant monetary prizes for the development of space-related technology and to assure appropriate property rights to those who seek to develop space-related technology and infrastructure.

Based on the *Vision*, we are embarking on a new technology development era. We also have the responsibility to protect intellectual property and technology developed at public expense. Further, we are moving aggressively on these recommendations to increase commercial initiatives. I will address some of those initiatives, but I first want to talk a little bit about some of the unique aspects of the Space Act.

Now as I said, the Space Act provides us with something called 'other transaction' authority. The authorizing statute, which is very broad, allows NASA to enter into and perform such contracts, leases, cooperative agreements and other transactions as may be necessary in the conduct of our work and on such terms as we deem appropriate. The arrangements that we conduct and conclude under our other transaction authority are commonly referred to as Space Act agreements. Our agreements are generally unfunded Space Act agreements. There are two types: non-reimbursable agreements which we use for mutually beneficial activities, cooperative type of work with other parties where each side funds its own activities. We also have reimbursable agreements, which is where we might have unique goods or services that are excess to our mission needs and other entities can use those on a reimbursable basis; for example, if somebody wants to use our wind tunnels. We also enter into funded Space Act agreements.

We use these Space Act agreements to enter into a wide range of partnerships. However, all these agreements also have to comply with other laws and the rest of the Space Act. We are limited somewhat by Section 305(a) of the Space Act, which I will talk about momentarily, and other laws such as the Grant and Cooperative Agreement Act of 1978,<sup>6</sup> which is commonly

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<sup>6</sup> Federal Grant and Cooperative Agreement Act, 31 U.S.C. § 6301 et seq. (2006).

referred to as the Chiles Act. The Chiles Act specifies when traditional funding agreements—that is contracts, grants and cooperative agreements—are to be used.

As I said, our 'other transaction' authority is quite flexible. However, it is not outside the Congressional intent of the Chiles Act on when we should use traditional funding agreements. Therefore, we must interpret the Space Act in a consistent and defensible manner on when to enter these Space Act agreements—especially with respect to funded Space Act agreements as opposed to contracts. Normally we use funded Space Act agreements only when the agency's objectives cannot be accomplished through the use of traditional funding agreements. So, we use funded Space Act agreements only sparingly.

Now, Section 305 of the Space Act limits our intellectual property flexibility. Under Section 305(a), we are what is called a title-taking agency. Inventions made under NASA contracts are, by operation of law, the property of the government. For the purposes of Section 305(a), a contract is defined in the Space Act as very broad. It is defined as any actual or proposed contract, agreement, understanding or other arrangement, and this includes Space Act agreements under our 'other transaction' authority. However, despite this broad definition, not all the contracts are subject to Section 305(a). We have a longstanding administrative interpretation that the types of contracts to which Section 305(a) applies are contracts for work of an inventive type for NASA. We can't waive the applicability of 305(a) for those types of contracts. However, under the Space Act, we can waive the intellectual property rights back to the inventive entity, subject to the retention of a government purpose license.

In 1980, the Bayh-Dole Act took precedence over the Space Act for traditional funding agreements with small business and non-profit organizations, which includes colleges and universities. Under Bayh-Dole, these funding recipients have the right to elect title to the technology that is developed under these funding agreements. However, Bayh-Dole does not apply to our 'other transactions' authority. So, the determination as to when 305(a) does apply is very fact specific. There is a risk if the facts do not support the determination. One of those risks is that the intellectual property of the private party could be at risk be-

cause they might not have received clear title to the property; they have imperfect title.

Now I want to talk about some of our new initiatives. There is a long history of prizes and recently there was the Ansari X PRIZE, which was for the first privately launched mission to take a human into space and back. They won \$10 million. We will not be giving that much money away under our prize authority.

NASA is using new authority from Congress to establish what is called the *Centennial Challenges Program*, which is for conducting prize competition to stimulate innovations having a potential application to future NASA missions. Currently, we have announced nine prizes for a total purse of \$3.9 million. We had to determine whether 305(a) applied to these prizes. NASA is using the prize money to incentivize and reward participants for reaching or achieving particular results. We are not directing how they achieve those results. We are not using the prize money to purchase work for NASA, because we might use what comes out of this prize or we might not. In fact, we did not know upfront who would be participating in the prize competitions or if anybody would be successful in getting the prize money. Therefore, our determination was that 305(a) does not apply to the *Centennial Challenges* and we do not take title to contestants' inventions.

In contrast, under most funded Space Act agreements, where NASA funds inventive R&D activities for the agency to achieve specific results for our benefit or to satisfy some specific need, 305(a) would require that we take title.

Another new initiative is NASA's *Red Planet Capital Project*. This is intended to provide NASA with early exposure to emerging technologies and private venture capital funding to help in the development of products that could potentially support our missions. We recently entered into a funded Space Act agreement with Red Planet Capital, Inc (RPC). RPC is a non-profit corporation established for this purpose, and Red Planet will become a limited partner in an investment fund. The fund will invest in emerging, privately-held companies that are developing innovative technologies with both government and

commercial applications and with potential to support future NASA missions.

We are providing RPC with strategic direction and technical input on the types of investments that we want them to make based on areas of technical interest to NASA. With respect to applicability of 305(a), in this case the money is provided to RPC and they are investing it in the fund that is acquiring equity stakes in companies to help them stimulate technological development. We are not directing the work and we have no current mission requirements for any specific results of the work. Rather, the technical achievement might benefit us if, at some point, we decide to apply them to our missions and buy them commercially. So, while these portfolio companies are selected based on areas of technological interest to NASA, the work of the companies is not being done for NASA and Section 305(a) does not apply in this case. Thus, we do not take title to inventions made by these portfolio companies.

The last initiative I will talk about is really the most ambitious of NASA's commercial initiatives. It is called the *Commercial Orbital Transportation Services, or COTS, Demonstration Program*. It is intended to create a market environment in which commercial space transportation services are available to both government and private industry. Specifically, this demonstration project is to facilitate the demonstration by U.S. commercial providers of a capability to safely deliver cargo and crew to and from low-Earth orbit.

In January 2006, NASA released an announcement seeking proposals from U.S. companies to develop and demonstrate the technologies necessary to deliver cargo and later crews to low-Earth orbit. COTS is a major program. NASA is making \$500 million available over the next five years and payments are based on negotiated milestones. We had more than 20 companies respond to this COTS announcement, and just last month we selected two start-up companies to receive COTS funding.

Now, at the Administrator's direction and aligned with the Commission's recommendations—to spur development of the emerging space industry and provide incentives for COTS participation—it was the Administrator's direction that intellec-

tual property rights to technology developed under the COTS effort would stay with the developing parties. However, we have Section 305(a), which limits our flexibility with respect to invention rights. The COTS program is organized in a two-phase structure. The first phase is under a funded Space Act agreement for the demonstration of a crew cargo transportation capability to the *International Space Station* or another test bed identified by the COTS participant.

Phase two, if phase one is successful, is the procurement of space transportation services to the *International Space Station*. Basically, upon retirement of the shuttle we would like to purchase commercial launch services to the *ISS*, but first we need to gain confidence that these commercial providers can provide safe, reliable and cost-effective services. This phase one demo is intended to do just that, because only upon a successful demonstration would we then purchase any commercial launch services. Therefore, we saw the phase one demo, in this case, as work for NASA. Thus, Section 305(a) applies and we have to take title, under law, to the technology that is developed under these COTS efforts.

As I said earlier, based on the administrative interpretation that we have followed for forty-odd years, we cannot waive Section 305(a) requirements. However, under the Space Act, we can waive title to the technology back to the developing entities subject to, again, the government purpose license.

So, the COTS-funded Space Act agreement provides that, upon petition by the participant, we will grant an advance waiver to all technology developed under the COTS agreement. We have two types of waivers. There is the advanced waiver whereby if the COTS participant requests a waiver prior to or soon after initiation of the agreement, we can waive everything developed under the agreement. Otherwise we can issue individual waivers of title on a case-by-case basis. There are requirements: they have to, of course, report the technology to us so that we know we have our government purpose license in it. They also have to file patent applications, normally within a certain amount of time.

Now, as I said, we will grant the advance waiver subject to the government purpose license. However, we have agreed to

refrain from any NASA use or exercise of the government purpose license for a specific period of time.

On the other hand, we are spending a lot of money on this effort and we need to protect the government's interest and the public's interest in their taxpayer money. Therefore, in the event of termination of a COTS effort because of lack of performance—that is, a participant's failure to reach a defined milestone—we can then exercise the government purpose license immediately.

It has been our experience and the experience of the Department of Defense, which is the other agency that has other transaction authority, that the retention of the government purpose license by the government is not the big issue to most of our contractors. There are other flexibilities under our other transaction authority; things like relaxed financial reporting requirements and relaxed patent filing requirements that are more relevant to contractors. For example, we can allow them a longer period to file patent applications on waived inventions than they would have under the Federal Acquisition Regulations, which allows them to keep their technologies as a trade secret for a longer period of time. Also, we may allow relaxed data delivery requirements to protect data. We've used these flexibilities to try to meet the Administrator's goal of providing the maximum intellectual property rights to the participants.

So, Section 305(a) applies to invention, not to technical data. This is key, because it is very important to most of these new small entrepreneurial technology companies to protect their technological data—basically, their know-how to make and use the technology. It's one of the reasons why if you look at NASA's history, it has worked with traditional contractors such as Boeing and Lockheed, the big guys. We do not get the innovative ideas from the smaller companies because they do not want to enter contracts with the Government. Thus, one of the goals that we are trying to accomplish with the COTS Space Act agreements is to get these companies working with NASA. Congress and the President in the *Vision for Space Exploration* have decided we should step out and try to help foster a new commercial space industry. So that is one of the reasons we de-

terminated that funded Space Act agreements in this case are proper and give us that flexibility.

So, under the COTS agreement there is no affirmative requirement to deliver technology and data developed under the COTS efforts. We can request delivery of that tech data, but we can only use it to evaluate performance of the participants. In the event, however, of a termination for failure to reach a milestone, we then can use the data right away. We could use it and transfer it for government purposes.

MS. MEREDITH: I am going to talk about commercial space contracts and IP. When Joanne asked me to talk at an IP forum I thought, "Well, IP is not what I do." But then I sat down and thought about what I actually do when I do contracts, which I do a lot of in the space area, and there are a lot of IP clauses in those contracts. They just come in everywhere, whether it is a launch contract, or a spacecraft component supply contract, or a satellite manufacturing contract, or a satellite operator's note purchase agreement, you name it. So I thought, "Well, that at least I can talk about."

Intellectual property – this is a forum where I do not need to introduce that concept. I suppose there are many ways to skin this cat, but rather than getting into the meaning of intellectual property, proprietary information, trade secrets, and patentable inventions; or where the divisions between these concepts actually go, I will leave it to you to sort out the details, and I will move on to something I am more comfortable speaking about: commercial space contracts.

We do a lot of satellite purchase contracts. We review them as part of advising insurance underwriters, satellite purchasers, satellite manufacturers, and financial institutions. We also draft and review satellite launch contracts as well as contracts for the supply of various space products, whether it be a satellite component or a launch vehicle component. The approach of course depends on who you represent. If you represent the one with the intellectual property the key for us is, as lawyers, to make sure that that intellectual property is protected. At the same time, the other party's legitimate rights to that IP needs to be satisfied so the transaction makes sense. If you are representing the buyer, you need to make sure that the buyer has

what he or she needs in terms of intellectual property, to make or use the product. If you are representing the seller, you need to make sure he or she has access to buyer's IP to the extent necessary to make the product. If it is a joint venture, the joint venture company needs freedom to operate without having to seek all sorts of other licenses and permissions after it has been set up. So, again, as legal practitioners, depending on which side we are on, we have different responsibilities.

Let's look at proprietary information. In the contracts that I come across, there is always a confidentiality clause – or a reference to a separate confidentiality agreement. Basically, the rule, as you know, is no disclosure of proprietary information to third parties. Within the receiving party's organization there is usually a disclosure right on the basis of need-to-know. The term, or duration, of the confidentiality obligation varies; could be from five to ten years and it tends to be longer in the aerospace industry than in other industries that I have come across. With respect to the care of the proprietary information, it's usually so that the receiving party has to take the same degree of care of the disclosing party's proprietary information as he does his own, assuming those procedures are reasonable.

While the rule is that you cannot disclose proprietary information, there are certain exceptions. Again, these are very standard. They are when something is in the public domain or the receiving party has independently developed the information or has gotten it from another source with no confidentiality obligation attached. Then, there is usually a right to release the proprietary information if required by law or in the context of a legal proceeding. This phrase 'legal proceeding' is key. Sometimes it says 'judicial proceeding'.

Let's say your client is in arbitration and you have one of these agreements and you would like to, for purposes of document production, have some of the documents that you have gotten under one of those agreements into the arbitration. You find yourself in a situation where you have to interpret what 'judicial proceeding' means for purposes of releasing the documents. Can you, then, release documents into the arbitration proceeding if you have a right only to do it under judicial proceedings? The best answer to that is no.

What you end up doing, in this case, is you have to go back to the disclosing party while you are in arbitration for your client with a third party, to ask for permission to disclose. Then, the disclosing party, depending on its interests, may say, "Well, no. I am going to be difficult. So I am going to put new conditions on." And then you go down that road.

Let's look at the spacecraft purchase contract. Basically, the ones that I have come across — and I have come across a lot of them over the years — are written so that IP rights remain the property of the owner, whether it be the seller or the buyer. The two exchange rights, or licenses, to do what each needs to do. This is the key, as far as I am concerned, when you deal with intellectual property in these contracts. Each needs to get the rights that it needs to do what it legitimately needs to do, if you see what I mean. That is where I am coming from with these contracts. The manufacturer, of course, has legitimate rights to protect its intellectual property in the satellite it sells. The manufacturer typically will have a satellite bus, a platform, which is its standard platform that it sells to a number of customers; and it will guard those IP rights carefully. There will be a payload on the satellite platform, which may or may not be supplied by the same manufacturer — usually not. Somebody else, a subcontractor, then has IP rights in that payload, and that subcontractor will have protected its rights in a subcontract with the satellite manufacturer.

The buyer needs to have enough license rights to use, operate, repair and maintain that satellite. Sometimes the buyer also needs to test the satellite and it needs to have rights to do that. Sometimes the buyer does not test the satellite, the manufacturer does that and delivers the satellite "turn-key" in orbit fully tested and then those rights may not be included.

The buyer also needs to be able, sometimes, to sub-license. There may be someone operating the satellite for buyer. Satellite buyer sometimes also needs to have the right to transfer that license, for example, to a financial institution in connection with the financing for the satellite.

Also, with regard to the satellite manufacturer, it of course needs to have whatever the buyer has of IP that is critically

necessary to design, develop, and manufacture that satellite for the buyer's application.

There also is a distinction that is drawn in these types of contracts between what they call background and foreground IP: background IP being what each party had when they came to the table and foreground IP being what was developed within or during the contractual relationship. Obviously, there are greater rights to the foreground IP than the background IP, as a general matter.

Typically, not a lot of IP is exchanged in satellite launch contracts. As for patents, each party retains ownership and rights in its own inventions and patents. There is not really a lot of need to exchange rights to each others' inventions. There is of course exchange of proprietary information, especially satellite-launch vehicle interface data and information on satellite environmental tolerances.

Supply contracts get trickier. Here, again, we are talking about a launch vehicle component supplier or a satellite component or sub-system supplier. We have represented engine suppliers, upper-stage suppliers, fairing suppliers, satellite component suppliers, you name it. In each of these cases there were interests on the part of the supplier in protecting its IP. Again, the buyer needs enough IP rights or license rights to use or sometimes also make the product, depending on what the product is, but usually just to use it. The parties arrange the contracts depending on what needs each party has. But, of course, the parties typically differ as to what each believes is the other party's legitimate needs.

I put a "no infringement" clause at the end of these contracts. There are also usually these types of clauses in the satellite manufacturing contract. Here is where each party warrants that there will be no infringement of third party patent rights through the use of the license granted. In other words, if the other party - say buyer - uses the IP to which seller grants a license, then seller warrants that using that IP will not infringe any third party patents. There is also usually indemnification, by the seller, in this case, if infringement results. So, if you buy a component of a satellite, let's say, and in using that component you find out you were infringing and you were sued by

somebody because you were infringing their rights. Then the seller has undertaken to indemnify you for any liability or claims or suits.

Contracting with the government gets interesting. Sometimes you have contracts directly with the government. You represent, let's say, the private party in the contract with the government, the prime contractor. Where the contract mixes commercial concepts and FAR clauses, Federal Acquisition Regulations,<sup>7</sup> protecting your client's interests can be challenging.

The other situation is where you have supply contracts. Let's say you represent a foreign supplier of a subsystem for a launch vehicle. That supplier is contracting with a U.S. prime contractor, itself under contract to the U.S. government for supply of a launch service. So the contract with your client is a commercial contract with IP provisions included. But what typically happens is that the prime contractor, in addition, will flow down FAR clauses from the prime contract with the U.S. government, plus other so-called standard IP clauses that a company uses in all its subcontracts. Then you sit there and try to make sense of all of this. It usually does not make sense and then you have to negotiate. I guess it makes for a fun and interesting practice. That is all I have to say on IP and contracts.

MR. SMITH: I introduced myself as an Alcatel employee. That is true. But I am also a General Intellectual Property Counsel for the European Space Industry Association, which is a conglomeration of about 60 space manufacturers all across Europe. That is primarily for lobbying purposes.

Mostly, when I speak about divergences and convergences, I get stuck on divergences between intellectual property law and space law, in particular, when intellectual property law is applied in outer space.

So, legal considerations on space patents: when you make patents on things that can only be used in outer space, and then you come up with questions about what is the applicable law. I would like to take the example of patents on orbits. It is a kind of hot topic because then we run into these questions of appro-

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<sup>7</sup> Federal Acquisition Regulations, 48 C.F.R. § 1.000 – 53.303 (2006).

priation and Article Two of the Outer Space Treaty.<sup>8</sup> I have a case study where there have actually been some problems presented before the court in California. Then I will speak about the recent developments at the UNCOPUOS on this issue, and what, finally, the interface is between IP and space law.

Basically, the origins of today's IP law, as it is practiced around the world, are to be found in the United States Constitution, the first patent law being passed in 1790, and followed shortly by the French patent law in 1791. Now, as you know, they have gone in different directions because of the nature of the common law and the nature of U.S. law and the coded nature of French patent law. I think it is always useful to go back to the roots. The purpose of patent law is to promote the progress of science and useful arts. As we can see in some examples, maybe sometimes it is actually slowing down progress in the way that the owners of IP use it.

Intellectual property has to be intellectual; it is property, and it belongs to somebody. Quite often it does not belong to the person who created it because it has been assigned one way or another, or the rights have been diluted, or else they were bought before they produced. The right is the right to forbid. It is not the right the use; it is the right to forbid. For naïve people this is really hard to understand, but all of us in the room are experts so I just want to insist on that. The second right is to make all kinds of transactions. You can use it to license, lease, assignment, collateral, technology transfer, and so forth.

Satellites have been a major motor in world economic development over the years. The first Intelsat Treaty Organization gave universal telecoms to countries that had little or no access to telecoms. The Inmarsat Treaty made maritime telecoms possible and then branched out into land mobile telecoms. Regional telecoms and meteo-sats organizations include: Eutelsat, EUMETSAT. There are some Russian equivalents as well, in the former U.S.S.R., and all of these things are leading to multibillion dollar industries. Private spending in outer space has

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<sup>8</sup> 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, art. 2, T.I.A.S. 6347, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

exceeded public spending for the first time in 1998 and has been accelerating.

Now let's have a look at the typical costs of some of the satellite systems that are being put up by private money. The Iridium Constellation cost \$5 billion, Globalstar cost \$5 billion, ICO would have cost \$5 billion but it never got up there, SkyBridge was budgeted \$5 billion (this was an Alcatel project). I would estimate that it would have cost \$8 billion if it actually got up there. Teledesic, the Bill Gates world satellite grid, was estimated at \$10 billion with 266 LEO satellites. Actually, they filed at the ITU for something like 888 but they scaled back. They all went broke. The only one that has not gone broke yet is *Galileo*. It has cost € 1.2 billion in taxpayer money. It is supposed to cost another € 3 billion, split two-thirds by industry and one-third by public financing. We'll see if that one goes broke too. It might then be able to work, because you can reclaim what went broke, and after canceling all of the unpaid debts, end up with a system which works. Globalstar went broke; now it works. ICO went broke, was bought up in a fire sale by Craig McCaw, and it probably will work as well. But the first thing you have got to do is invest \$5 billion, lose it all, and then you can make money.

Intellectual property in outer space activities has actually been used in the courts a few times. It is hard to know what has been going on in transactions because transactions are generally kept secret. However, sometimes you can find filings at the Security and Exchange Commission for publicly-traded companies.

This first example is the case *Space Systems/Loral v. Com Dev. Com Dev*, when it was a Canadian company, was importing high-power filters to the United States for Intelsat satellites, infringing the Space Systems/Loral patent. They got hit with an out-of-court settlement of only \$3 million, but with a guaranteed running rate of 100% royalties for future supplies. That is pretty stiff to try and be competitive with 100% royalty rate.

In the *Hughes Aircraft Company v. the United States Government*,<sup>9</sup> I was quite interested to hear in a preceding talk about this Section 35 U.S.C. 105. Now, maybe we can go into this a little bit more in the question and answer period, but Hughes Aircraft won nearly \$1 billion in damages after appeal. Basically, this was on the famous Williams' patent, which was funded by the Navy. Unfortunately, at the time in this particular instance, the Navy did not see the need for having a license for government use. So, Hughes requested a reasonable royalty rate of 3% on all of the geostationary satellites that were sent up with the spin stabilization. By the time the case was judged there were 84 of them up there. Three percent of 84 times an average price of about \$300 million and you get up, easily, to a billion dollars.

I also know that the European Space Agency was attacked and they settled out of court for an undisclosed amount. Another European company was attacked as well, DASA. The next example in my list is TRW versus ICO—we will speak about that later on because that is a patent on the orbits.

The Hughes patent was on the spin of the satellite. Obviously, this alleged patent infringement can only occur in outer space. This was the case law that led to the legislation 35 U.S.C. 105. In fact U.S.C. 105 says exactly what the judge said in the Hughes case: any space object under jurisdiction or control would then be considered as part of U.S. territory for patent purposes.

But, we also have a lot of other strange patents that can only be used in outer space: pseudo-geostationary orbits, frequency sharing between LEO and GEO satellites, unfolding of solar panels and antennas, and so on.

This next example is something that has to do with the radio regulation issues of the ITU. Another example: GSM in the Sky, from Motorola. The Comsat maneuver for end-of-life; and at the time, Comsat was an Intelsat signatory, one of the first of Intelsat signatories to go private. They started thinking about things like, "Well, what happens when the satellite is at the end

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<sup>9</sup> *Hughes Aircraft Co. v. United States*, 86 F.3d 1566 (1998).

of its life?" "That means the fuel is running out and it starts wobbling." "Well, let's patent that, you know, because that is a great way to save fuel. Just let it wobble." So the satellite makes a small figure eight in the sky and anytime you get to end-of-life on a geostationary satellite it is going to do that. So, it is going to automatically infringe that patent. Very clever!

Then there is Motorola's LEO smart satellite constellation called *Iridium*. If you do not want to infringe this patent, it is easy: you just send only dumb satellites. Recalling the relevant articles of the Outer Space Treaty, basically the benefit for all countries, Motorola's *Iridium* would argue that every country can benefit from the *Iridium* constellation, you just have to buy the telephone for \$1,000 and pay \$12/minute and everybody can benefit, except those who only earn \$12/year, of course.

What we see here is a constellation of basic contradictions. Space law is extra-territorial. IP law is fundamentally territorial; it is only valid on the State in which it is granted. Space law is the same for all States, and IP law is different in every State in the world and at different stages of development as well. Space law is extraterrestrial and IP law is terrestrial. It is 200 years old and it has not changed that much. The United States is the only one that has made any specific provisions for space in IP law. Space law says share benefits, but IP law operates a monopoly. I see it is a head-on collision in all of these areas.

Now, just recalling that IPR, Intellectual Property Rights, are those rights granted to the owner by a state, enforcement and legislation in each state, and logically, for acts occurring within the State territory. The right is to forbid. However, the IPR owner does not necessarily have free rights to use. He may be dependent on third-party rights to do so. There is a particular problem if those third-party rights belong to a United States entity, whether is be a legal or physical person, the reason being that intellectual property rights having to do with satellites fall under ITAR.<sup>10</sup> As a dual-use technology, there are restrictions on the export of such rights, and even discussing such rights

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<sup>10</sup> International Traffic in Arms Regulations, 22 C.F.R. Parts 120-130 (2006).

with third parties and third countries. It may be difficult to get the necessary license on those third-party rights if you need to use them.

Only the United States has made specific provisions for intellectual property law by the U.S. Space Bill signed into law by George Bush, Sr.: the 1971 NASA Act, which foresees a temporary exclusion for launch purposes.

I would like to point out, in the U.S. Space Bill, that concerning the IPR, the jurisdiction is determined by the registry on the UN Register. The UN Register was never foreseen to determine jurisdiction. It was foreseen to determine liability, this sort of thing: ownership, jurisdiction and control. When it was translated into American, this turned into jurisdiction or control. The difference is substantial. Jurisdiction and control is this big. Jurisdiction or control is bigger.

This was codification of the Hughes case, because the Hughes lawyers argued that when the satellite went up into geostationary transfer orbit there was a control signal sent from the Virgin Islands, which is a U.S. protectorate. So, it was under the control of the United States. Secondly, the use of the satellite: what is the use of a telecommunication satellite? Lawyers cleverly argue that the use of a telecommunications satellite occurs in the receiver. The receiver is on the ground, on the territory of the U.S. Therefore, the spin of that satellite is not being used in outer space; it is being used on the ground in the receiver.

There are exceptions for foreign registry. This also brings up the issue of what happens when a satellite changes ownership and the owner is of a different nationality. This is an open question.

What about the patentability of orbits? Could this lead to new type of merchandizing? Claims laid on orbits, claims which are upheld or believed to be valid claims on orbits. Could they, first of all, be patentable? They could easily satisfy the novelty criteria if they had not been previously described. They could also have an inventive step if it, you know, solves some sort of practical, technical problem.

There is also the question of industrial application. If you can make money at all from it, generally it is considered to have

industrial application. But there is another aspect of industrial application; it has to also be feasible. In general, orbits may have patentable characteristics. We will see that, in fact, many patents have been taken out on orbits. In that case the objects of transaction are just like any other technology. There is the example of the Luxemburg company SES making deals with an American company over a Mexican satellite orbital slot.

The most important patent that was never patented is the geostationary orbit. In 1945, Arthur C. Clarke described the advantages of a geostationary orbit. A satellite placed 36,000 miles above the Earth and turning, therefore, with a period of 24 hours at the same rotation rate as the Earth appears to be stationary in the sky. This is an enormous advantage because you do not need a tracking antenna. The first satellites were using C-band, which needs an antenna just about as big as this room. If you have to turn that thing to track the satellite you need some pretty hefty motors.

This was a really great idea. But was it a patentable idea? In fact, it wasn't, because at the time, we had no means of getting satellites into that orbit. It was pure science fiction. So it could not be patentable because it could not be implemented. One of the requirements for a patent is you have to describe the way that you could best implement it, and it was not described. I recall that Arthur C. Clarke also was the author of 2001: A Space Odyssey. Great author, and he had some great ideas, but they were not all patentable.

If you go to the U.S. PTO and type in 'satellite orbits', you get a list of patents like this. It goes on and in the long version you get abstracts from all of these patents.

There is the TRW patent on a MEO, for medium earth orbit, satellite based cellular telecommunications system. TRW is a well-known California military contractor. They took out a patent in 1995 saying that if you launch a constellation of satellites between 5,600 and 10,000 nautical miles and you put them into radio communications contact with handheld telephones, it belongs to us. So you can imagine this shell around the Earth between 5,600 and 10,000 nautical miles, which belongs to TRW for telecommunications applications to handheld sets. Great patent.

They decided to litigate on that because there was a UK company called ICO Global Communications who had the intention to build such a system. They made the bad mistake of asking Hughes to build the satellites. Hughes in El Segundo, California and TRW is right next-door, practically. They are both at Los Angeles International Airport. So, they sued and requested an injunction on the construction of those satellites before the California Federal Circuit Court on the basis that if those satellites were built and they were launched they would become infringing. "We need an injunction right now!" Of course, the court threw that out because the satellites were not on that orbit, so they obviously were not infringing.

The problem is TRW appealed. During that time, ICO could not find the necessary funding to do their project, so they had to try and settle out of court in order to stop, first of all, the investor scare and also to stop the legal expenses, which were a couple million dollars per month. What turned out is they settled for \$150 million and a few months later they went broke for \$450 million worth of debt. They were subsequently bought up by Craig McCaw for only \$50 million. When Craig McCaw bought this system it was really great; it was nothing but some satellites sitting on the ground. Then he went to the FCC and said, "Look, I am going to make a telecom system to handheld mobiles. But I am going to have a hard time penetrating into buildings so I am going to need some Earth-based and terrestrial repeaters." In fact, the gambit is that he would be able to deploy a terrestrial system on the excuse that he has a couple of satellites in the air that cannot communicate directly with handheld sets.

Here we can see how a U.S. patent on an orbit can keep a foreign country from making progress into outer space in deploying its own space-based system. Does this seem consistent with Article Two of the Outer Space Treaty? "... Not subject to national appropriation by claims of sovereignty, use occupation, or by any other means."<sup>11</sup> It seems to me that here we are in the characteristic of "any other means".

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<sup>11</sup> Outer Space Treaty, *supra* note 8, at art. 2.

I should like to also mention that there has been recently—I say recently because on the scale of time that these legal subcommittees of the United Nations COPUOS works, only ten years ago -- we have a resolution taking into account the needs of developing countries for technology transfer agreements. This is the first time where the United Nations has actually used the three words 'intellectual property rights'. In that declaration they say, "Contractual terms in such cooperative ventures should be fair and reasonable and they should be in full compliance with legitimate rights and interests of the parties concerned, as, for example, with intellectual property rights."<sup>12</sup>

Now, as typical of United Nations' resolutions, this is a lofty principle. But the thing is that the owners of the intellectual property rights still want to be paid for the use of those intellectual property rights. Cooperation with developing countries still has this impediment of intellectual property rights belonging to developed countries.

Finally, what is the interface between outer space law and intellectual property law? As it stands, intellectual property law has a few steps. First of all, you have to make a patent application and it goes to the Patent Office. The Patent Office has a huge, thick book just full of rules. The legislation is only this thick, but the book of rules, how to apply that legislation, is about four times as thick. In the MPEP, the Manual of Patent Examiners Procedures, there is nothing said about the Outer Space Treaty, there is nothing said about international public law. The examiner just does his or her job. They look for novelty, inventive steps, and industrial application—and that is it. You can thus end up with patents that seem to be contrary to Article Two of the Outer Space Treaty. Nobody expects that this will be brought up in court before a judge. First of all, the judge probably did not learn that in school. Secondly, the lawyer would probably get fired for bringing up such an argument.

I have presented this to the UNCOPUOS Legal Subcommittee as well. They thought it was a very interesting problem.

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<sup>12</sup> Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, A/RES/51/122 (Dec. 13, 1996).

They said, "Well, you know, IP contains the word property"; therefore, it is not in their territory and it is not up to them to resolve. There is no interface between outer space law and intellectual property. They can be in contradiction and for the moment, there's just nothing we can do about it."

It is going to get worse because we have new emerging space powers. The Brazilians are working with the Chinese and they have launched satellites. The Nigerian satellite is a Chinese satellite. The payload was supplied by a French manufacturer. We have evolution of applicable law, but applicable law is still piecemeal in the intergovernmental agreement (IGA) on the *International Space Station*.

On the ISS, which took about ten years to negotiate because of IP issues, we ended up with a total patchwork. On each segment, and each module supplied by a different country, the intellectual property law of that country applies. If we do get similar provisions from the European Commission and the new European Community Patent, which is in the recommendation stage but has not yet passed, mostly because of language and translation requirements. There are some United Nations efforts which have been endorsed by Unispace III, but this has not gone forward. The World Intellectual Property Organization has also studied the problem. They said it is not for us because, you know, we are just here to grant patents. We have an arbitration committee but, for us, a space patent is like any other patent.

The World Trade Organization and the TRIPS Convention have totally ignored this problem. There was a revision in the millennium round. Intellectual property was not opened for question. The United States does not want to hear that question opened at the moment.

A revision of the Munich Convention, this is the European Patent Convention, overlooked this problem as well. There was lobbying from the European space industry for that. So in the meanwhile, we are on the point of passing appropriate legislation into French law which is basically the same as the U.S. law, except that it does not have the 'or' under 'jurisdiction and control'. We prefer to stick to the international law terms. Other national laws are in the works in India, Kazakhstan, and a few other countries.

So, is there divergence or convergence? IP can aid if it contributes to promote the progress. That is what it is made for. But we have seen in practical examples that quite often it is preventing people from going forward. I would be tempted to say there is a misuse of intellectual property law. Appropriate legislation should be put into place to ensure that it actually does promote progress, that the goals that we set ourselves in making these laws can actually be met.

I didn't give you lists of all the different people that have made these patents I showed you, but you find individual inventors who have absolutely no means whatsoever to make a satellite or launch it. You have consulting companies who will go knocking on doors saying, "Hey, don't you want to use this idea?" You have national space agencies who own patents on orbits. Remember, owning a patent on an orbit is in order to forbid somebody else from using it. What is the logic in national space agencies taking out patents on orbits? In order to keep somebody else from using it, obviously.

Somebody else's IP is always a barrier to overcome. So, if the United Nations' public international law is to have any useful effect, it has to be translated, in adequate terms, into national legislation.

MR. WILLIAM WILKINS: My name is Will Wilkins. I work for a department of the law school called the Mississippi Law Research Institute. What I thought I would do is just give you a little rundown of some things I do and be very brief, and then sit down—a little rundown of an issue or two that I have run into in working with Joanne and some other groups in space law. Again, I work for all the universities in the state of Mississippi for intellectual property issues. It is very broad. It is almost like a practice, it is very broad. I am a generalist inside the intellectual property field and so what I do is extremely terrestrial. I work on a really base level on a lot of these issues: from copyright issues to dealing with bands playing across campus, to T-shirts being sold at football games, to people that are developing technologies dealing with space issues and geospatial issues.

In my experience working with the space and remote sensing programs, I have worked with Joanne's Center, the Center that is sponsoring this program, and also another center here

called the Center for Geospatial Workforce Development. The issues that we have had have ranged from fairly usual publishing issues: copyright issues, speakers' issues, release issues—things that would generally come up—to more technical patent issues: issues of data, what we can do with data that was generated in space. I have not really dealt much with data while it is still in space, but once it gets down here it comes into my field. Like the previous speaker said, there is a divergence of what has been developed in space, which is covered by space law, and once it gets down here it is covered by what I know, which is intellectual property law.

The problem with intellectual property law is it is jurisdictional. From country to country there is a wide divergence on coverage. Even within individual U.S. states, there is a wide divergence.

A lot of the issues that I have dealt with have involved software that is used to translate the data once it has come to Earth. It was fortuitous that I was going to talk about this today, because in the window of the library at the law school was a book exactly on what my experience has been, which is Math You Can't Use. I haven't read the book yet, but its cover says, "Patents, copyright, and software." The gist of the book, from what I got in my five minutes of reading the cover, is that patent and copyright law are being used to take principles of math and make them unusable, as in the orbits that are now unusable. Basic mathematical principles are becoming unusable.

We have had some experience in dealing with algorithms. Algorithms are patentable in certain circumstances. The exact language is that they are protectable, if they produce a definite tangible concrete result. In other words, if the data comes from space, from a satellite, you can patent, in certain circumstances, the algorithms that you use to crunch those numbers, to do something with those numbers, if there is output on the other end—if something comes out of there. That is the holding of the *State Street Bank*<sup>13</sup> case and it has become kind of established law. The problem is, as this book points out, we have a lot of

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<sup>13</sup> *State Street Bank & Trust Company v. Signature Financial Group, Inc.*, 149 F. 3d 1368 (Fed. Cir. 1998).

math that is becoming unusable. It is a struggle that the courts are taking up on a real base level right now, which is probably going to have to be settled statutorily, eventually. The problem is that the argument on the unpatentability of algorithms and things is that these are math principles; they have always been there, there is no originality, they are there. We may not know them today, but they are there. All we are doing is figuring out something that is there.

It has been a real struggle when I am working with people on algorithms patenting or working on software that they have produced to deal with this information, the breadth of the information that has come from space. That is the majority of my experience working with intellectual property issues and space law: working with what we do with the information once it comes back to Earth, whose information it is. Was the information in the public domain, and then what we do with the information? Does that transfer it into something that is proprietary? When does it become a trade secret? What steps do we have to take to make it become a trade secret? Things like that.

My issues, again, have been much more basic. But it does tie into the previous talk, which is that what we have done with algorithms has been that we have tied up a bunch of things that may not be very usable, and may not in the end satisfy the Constitution's requirement of progressing the natural progress of science and arts.

PROF. GABRYNOWICZ: Any comments, questions, reactions to anything you heard? Anything you want to direct to anybody? Yes.

FEMALE VOICE: I have a question about inventions for the Other Transactions Authority. Is that a literal translation of invention or is that going on to include other branches of intellectual property law?

MALE VOICE: Inventions under Section 305A is inventions in the normal sense of the word; patentable inventions. Basically, the transfer may be patentable. An invention that is or may be patentable. Inventions 305A applies to contracts for large businesses that have not been carved out by Bayh-Dole and other transaction authorities. When we talk about title taken to inventions, it is the rights in the inventions and the

patent. That something is in the patent that was made, which is conceived or first actually reduced to practice under the agreement.

FEMALE VOICE: So that extension does not extend to copyrighted works? So those could be other transactions?

MALE VOICE: 305A does not apply to copyrights.

FEMALE VOICE: Right.

MALE VOICE: This would be more of a data rights type of issue.

FEMALE VOICE: Okay.

MALE VOICE: And we have much more flexibility in data. We talk about data; it is broader than databases, it is information.

FEMALE VOICE: Okay.

MALE VOICE: You do not take title to copyrights, per se. Now...

FEMALE VOICE: But you could?

MALE VOICE: We can get assignment. In fact, when it comes to software, we have some NASA FAR supplement clauses or we can require contractors to assign the copyrights to software to us.

FEMALE VOICE: Okay.

MALE VOICE: Software is a unique kind of technology that is not covered by patents now.

FEMALE VOICE: All right. Thank you.

PROF. GABRYNOWICZ: Anyone else? Any of the students? Comments? Questions? Okay. Well thank you very much. I learned a lot. It was great. Thank you.

#### CLOSING STATEMENTS

PROF. MYERS: Thank you, first of all, to all those of you who have borne with us today. We have covered a lot of ground and I think I have learned a lot about space law that I was unaware of. I want to conclude with three points.

The first point I would make is about space law. As I may have not even brought up earlier, I was pretty much an empty vessel when it came to space law up until I started reading the

papers and listening to the presentations today. I have learned a lot from all of you and I appreciate that.

One of the things I learned about space laws is just how far-reaching the field can be. We have talked about international law, treaties, comparative law, jurisdiction, choice of law, contracts, and, of course, intellectual property. It is striking to me that you can probably find a connection to almost any area of law here. I was impressed with that.

My second point is about the convergence and divergence of intellectual property and space law. It struck me that space law, here too, is quite—and I use this word in a favorable way—imperialistic, in the sense that it has really carried through every area of intellectual property.

We have talked about patents and patent litigation and the issue of enforcing patents in extra-territorial and space locations. We have talked about copyright ability issues, database protection. Quite a bit of talk of the trade secret area, which does strike me as very important for space law, as well as technological means of protecting data. Pretty much everything that I talk about when I teach intellectual property and think about intellectual property seems to be covered here.

I guess that brings me to my third point: is there divergence or convergence or both? I think we have had healthy dialogue here among practicing lawyers/professors and there has been disagreement amongst those groups as well as between them. It strikes me there is some of both divergence and convergence.

In my view, listening to everything, I think space law and remote sensing generates a wealth of information in much the same way, for example, that pure scientific research might generate a lot of information that probably ought to be free to all. And available in part because it does frequently seem to be the product of governmental taxpayer funds, and therefore ought to be available to be used.

Once we take that raw material and alter it, make it useful, it is much like applied science, intellectual property, because at that point we are transforming something that is public in nature, something that is theoretical, something that is raw, factual, and turning it into something that would be useful to peo-

ple; maybe useful in a patent sense, maybe creative in a copy-right sense.

In either case, at that point there is a role for intellectual property and for property rights in that information. To me, that is where there is both a convergence, a sense of an interplay, and a close relationship in the two fields, even though they may start off with very different premises.

PROF. GABRYNOWICZ: I am just going to try to synthesize a little bit of what I heard. I also learned an enormous amount today. I think the conversations we heard this morning is what is so desperately needed in the space law community.

I heard things that have expanded my own thinking of space law and that have opened up new opportunities in ways of thinking about both national and international space law. We had a lot of lively discussion and I did hear that there was some kind of consensus. That we do need to consider a range of property rights when we are talking about intellectual property and the territorial is only one component.

Chattel, intangible rates—all of that is appropriately discussed in the context of space law. The question is how best to do that via national legal vehicles or international law. Can intangible rights be registered the way a spacecraft is registered? Is that an appropriate mechanism for a commons?

A lot was said about the focus of space law on a commons and equity and that this is a context, which, when it meets the idea of individual rights as promulgated in intellectual property, really needs to be addressed. The assumption is there will be leakage—I think that was the word I heard—of intellectual property and the stress on individual interests. If space law is to maintain its focus on equity and a commons approach, there will need to be some kind of affirmative action for that to happen. It would be interesting to see how my colleagues from other countries would respond to that remark, but, very interesting.

The second thing we addressed was databases. We spent a lot of time dissecting and discussing the difference between the U.S. approach and the European approach, the database directive and the different values that each one of those approaches have. That dovetailed with something we kept hearing over and

over, which is the need for empirical evidence regarding the effectiveness of one approach or another.

In fact, what we did hear is perhaps in Europe they are beginning to rethink some of these things based on the fact that they have looked at the empirical side of it and it would be interesting to see if there were parallel efforts that have happened in the United States.

The practitioners' panel was fantastic. We saw a wide view of things and it came from the point of view of the client, that the practitioner has worked with in the past. We saw different angles, in one case, a speaker has NASA and the government as a client and so the discussion was about its organic statute and the use of the law and the legal tools that they have to implement national policy.

We also heard that intellectual property is an integral part of commerce, and specifically, commercial spacecraft sales and the contracts that are drafted to affect those sales. That not all space hardware is the same. Launch agreements are different. The intellectual property issues and the launch agreements were different than the intellectual property in the spacecraft agreements. To have a successful mission, you need both the launch vehicle and the thing on top of it. To see that coming from two different angles was interesting. That the law can change with institutions, whether you are NASA, the Air Force or the European Space Agency, depending on which one of those institutions you're dealing with—going to have different implementing regulations, which is also going to add a layer of complexity.

One view, based on clients that are outside of the United States, is that there is no interface between intellectual property and space law and that there definitely is a divergence, not a convergence in that point of view.

We heard from an attorney whose client was academia that there is concern for the growing use of intellectual property to prohibit the use of mathematical formulas or, in the case of Brad's presentation, physical facts, like orbits. That brings us back to the original paper, of what is the best and appropriate approach to this role of space law and international intellectual property law.

Finally, our last and most recent paper I found compelling in so many ways. The idea of discussing a developing nation's approach to laws that have historically been considered sophisticated technological requirements and which have been traditionally, within the realm of the developed world. I think it is an amazing insight into one country's approach to its beginnings and how to make it grow.

The aim to protect the intellectual property of a creator or a producer is very similar to what we hear in the developed world. But what we do not hear in the developed world, although there is increasing demand for, is to prove the social and economic value of these activities.

From Nigeria's point of view, that is their starting point. Whereas the developed world, which has been involved with space activities now for over 40 years, are still often required to prove that to funding agencies and policy-makers and decision-makers. Nigeria seems to have that from the beginning.

I love the term that Tare Brisibe used, the 'reciprocal penetration of national and international law', when we were talking this morning about what is the appropriate way to go in terms of further defining it. That sounds like a standard to me. It is a very eloquent term and I think it has value.

That is my wrap-up on the law. But, I am not finished wrapping up my wrap-up. Before I wrap up my wrap-up, I must thank a number of people who helped make this possible.

First, I have to thank Kali Murray. We just were talking one day and she was talking about the idea of commons and intellectual property. I said, "You know, space is a commons," and one conversation led to the next, and that is really what gave birth to this idea of having this conference, and Kali's resource to the IP bar has been a very valuable thing. I want to thank her for that.

I also want to thank Michelle Aten, who has been in the control booth. She has been working back there, making sure that the webcast and everything has been going smoothly and dealing with the technology here. We had an intervention by Jake Jenkins, who came from across campus to help us out. We found out that evidently there was some kind of campus-wide difficulty with audio earlier today and there was nothing we

could do about it from here and he dropped everything he was doing to come over here to get us back on track. I want to thank him for that.

With that, I will just give our participants a last chance to make a comment, a question, sign off, whatever. If not, I declare this symposium closed and thank you all for your participation. For those of you out in Webland, thank you for your patience and join us for a virtual cookie while the rest of us have a real one. Thank you, very much.

**REPORT OF THE IISL SPACE LAW  
COLLOQUIUM IN FUKUOKA, JAPAN,  
OCTOBER 2005**

*Contributed by Rapporteurs Martha Mejia-Kaiser, Setsuko Aoki,  
Yasuaki Hashimoto, Motoko Uchitomi and Sethu Nandakumar*

*Edited by Tanja Masson-Zwaan*

**SESSION 1 - LEGAL ISSUES RELATED TO NEW  
DEVELOPMENTS IN SPACE APPLICATIONS: NAVIGATION, REMOTE  
SENSING AND GIS**

*Chairmen: Prof. Setsuko Aoki (Japan) and Prof. Jonathan  
Galloway (USA); Rapporteur: Dr. Martha Mejia-Kaiser (Mexico)*

1. The first paper presented was "Global Earth Observation for Compliance of International Environmental Agreements" by Ms. Masami Onoda (Japan). Ms. Onoda listed the most important treaties on environment and pointed out that the implementation of international obligations in this area is addressed together with the gathering and distribution of remote sensing data. She stated that protection of the "global commons" such as the high seas, the ozone layer and the global climate, demands global responsibilities, because injured States can not identify the State which violates its obligations. She mentioned that, at present, it is necessary to find a balance between public (data as a public good) and private interests (data as a commercial product). She also recommended that national and regional interests

should be integrated into a global one, while maintaining a balance among the interests of all parties.

2. Mr. Mukund Rao and Mr. Sridhara Murthi (India) presented the paper "Legal Issues Relating to Convergence of Imaging, Positioning and Spatial Databases". The authors stated that the divide between the free access of the civilian sector and the restricted defense requirements have vanished. As a result, States' outlooks for the dissemination and use of satellite remote sensing images have had to adjust to these technological and market-driven developments. The authors were of the opinion that the integration of remote sensing images, the positioning reference and the spatial databases are powerful tools that will reach dimensions not imagined before. They commented that legal regimes for protecting and managing compilations are needed. Issues like the ownership of digital data, protection of privacy, access rights to compiled data and information liability were addressed.

3. The paper "Regulatory Framework for the Distribution of Remote Sensing Satellite Data: Germany's Draft Legislation on Safeguarding Security Interests" was submitted by Dr. Michael Gerhard and Dr. Bernhard Schmidt-Tedd (Germany). The authors presented an overview of the upcoming German legislation for the operation of "advanced" remote sensing satellite systems and the distribution of their data. The draft legislation, which may be approved by the parliament in mid-2006, was prepared with the aim to protect Germany's national security and foreign policy interests, through the granting of licenses. If a space remote sensing satellite system qualifies as "advanced", there is the need to apply for three licenses: one for the operation of the satellite system, one for the general distribution of data and one for a specific transactions of data.

4. Mr. Álvaro Dos Santos (Brazil) presented the paper "Policy for Commercializing CBERS Data", depicting the Brazilian-Chinese cooperation in the experimental operation and data distribution of the remote sensing satellite CBERS-2. He referred to the '2004 Protocol' signed between these two States and to the "CBERS Data Policy". Through this Policy, China and Brazil agree to have free access to data generated by the satellite. Through agreements, other States may be given direct

access to the downlinks of this satellite, subject to reimbursement on a per-minute basis. The author mentioned that the Brazilian Ministry of Science and Technology has decided to distribute these data free of charge to Brazilians during an initial period of two years, but both parties have agreed not to distribute such data to foreign States or persons. The author made reference to the Brazilian position in COPUOS on remote sensing. Brazil had proposed a general convention, but this proposal has now been withdrawn.

5. The paper "The Search for New Institutional Models of International Remote Sensing Activities" was prepared by Dr. Mahulena Hofmann (Czech Rep.) and Mr. Clemens Feinäugle (Germany). The authors consider that the commercial access to satellite remote sensing technology requires rethinking legal models for an international organization. Although there is no political will for the establishment of an international regime on remote sensing activities, they commented that international practice has been developing its own rules, channels and structures. The authors addressed several international organizations (FAO, WMO, UNESCO) as models for a remote sensing international organization, but also suggested to consider an international network without rigid structure (GEOSS). They concluded that it is important to coordinate the various observation systems in order to ensure consistency and interoperability.

6. The next paper was presented by Ms. Atsuyo Ito (Japan), entitled "Legal Aspects of Implementing the World Heritage Convention Using Remote Sensing Data". Ms. Ito referred to UNESCO's 'Convention Concerning the Protection of World Cultural and Natural Heritage', which is to safeguard sites with outstanding universal value. The Convention covers cultural, natural or mixed sites already on the World Heritage List. The Convention also contemplates the identification of potential sites. The author referred to the ESA-UNESCO "Open Initiative", which aims to monitor heritage sites through remote sensing satellites. She pointed out that World Heritage Convention, as a drawback, leaves it up to each individual State to take measures for protecting the sites in its territory. She mentioned that the "Open Initiative" takes the approach of requesting a

State's prior consent before teleobservation of its territory. Ms. Ito advanced the idea of collecting images in an inventory of cultural and natural heritage sites, to be managed by the World Heritage Committee. She recommended that protection of heritage sites should be the "common concern of humanity", as already stated in the Convention on Climate Change.

7. In the paper "The UN Principles on Remote Sensing Today", Dr. Maureen Williams (Argentina) presented a summary of the discussions in several international gatherings on remote sensing activities. The participants of the Conference of the ILA, of the last three years of the IISL Colloquia, of the Argentina/Brazil Meeting on Ciencia en Tecnología and of other meetings, all agreed that the UN Principles on Remote Sensing have been superseded by current technological developments, by the way in which the data is being distributed and by new areas of application not foreseen.

8. The last paper was co-authored by Prof. Anatoly Kapustin and Prof. Gennady Zhukov (Russian Federation) on the "Problem of Coordination of the Use of National GNSS Systems". In this paper the authors proposed the creation of a consortium to coordinate the civil use of national GNSS systems for civil aviation, maritime and land traffic management. They addressed ICAO's work in this field and referred to the "Charter of Rights and Obligations of States Relating to GNSS Services", which has no binding force. They held that the proposed consortium could provide and operate the system by itself or monitor and control the service provider. Finally, the authors recommended the inclusion of a new item in the COPUOS agenda: "Legal Principles on GNSS Use for Peaceful Purposes".

*Notes on the discussion:*

a) On the question of Germany's national legislation on remote sensing satellite data:

- *Dr. Schmidt-Tedd* clarified that the foundation of Germany's regulation was Art. VI of the OST, and was also meant to complement export control legislation.

b) On the issue of an international organization on remote sensing:

- *Dr. Hofmann* was asked how an international organization might be structured: she responded that she and her co-author didn't have any clear idea, but mentioned several organizations as examples. About the Intelsat or the Inmarsat models, *Dr. Galloway* noted that those were historical examples, because they have changed through privatization with Inmarsat's shares being traded on the London stock exchange. *Dr. Hofmann* replied that they only considered theoretical alternatives, but that they were aware of the problems arising from privatization.

- *Dr. Jakhu* referred to the fact that in COPUOS some States were blocking decisions. In his view, consensus is a tool, but the goal is to promote the rule of law. He mentioned that since 1979 no new treaty has been adopted and resolutions have often been bypassed. He suggested that we also look at other fora in which international agreement might be achieved.

- *Dr. Hobe* proposed an examination as to why the international community is reluctant to create hard law for space activities and asked if the existing unbinding resolutions provide sufficient legal certainty, for example in the area of private investments.

- *Ms. Onoda* responded that there is more consensus in respect to environmental principles, and that it may be more important to concentrate on this area, rather than discuss an international agreement on remote sensing activities, thus avoiding the practical problems stemming from consensus mechanisms of COPUOS.

*c) On implementing the World Heritage Convention using Remote Sensing Data:*

- *Dr. Martha Mejía* made reference to the systematic robbing of archeological sites in Russia, using remote sensing images. She was of the opinion that the ESA-UNESCO Open Initiative, which introduces 'prior consent' for teleobservation is a step back in the freedom of remote sensing activities. She considered that images should be taken without prior consent, in order to point fingers where poaching is taking place, rather than asking permission of the State where an archeological site is located.

- *Dr. Jakhu* commented that in analyzing the use of remote sensing techniques to protect the World Heritage Convention, one should not argue that the Convention is in accordance with the UN Principles, because there is no 'prior consent' requirement in the UN Remote Sensing Principles.

- Answering *Dr. Galloway's* question about World Heritage Sites in international territories, outside the sovereignty of States, *Ms. Ito* recalled that at present there is no such site. *Dr. von der Dunk* did wonder how "world" should be defined, and commented that there is discussion about the protection of historical sites like the steps of the first astronaut on the Moon. He wondered if such sites could be covered by this Convention. *Ms. Ito* answered that a new international instrument might be required to regulate that aspect.

#### SESSION 2 - LEGAL ASPECTS OF EXPANDING HUMAN PRESENCE BEYOND LOW EARTH ORBIT

*Chairmen: Prof. Elisabeth Back Impallomeni (Italy) and Prof. Mamoru Koga (Japan); Rapporteur: Prof. Setsuko Aoki (Japan)*

In this Session eleven papers were registered, eight papers submitted by the authors, three papers withdrawn and two papers summarized due to the absence of the authors.

1. The first paper presented was "The Sky Is The Limit - But Where Does It End?" authored by *Dr. Frans von der Dunk* (The Netherlands). In this paper *Dr. von der Dunk* reminded us of the fact that recent events including *Spaceship One* brought the question of the delimitation of outer space and airspace back on the table and pointed out the growing necessity to reconsider the establishing of a boundary between airspace and outer space in order to provide a stable and predictable legal framework for the development of private space flights as well as for national activities of reusable space objects. *Dr. von der Dunk* proposed to establish this boundary at an altitude of 100 km since this limit already has been recognized by almost consistent state practice and also by domestic legislation. It was upheld by the author that priority has to be given to this problem to better

deal with today's necessities. However, he stated, any future limit should remain flexible.

2. Mr. Ricky J. Lee and Ms. Felicity K. Eylward (Australia) authored the paper "Article II of the Outer Space Treaty and Human Presence on Celestial Bodies: Prohibition of State Sovereignty, Exclusive Property Rights, or Both?" The authors analyzed in detail the relevant international agreements, *inter alia*, Article II of the Outer Space Treaty, Article 11 of the Moon Agreement and Article 137 of the Law of the Sea Convention, and they concluded that Article II of the OST itself may prohibit the exercise of sovereign rights or national appropriation through private use or occupation of celestial bodies, and arguably it was not until the entering into force of the Moon Agreement that the creation of property rights on celestial bodies came to be prohibited. However, since a significant number of commentators are of the opinion that Article II prohibits the creation of property rights and no contrary state practice could be found, Mr. Lee stated that it might be prudent to consider that Article II stipulates the prohibition of property rights. Considering the recent private activities such as selling the soil of the Moon and Mars, the authors were of the opinion that further clarification of the issue had to be achieved before space mining and other ventures would become economically feasible.

3. The third paper, "Between Concord and Rivalry - requirements for and political feasibility of modifications of planetary operations legal regime" was submitted by Mr. Jakub Ryzenko (Poland), who presented the paper orally, and Ms. Anna Burzykowska (Poland). The authors stated that the development of technological capabilities would necessitate a detailed legal regime taking into consideration prior legal regimes in other common areas such as the High Seas, Antarctica and the Deep Sea Bed. Since renewed interest in the exploration and exploitation of the Moon and other celestial bodies has recently become evident among space faring states, the authors maintained that a multilateral legal regime should be established to strike a balance between a safe business environment and the principle of space exploitation for the common interest. The authors were of the view that lessons learned by the Deep Sea Bed Authority in connection with the 1982 Law of the Sea Conven-

tion should be carefully studied to accomplish an appropriate multilateral agreement of how to share benefits and results of space activities. It was concluded that a multilateral legal regime would be politically feasible provided that economic justification and legal soundness were also satisfied. For that goal, the authors stated, the following would be key issues: (1) a successful evolutionary approach; (2) the clear and acceptable definition of Common Heritage of Mankind; (3) the reasonableness in the "benefit sharing" to non-space faring states and (4) the participation of space faring states in the decision making process for such a regime.

4. The next paper, submitted by Prof. Paul B. Larsen (USA), "Application of the Precautionary Principle to Lunar Activities" was summarized due to his absence. The author insisted that, taking special note of the fragility of the lunar environment, the "precautionary principle" applicable to Antarctica should also be applied to the multifaceted activities on the Moon. With respect to the legal basis for the precautionary approach to the Moon, it was maintained that such an approach could be drawn from the Outer Space Treaty (OST), *inter alia*, from Article I (common interest principle) and from Article IX (avoidance of harmful contamination with due regard to the interests of other states), although the volume of human activities on the Moon at present and in the near and mid-term future could not be envisioned when the OST was adopted. To preserve and to facilitate scientific investigation of the Moon, which is the important purpose stipulated in Article I of the OST, the author was of the view that precautionary measures had to be taken in order to not deteriorate the lunar environment.

5. Mr. Kallun Willock (Australia) presented a paper on "Human Colonisation / Exploration beyond Low-Earth Orbit: space: safety imperatives at conflict with the provisions of the Outer Space Treaty and other such instruments". This paper began by stating that the prospect of human settlements beyond the low earth orbit would open the question whether existing international space law could provide appropriate safeguards to explorers and settlers from asteroids or comets. In the following, Mr. Willock studied the legal permissibility in regard to applying nuclear weapons as a defensive system to protect human

settlers from asteroids and comets. In case human life is threatened in outer space, Mr. Willock questioned if the deployment of defensive systems of nuclear weapons would be permissible although it was categorically prohibited in Article IV of the Outer Space Treaty. He concluded that since human life was of supreme importance, any action to save it might be construed as a true peaceful use of outer space.

6. The paper "Nuclear Power Sources and Future Space Exploration" was presented by Mr. Steven Mirmina (USA). It was stated in his paper that using Nuclear Power Sources (NPS) was a prerequisite for planetary exploration and exploitation of the Moon and Mars since such activities required tremendous amounts of energy. However, the fear of NPS being a threat to the safety of human life and the environment both on Earth and in outer space is widely shared. First, the author explained in some detail the level of safety with respect to different types of NPS as well as the current practice of some states using NPS. After reassuring that the US use of NPS (RTG-type) belonged to the safe category without nuclear fission, the author outlined the existing international law related to the use of NPS. Analysing present international space law, nuclear law and environmental law and also the relevant US legislation, he concluded that the US practices had been strictly observing law and soft law applicable to the use of NPS. Finally, the author proposed an international technically-based safety framework by which the safe use of NPS could be ascertained worldwide without politicizing the issue.

7. Dr. Douglas A. Vakoch (USA) presented the paper "Expanding Human Presence beyond the Solar System through Active SETI: on the Prerequisites for Legal Relations with Extraterrestrial Intelligence". Dr. Vakoch stated that the expansion of human presence beyond low-earth orbits would increase the possibility of detecting any kind of extraterrestrial intelligence (SETI). Dr. Vakoch maintained the importance of "active SETI", or to transmit from *Earth de novo*, prior to detecting intelligence of other worlds, instead of traditional "passive SETI", in which humankind would detect the signals from other planets. Since no proof was found if essentially the same legal and policy considerations could apply between the two, according to Dr. Va-

koeh, the central problem was the achievement of communications between the two entities: human beings and SETI. The author stressed the importance of obtaining guidance from entities other than the SETI community prior to embark on active SETI programs and gave some examples to take into consideration including how to represent humankind and how to tell the truth to SETI.

8. The last paper was submitted by Dr. Julian Hermida (Canada) and summarized because of his absence. The paper "Crimes in Outer Space. Criminal Law Policy Basis for Long-Term Human Presence beyond Low-Earth Orbit" presented an overview of the *lex ferenda* aspects of a future criminal law system in outer space, when long-term human settlements in low-earth orbits would make it possible. Currently, criminal jurisdiction in outer space, found in the International Space Station Agreement is based on the criminal law of the state of nationality of the alleged offender. Dr. Hermida predicted that such an approach would be inappropriate in the future, because the mode of life and behavioral problems would be completely different from what had been experienced on Earth. Thus, he proposed the criminological approach to construct a new rule for the life there.

*Notes on the discussion:*

a) On the question of delimitation:

- Prof. Zhukov stated that the difference between a sub-orbital flight and a ballistic missile should be clearly defined in the construction of any legal regime for sub-orbital flights and added that he thought the difference lay in the fact that an object for sub-orbital flights had space velocity, while a missile did not. Dr. von der Dunk confirmed that further analysis was necessary to solve the question of the definition of a sub-orbital flight.

- An interesting point was raised from the floor; since both NASA and the US Air Force had the policy of distinguishing the licensing criteria at an altitude of 100 km, consequently a flight higher than 100 km was especially planned and conducted to be highlighted and advertised as a space flight. From those facts, it

was stated, it was a bit premature to say that 100 km should be the demarcation line. *Dr. von der Dunk* responded that he constructed his reasoning taking into consideration several aspects, including the one raised from the floor.

b) On the question of the prohibition of sovereignty and property rights on the Moon:

- *Prof. Dempsey* wondered how exclusive property rights could be used on the Moon either by states or private persons under the prohibition of the exercise of state sovereignty.

- *Prof. Hobe* was of the view that it did not seem appropriate to use Article 11 (2) and (3) of the Moon Agreement to interpret the Outer Space Treaty (OST).

- It was stated from the floor that property rights on the surface or sub-surface of the Moon did not have to be considered so seriously if the setting up of a hotel on the Moon or mining natural resources from its soil were planned, since Article I of the OST guaranteed the freedom of activities in outer space. *Mr. Lee* responded that Article I of the OST did not provide for unlimited freedom, but provided for the obligation to carry out the exploration and use of outer space for the benefit and in the interest of all countries and added that as a result any provision with respect to exclusive property rights on celestial bodies had to be carefully construed.

c) On the question of using nuclear weapons as a defensive system to protect human settlers in space:

- *Prof. Dempsey* commented that it was almost impossible to distinguish between "nuclear defense systems" and "nuclear offense systems" and that allowing the former in the name of protecting human life was dangerous because it would accelerate an arms race in outer space.

- *Prof. Back Impallomeni* pointed out that two different terms were found in this paper, "colonisation" and "settlement", and asked which term *Mr. Willock* had really in mind. She underlined the importance of the selection of the proper term, because "colonisation" would amount to a breach of Article II of the Outer Space Treaty (OST), which prohibits national appropriation of outer space including celestial bodies. *Mr. Willock* responded that he meant "settlement".

- It was commented from the floor that it seemed highly doubtful that using nuclear devices to protect human life would be regarded as a use of a weapon of mass destruction as prohibited by Article IV of the OST.

d) On the desirability of establishing a multilateral legal regime to regulate space exploitation:

- *Dr. Perek* stated that some 100 kg of minerals were already extracted from the sub-surface of the Moon and that only small portions thereof were for pure scientific research. Residual parts were used to make a block on which experiments were conducted for not purely scientific, but military and economic purposes. *Dr. Perek* expressed his concern that the principle of collecting and removing minerals from celestial bodies only for purposes of scientific research began to be slightly corrupted and warned that the making of creeping boundaries and creeping national jurisdiction was gradually proceeding. *Mr. Ryzenko* shared *Dr. Perek's* concerns.

- *Prof. Kozuka* asked whether such a multilateral legal regime should be established by Treaty or as soft-law, and *Mr. Ryzenko* replied that it should definitely be a legally binding Treaty. In response to a question as to how *Mr. Ryzenko* assessed the on-going efforts by other fora such as COSPAR, COPUOS and UNIDROIT in regard of constructing such a legal regime, he stated that deficiencies of these efforts led him to propose a new multilateral legal regime.

- *Prof. Koga* pointed out that the mistake made by member states in the course of establishing the Deep Sea Bed Authority within the Law of the Sea Convention was that those which lacked economic background discussed the international regime of economic implications. *Prof. Koga* underlined that a good lesson learned from the experience of the Deep Sea Bed Authority was the importance to provide a safe business environment and incentives for various participants to establish an effective multilateral legal regime promoting economic activities.

e) Concerning Nuclear Power Sources:

- *Prof. Aoki* asked how an appropriate scientific assessment could be guaranteed in setting up a technically based framework, since scientific neutrality was not so easily assured. According to her, one example was the International Panel of Cli-

mate Change (IPCC), the assessment of which is sometimes regarded rather politicized. *Mr. Mirmina* responded that careful selection of expert groups and appropriate fora to discuss the matter would solve such doubt and referred to the upcoming "2006 Joint Technical Workshop on NPS" between the Scientific and Technical Subcommittee (STSC) and the International Atomic Energy Agency (IAEA).

### SESSION 3 - OTHER LEGAL MATTERS I, INCLUDING LEGAL ASPECTS OF SUB-ORBITAL FLIGHTS

*Chairmen: Prof. Dr. Stephan Hobe (Germany) and  
Mr. Masahiko Sato (Japan); Rapporteur Prof.  
Yasuaki Hashimoto (Japan)*

Chairman Prof. Hobe pointed out that this session's topic, 'Other Legal Matters I' showed that nowadays, other legal matters are becoming a core issue of international space law, because this theme covers all kinds of new developments, business ventures, etc, which are so numerous that they cannot be covered in one single session!

1. The first paper was "The impact of Space tourism on the International Law of Outer Space" by Mr. Steven Freeland (Australia). The present situation of emerging low cost space tourism is his motivation for writing this paper. The author discussed and showed some points to be considered about matters like tourist status, property rights for instance for space hotels, liability, etc.

2. The second paper was "Lessons from "The Little Prince" on Space Flight" by Dr. Sylvia Ospina (USA). Private enterprises' access to outer space inspired Dr. Ospina to prepare this paper. She emphasized the importance of sharing the spirit of frontiers, learning from the Little Prince lessons.

3. "Developing a Legal Regime for Space tourism: Pioneering a Legal Framework for Space Commercialisation" was presented by Dr. Yun Zhao (Hong Kong). Dr. Zhao discussed the difference between space travel and air transportation, and applicable air laws and space laws. This includes very old questions like the demarcation between air space and outer space.

Dr. Zhao analysed several matters, including liability, insurance, criminal jurisdiction, registration, licensing, and the status of Astronauts, and indicated the tendency of expanding aviation law concepts to outer space activities.

4. Mr. Stefan Kaiser (Germany) and Dr. Martha Mejia-Kaiser (Mexico) co-authored the paper on "Space Passenger Liability". The paper compares air transport and space transport liability, and discusses the applicability of national rules like the US Commercial Space Launch Act of 2004 in case of overseas business. During the *discussion*, Dr. Mejia-Kaiser pointed out that hybrid vehicles might present a liability problem in case of accident.

5. The next paper was "Liability Arising from Article VI and Other Provisions of the Outer Space Treaty: Status, Domestic Law and Private Operators", presented by Mr. Ricky Lee (Australia). His main theme was the liability provision of Article VI of the 1967 Outer Space Treaty. The author summarised several national space legislations, like those of Norway, Russia and the USA. He concluded that while several states have enacted domestic laws, the coverage of liability varies widely, and some do not cover Article VI properly. During the *discussion*, he mentioned as an example a recent US domestic law amendment which does not cover the state's responsibility under international space law. He also pointed out that some of the provisions of the international space treaties, like Articles VI and VII of the Liability Convention, might not properly cover some cases, like for instance the in-orbit transfer of ownership, because the new owner (country) may not be bound by these provisions.

Also during the *discussion*, an important suggestion was brought up regarding the confusion that often surrounds the meaning of the words 'responsibility' and 'liability' in English. The French text of the Outer Space Treaty has no distinction between those two words, they only use "responsabilité". Although IISL meetings are always held in English, consideration of other official languages may be helpful.

6. The paper "Consumer Protection and the Limitation of Liability in the National Regulation of the Space Tourism Industry – Lessons from EU Law" was presented by Ms. Zeldine O'Brien (Ireland). This paper was this year's winner of the Isa-

bella H.Ph. Diederiks-Verschoor Award for best paper by a young author. Ms. O'Brien analysed the protection of newcomers like tourists from the viewpoint of a consumer protection concept, learning from EU laws and regulations. Such EU laws and regulations protect the rights of customers. The author offered possibilities of application of those laws. This interesting analysis and approach might provide ideas to be considered in the present and near future. During the *discussion*, the question of the applicability of EU laws and regulations to outer space was raised, because Outer Space is not within EU jurisdiction, and this idea thus raised the question of extraterritorial application of EU laws.

7. Dr. Leslie Tennen and Dr. Patricia Sterns (USA) co-authored the paper "Private Enterprise and the Resources of Outer Space". They described the present situation where newcomers from the private sector become involved with outer space activities. They attempted to identify principles which can be applied to this sector, using non-space precedents like the Law of the Sea and the World Trade Organization system as examples.

8. The next paper was "Corporation and Space Law" by Prof. Jose Monserrat-Filho (Brazil). The author summarised the principles of space law in relation with the present situation of space industry. After this analysis, the author touched upon the increasing pressure from private industry and identified some basic and unavoidable rules of 'Jus Cogens' which are needed as an essential basis.

9. Then, the paper entitled "Space Commercialisation: Addressing Intellectual Property Issues" was presented by Ms. Sagee Sasikumar (India). The author analysed the present legal system and its applicability to private activities, especially in the field of intellectual property rights, and pointed out the lack of adequate regulations.

10. The next paper was "Regulation of Space Activities in Canada" by Prof. Ram Jakhu (Canada). This paper reviewed the long history of Canadian space law. The author touched upon the necessity/need of space use by Canada because of its huge size and extensive national borders that need to be guarded. The author also introduced Canadian domestic space law in all

its aspects and levels (general, civil, military, national, local, provincial). During the *discussion*, the question of protection of remote sensing data was raised. The author responded that data processed on earth was not treated as a space activity, but regulated by Canadian property-related laws. There was also some concern about disclosure of remote sensing data on the internet, like Google Watch. Some participants supported the concern from security and natural resource viewpoints and held that the releasing of data from outer space on the internet should be properly regulated. Others, however, including Prof. Hashimoto, disagreed, because the disclosure takes place under proper control of supervising countries like the USA and the suppliers accept free use of the data. Moreover, from the security viewpoint, those data have limited value because they are several years old.

11. The paper "Is a "fair return" admissible on space activities funded by the EC/EU?" was prepared by Dr. Luis Castillo Arganaras (Argentina). The author explained the constitutional reform that took place in 1994 in Argentina. Under this reform, Treaties have higher status than domestic laws and regulations. The author discussed some investment treaties under this new scheme.

12. The last paper in this session was "The Main Contents of the New Space Exploitation Promotion Act in Korea" presented by Prof. Dr. Doo Hwan Kim (Korea). The Author first gave a brief history and current situation of Korean space activities including building its own launching site. Then, the author introduced the new domestic law for space exploitation promotion, and lastly proposed establishing a Korean Space Agency.

SESSION 4 - OTHER LEGAL MATTERS II, INCLUDING LEGAL  
ASPECTS OF PROPERTY RIGHTS ON THE MOON"

*Chairmen: Prof. Gabriella Catalano Sgrosso (Italy) and Prof. Kasuhiro Nakatani (Japan); Rapporteur Ms. Mokoto Uchitomi (Japan).*

The papers presented in this session could be classified in four groups:

a) Safeguarding Humanitarian Rights:

1. Mr. Sethu Nandakumar (India) explored the concept of "common heritage of mankind in the Moon Treaty in the paper: "Common heritage of Mankind"- property rights in the wake of commercial use of the moon and other celestial bodies".

2. Prof. Gabriella Catalano Sgrosso (Italy), in her paper: "Emergency for natural Disasters – Prevention and Management", insisted that we should make use of the space system in order to prevent and manage emergencies, such as natural disasters, on the basis of international cooperation.

3. Mr. Mehmood Pracha (India) underlined the importance of the concept of "common heritage of mankind" as safeguard for developing countries in the paper: "Legal aspects of Expanding Human Presence beyond Low Earth Orbit - Safeguards for Underdeveloped Countries".

4. Dr. Liara Covert (Canada) proposed to set up a new treaty in her paper entitled "Progress toward an Asteroid Deflection Treaty".

b) Commercial activities:

5. In his paper "UN General Assembly Resolution 'Application of the concept of the 'Launching State'", Dr. Kai-Uwe Schrogl (Germany) reported the successful output by the UNCOPUOS Working Group concerning the concept of the "launching State", which resulted in UNGA Assembly Resolution 59/115 of Dec. 2004.

6. Dr. Bernhard Schmidt-Tedd and Dr. Michael Gerhard (Germany), expressed doubts about the up-to-dateness of the registration of space objects regime and the new situation in their paper "How to adapt the present regime for registration of space objects to new developments in space applications?".

c) Export control:

7. Ms Yuri Takaya-Umehara (Japan) pointed out the necessity of space arms control making use of the Registration Convention, and proposed several amendments in her paper "Enforcing the verification mechanism of the registry for space control".

8. Ms. Amal Rakibi (France), raised the problem of export control of space related dual technologies and highlighted conflicts between related domestic laws and international laws in her paper "Export Control and Dual Use of Space Technologies".

9. Ms Macha Ejova (Russia) explained the legal basis of Euro-Russian space cooperation and related export control practices in her paper "The Euro-Russian cooperation in space and Export Controls: policies and practices".

d) Expanding law in outer space:

10. The paper "Private Rules for the Commercial activities in Space: Lex Ferenda" by Prof. Souichirou Kozuka (Japan) proposed the application of private law rules for commercial space activities.

11. The next paper, by Mr. Declan O'Donnell (USA), proposed a common law approach for recent space activities in his paper "Astro Law as Common Law Extended into the Outer Space Territory".

12. In the last paper in this session, Prof. Stephan Hobe explained the development of the Project 2001 Plus and announced the upcoming Project 2006 in his paper: "Project 2001 Plus: Global and European Challenges for Air and Space Law at the Edge of the 21<sup>st</sup> Century".

Short *discussions* followed the presentations of the papers and the sharp remarks by Prof. Kopal, Prof. Perek and many eminent participants made the session lively and interesting.

SESSION 5 - CONVERGENCE AND PRIVATISATION IN  
TELE-COMMUNICATIONS: INSTITUTIONAL AND OTHER RESPONSES

*Chairmen: Prof. Francis Lyall (Scotland, UK) and Prof. Toshio Kosuge (Japan); Rapporteur Sethu Nandakumar Menon (India)*

1. The first paper presented was "Privatisation of Telecommunication in the developing world: A lesson learned, or a burden imposed?" by Mr. Atip Latipulhayat (Australia). The paper discussed the privatisation of the telecommunication sector in developing countries, with specific reference to Indonesia. The author explained the traditional telecommunication regime in Indonesia and its reform which began in the 1980's. The author gave various reasons which supported the reforms. For instance, inclusion of telecommunications into the WTO gave strength to regulation reform in the developing countries. The main object of the reform was to change government control from direct to in-direct control. The author was critical of the reason for reform and mentioned specific economic problems and international commitments. He was also critical of the alleged benefits that derived from privatisation of the telecommunication sector.

2. The second paper was "Convergence of telecommunication services and the problems of their regulation" by Prof. Rosa Maria Ramirez de Arellano (Mexico). The author highlighted the changes that occurred in the telecommunication sector and the impact of commercialisation on the regulation of telecommunication. She referred to the WTO and several rounds of negotiation with respect to telecommunications. Convergence in telecommunication services has existed for a long time, and the author explained the reasons and what has been happening with regards to convergence in telecommunication services. The author explained the differences in meaning of 'basic services' and 'non-basic services', and provided insight into the regulatory reforms that occurred in Mexico and several other countries. The paper concludes with eight specific points that need to be considered by countries when changing their telecommunication regulation.

3. The paper "Regulation of Access to Limited Resources in Telecommunication Sector in Europe" was prepared by Dr. Les-

ley Jane Smith and Ms. Kate Levy (Germany). The authors examined the struggle to ensure fair competition in regulating access to the limited resources in the telecommunication sector in Europe. The paper explained in great detail the purpose, structure and working process of the '2002 telecommunication package' of the EU. This package was intended to increase harmonisation between member states. The Authors described the three-tiered management hierarchy of the radio spectrum, consisting of the European Commission, the Radio Spectrum Committee and the National Regulatory Authorities, interlinked by the duty to consult and co-operate.

4. Prof. Toshio Kosuge (Japan) presented the paper, "Asian Broadband plan and its implication for bridging Digital Divide Within the framework of WSIS and international cooperation". Prof. Kosuge explained Japan's effort to implement the Asian Broadband plan to bridge the digital divide in the Asia Pacific countries. Tests have already begun in Japan, Singapore and China for this project. Japan and the Asia Pacific region will benefit from further advancement of information and communication technology through the building of 'Space infrastructure' using communication satellites. The author explained the different projects pursued by Japan in this effort. Prof. Kosuge concluded that humankind will benefit from the implementation of these concepts and there is a need for an action plan to overcome international barriers.

5. The next paper was presented by Prof. Francis Lyall (Scotland, UK), entitled "Deriving more 'Common Benefit' from Space Telecommunication". Prof. Lyall wondered whether the benefit from space telecommunication could be further improved in the interest of developing countries through existing or new mechanisms within the ITU. The author make the point that the user should require to pay for the use of the 'limited natural resources' from which they make their profit, and the income from such payment should be used for the general benefit. The paper proposed that such a fee could be a one-off payment or an annual payment, or alternatively the 'fee' could be based on bids through an auction process. The author proposed that the administration of such a system should be done by the ITU as it already maintains a register and knows how to operate such a

system. The author further pointed out that in appropriate cases, these fees could be returned as subsidy from maintaining uneconomic services or for fostering developmental programmes.

6. The last paper in this session was by Prof. Carl Q. Christol on "Remote Sensing in the War against Terrorism". The paper explained the utilities of a remote sensing satellite system in the war against terrorism. The author explained that techniques employed in remote sensing have instilled caution into the plans of terrorists and have reduced their evil efforts. The paper explained the role of the Geospatial-Intelligence Agency in collecting data and protecting the wellbeing of mass movements of human beings (e.g. the 2005 Super Bowl). Prof. Christol also described the dangers of excessive restriction on the availability of sensitive information.

#### REPORT OF THE GENERAL DISCUSSION

*Chairman: Dr. Jasentuliyana (President IISL); Rapporteur: Dr. Martha Mejia-Kaiser (Mexico)*

a) On the status of the UN Remote Sensing Principles:

- *Dr. Galloway* referred to some participants in the first session who had stressed that the UN Principles on Remote Sensing were outdated in view of today's applications. He proposed that the IISL draft a "white paper" in order to propose a balance between the various competing interests, such as business and national security. *Dr. Jasentuliyana* agreed and requested *Dr. Galloway* to prepare an outline to be presented to the IISL Board in March 2006. He also suggested to create a group for the drafting of this white paper.

b) On the reliability of remote sensing data, national security, and liability for distribution of remote sensing data:

- *Dr. Mejia* asked *Dr. Schmidt-Tedd* if "9/11" triggered the drafting of the German legislation for licensing the distribution of remote sensing data by private companies. *Dr. Schmidt-Tedd* replied that the legislation was drafted because of the forthcoming launch of a partially privately financed German remote sensing satellite with high resolution. *Dr. Mejia* expressed

doubts about the enforcement of this legislation, because remote sensing images with high resolution are already internationally available through the internet. She was of the opinion that the German legislation would only put obstacles to distributors in German territory. *Dr. Schmidt-Tedd* answered that the aim of this legislation was not to limit the distribution of data. He referred to Spot which also operates under some restrictions set by the defense ministry. He commented that the distribution of remote sensing satellite data in Germany would be no more restrictive to the industry than in other countries with similar systems.

- On the same issue, *Dr. Jasentuliyana* referred to "Google Earth", an internet site with a large collection of good quality images of the Earth. He asked how the German legislation would be enforced and how the source of information could be identified in order to apply the regulation. *Dr. Schmidt-Tedd* commented that he was aware that people have access to such information, but mentioned that for the Government it is necessary to protect security interests. He said that sensitive satellite images in "Google Watch" (e.g. of sensitive sites such as the White House) are not up-to-date but several days old. This would be of importance in times of crisis. The German legislation has been drafted to interfere as little as possible with the market, but to concentrate on very special aspects of control.

c) On export control:

- *Dr. Jasentuliyana* commented that it is important to know whether export control encourages or discourages space activities. *Dr. van Fenema* held that export control does not discourage space activities but affects international cooperation in space activities. He remarked that after an accident in the aviation sector, failures and information are shared by airlines and aircraft manufacturers. Conversely, in the space launch sector, investigations after a launch failure in one country are not shared, because of export control constraints. He was of the opinion that if we want to have safer space endeavors, we need to cooperate in sharing such investigation results.

d) On the trend of COPUOS resolutions to interpret existing space law treaties, rather than to revise and amend them:

- *Dr. Hobe* commented that the ILA was collecting evidence of State practice in several space related areas, for example registration of space objects, in order to see to what extent existing space law suits the needs of States and customers. He regretted that only soft law was created, rather than hard law.

- *Dr. Von der Dunk* pointed out that we should not underestimate existing space legislation, for example on registration. In his opinion the fact that there is an additional resolution calling for information on space objects was more useful than trying to make it a binding rule. He informed that there are several countries who submit information to the UN website about their space objects, although they have not signed the Registration Convention. He underlined that the ultimate goal is to have as much information as possible on space objects, in order to determine responsibility or liability.

- *Dr. van Fenema* referred to the Space Traffic Management session (IAA-IISL Scientific-Legal Roundtable) where the issue on the registration was brought up. He stressed that it was important to know what was moving in outer space, as precisely as possible, in order to guarantee safe space activities. He asked if we should create a more practice-oriented technical database from different national or international sources, including from the scientific community or ITU. Dr. Van Fenema was of the opinion that the Registration Convention has eroded, at least for present purposes.

- *Dr. Perek* commented that when the Registration Convention was drafted, only two countries were placing objects in outer space. He noted that at present the launching of objects is undertaken by several countries and approximately 25% of the launched space objects are not registered, including satellites of international organizations like Intelsat and Inmarsat. He underlined that it is compulsory to register cars, airplanes and ships, but pointed out that there was no interest of the international community to register space objects. He wondered whether the international community prefers to wait until someone places an object into space that is capable of executing terrorist acts. He stressed that the Registration Convention requires changes in order to contain significant scientific-technical data. Although there are other sources containing satellite pa-

rameters, he was of the opinion that the UN should be the most authoritative source of information.

e) On Space Traffic Management:

- *Dr. Schrogl* presented a report on the Space Traffic Management session, the IAA-IISL Scientific-Legal Roundtable (see elsewhere in these Proceedings).

- *Dr. van Fenema* reported that in this session participants had the feeling that any sense of urgency was lacking. Insurance specialists had indicated that the only means of getting a sense of urgency seems to be the occurrence of an accident.

- *Dr. Schrogl* mentioned the procedures of ITU to constantly revise and update their radio regulations. He regretted that COPUOS is a conservative and slow forum, reluctant to adopt new mechanisms and innovative legislation. He regretted that there are several international organizations elaborating regulations on different aspects of space activities, and these discussions are completely disconnected from COPUOS.

- *Dr. Jasentuliyana* recalled that in the past, COPUOS created general principles on international space law, but since we are going into an era which requires more technical guidance, like managing space debris, standards and recommended practices are needed, as in ICAO and other organizations. *Dr. Jasentuliyana* mentioned that COPUOS at present is not well-equipped to deal with this kind of regulations; the number of delegates at COPUOS is too large to deal with detailed technical issues. He regretted that the quality of the representation of States had diminished as compared to what it was at the time of the drafting of the space treaties. With COPUOS having become an inefficient international law maker, he concluded that other international organizations are taking over this regulatory role and they should be encouraged.

f) On the exploitation of space resources and property rights in space:

- *Ms. Takaya* reported that during the IAF Youth Forum, issues of property rights on celestial bodies and exploitation of space resources had been addressed, but there was no specialist to answer the various questions raised by students and young researchers. *Dr. Jasentuliyana* encouraged *Ms. Takaya* to or-

ganize a session on space law and policy at next year's Forum, with contributions by IISL members.

**FRAMEWORK AGREEMENT BETWEEN  
THE GOVERNMENT OF THE UNITED  
STATES OF AMERICA AND THE  
GOVERNMENT OF THE FRENCH  
REPUBLIC FOR COOPERATIVE  
ACTIVITIES IN THE EXPLORATION AND  
USE OF OUTER SPACE FOR PEACEFUL  
PURPOSES**

**PREAMBLE**

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<b>ARTICLE 2</b>	<b>IMPLEMENTING AGENCIES AND ARRANGEMENTS</b>
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<b>ARTICLE 4</b>	<b>CUSTOMS, ENTRY AND TEMPORARY RESIDENCE, AND OVERFLIGHT</b>
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<b>ARTICLE 8</b>	<b>EXCHANGE OF PERSONNEL</b>
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#### PREAMBLE

The Governments of the United States of America and of the French Republic, hereinafter referred to collectively as “the Parties” or individually as “Party”;

Recognizing a mutual interest in the exploration and use of outer space for peaceful purposes;

Taking note of the long-term successful cooperation that has existed among the U.S. National Aeronautics and Space Administration (hereinafter referred to as “NASA”), the U.S. National Oceanic and Atmospheric Administration (hereinafter referred to as “NOAA”), and the Centre National d’Etudes Spatiales (hereinafter referred to as “CNES”);

Recalling the Agreement Among the Government of Canada, the Governments of the Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station, done at Washington on 29 January, 1998, (hereinafter referred to as the “IGA”);

Considering the provisions of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, of 27 January 1967, and of other multilateral treaties and agreements on the exploration and use of outer space, to which both the Governments of the United States of America and of the French Republic are Parties;

Considering the desirability of enhanced cooperation between the Parties in human space flight, space science, Earth science, and other activities;

Expressing their satisfaction with the accomplishments resulting from cooperative activities in space exploration, science, technology, and applications, as well as their desire to continue to expand cooperation in these fields;

Desiring to establish an overall legal framework to facilitate the conclusion of Implementing Arrangements for cooperation between their Implementing Agencies;

Have agreed as follows:

#### ARTICLE 1 - SCOPE OF ACTIVITIES

1. The Parties shall identify areas of mutual interest and seek to develop cooperative activities in the exploration and peaceful uses of outer space and shall work closely together to this end.

2. These cooperative activities may be undertaken, as mutually agreed and subject to the provisions of this Framework Agreement (hereinafter "Agreement"), and the specific terms and conditions of Implementing Arrangements set forth pursuant to Article 2, in the following areas:

- A. Exploration systems;
- B. Space operations;
- C. Earth observation and monitoring;
- D. Science and space research; and
- E. Other relevant areas as agreed between the Parties.

3. These cooperative activities may be implemented using:

- A. Spacecraft and space research platforms;
- B. Scientific instruments onboard spacecraft and space research platforms;
- C. Sounding rocket and scientific balloon flights and campaigns;
- D. Aircraft flights and campaigns;

- E. Ground-based antennas for tracking and data acquisition;
- F. Ground-based space research facilities;
- G. Exchanges of scientific personnel;
- H. Exchanges of scientific data;
- I. Education and public outreach activities and;
- J. Other forms of cooperation as agreed between the Parties.

4. These cooperative activities may take place on the surface of the Earth, in air space, or in outer space. The Parties intend that the activities will be performed on a cooperative basis involving no exchange of funds.

5. All cooperative activities under this Agreement shall be conducted in a manner consistent with the respective laws and regulations of each Party and in accordance with applicable international law.

6. This Agreement shall not apply to activities undertaken pursuant to the IGA or any subsequent agreement that modifies, or is concluded, pursuant to the IGA.

## ARTICLE 2 - IMPLEMENTING AGENCIES AND ARRANGEMENTS

The specific terms and conditions for cooperative activities described in Article 1 shall be set forth in Implementing Arrangements between the Implementing Agencies for this Agreement. The United States of America has identified NASA and NOAA as Implementing Agencies. The French Republic has identified CNES as the Implementing Agency. Either Party may elect to designate additional Implementing Agencies for specific cooperative activities under this Agreement. In such a case, that Party shall duly notify the other regarding the designated Implementing Agency in charge of these activities through appropriate diplomatic channels.

Implementing Arrangements shall include, as appropriate, provisions, *inter alia*, related to the nature and scope of the pro-

gram and the individual and cooperative responsibilities of the Implementing Agencies, consistent with the provisions of this Agreement. The Implementing Arrangements shall refer to and be subject to this Agreement, unless the Governments agree otherwise. The Parties shall endeavor to ensure that their respective Implementing Agencies make all reasonable efforts to comply with the undertakings contained in the Implementing Arrangements.

### ARTICLE 3 - FINANCIAL ARRANGEMENTS

The Parties shall be responsible for funding their respective activities under this Agreement or any Implementing Arrangement concluded hereunder. Obligations under this Agreement and any Implementing Arrangements shall be subject to the availability of appropriated funds and to each Party's funding procedures.

### ARTICLE 4 - CUSTOMS, ENTRY AND TEMPORARY RESIDENCE, AND OVERFLIGHT

1. In accordance with its national laws and regulations, each Party shall arrange free customs clearance and waiver of all applicable duties and taxes for the import or export of equipment and related goods by the Implementing Agency of the other Party or on its behalf as necessary to carry out activities under this Agreement. In the event that any customs fees or taxes of any kind are nonetheless levied on such equipment and related goods, such customs fees or taxes shall be borne by the Party levying such fees or taxes.

2. In accordance with its national laws and regulations, each Party shall facilitate the provision of the appropriate entry and residence documentation for the other Party's representatives who enter, exit and reside within its territory in order to carry out activities under this Agreement. The Parties acknowledge, however, that such representatives may be subject to certain other administrative requirements, such as badging or security procedures for access to certain facilities.

3. In accordance with its national laws and regulations, each Party shall facilitate the provision of aircraft or scientific

balloons overflight clearances as necessary in order to carry out activities under this Agreement.

#### ARTICLE 5 - TRANSFER OF GOODS AND TECHNICAL DATA

The Parties are obligated to transfer only such technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions, notwithstanding any other provisions of this Agreement or of any of its Implementing Arrangements.

1. All activities under this Agreement shall be carried out in accordance with the Parties' applicable national laws and regulations, including their export control laws and regulations and those pertaining to the control of classified information.

2. The transfer of technical data pursuant to an Implementing Arrangement, with regard to interface, integration, and safety shall normally be made without restriction, except as provided in paragraph 1, above.

3. All transfers of goods and proprietary or export-controlled technical data are subject to the following provisions:

A. In the event an Implementing Agency or its related entity (including but not limited to contractor, subcontractor, sponsored entity, cooperating entity) finds it necessary to transfer goods or to transfer proprietary or export-controlled technical data, for which protection is to be maintained, such goods shall be specifically identified and such proprietary or export-controlled technical data shall be marked.

B. The identification for goods and the marking on proprietary or export-controlled technical data shall indicate that the goods and proprietary or export-controlled technical data will be used by the receiving Implementing Agency or related entity only for the purposes of fulfilling the receiving Implementing Agency's or related entity's responsibilities under this Agreement, and that the identified goods and marked proprietary technical data or marked export-

controlled technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Implementing Agency or its related entity.

C. The receiving Implementing Agency, or related entity, shall abide by the terms of the notice and protect any such identified goods and marked proprietary technical data or marked export-controlled technical data from unauthorized use and disclosure.

D. Each Implementing Agency shall ensure that its related entities are bound by the provisions of this Article related to use, disclosure, and retransfer of identified goods and marked technical data.

4. All goods exchanged pursuant to any Implementing Arrangement shall be used by the receiving Implementing Agency or related entity exclusively for the purposes of that Implementing Arrangement. Upon completion of the activities under that Implementing Arrangement, the receiving Implementing Agency or related entity shall return all goods and marked proprietary technical data or marked export-controlled technical data, as directed by the furnishing Implementing Agency or related entity, unless otherwise agreed between the Implementing Agencies or their related entities.

#### ARTICLE 6 - INTELLECTUAL PROPERTY RIGHTS

1. For the purposes of this Article, the term "Related Entity" includes but is not limited to, at any tier, contractors, sub-contractors, sponsored entities or cooperating entities of a Party and "Party" includes the Implementing Agency of that Party.

##### 2. PATENTS

A. Nothing in this Agreement shall be construed as granting, either expressly or by implication, to the other Party any rights to, or interest in, any inventions of a Party or its Related Entities made prior to the entry into force of, or outside the scope of, this

Agreement, including any patents or other forms of protection (in any country) corresponding to such inventions.

B. Any rights to, or interest in, any invention made in the performance of this Agreement solely by one Party or any of its Related Entities, including any patents or other forms of protection (in any country) corresponding to such invention, shall be owned by such Party or, subject to paragraph 2.D of this Article, such Related Entity.

C. It is not anticipated that there will be any joint inventions made in the performance of this Agreement. Nevertheless, in the event that an invention is jointly made by the Parties in the performance of this Agreement, the Parties shall, in good faith, consult and agree, in accordance with each Party's national laws and regulations as to: a) the allocation of rights to, or interest in, such joint invention, including any patents or other forms of protection (in any country) corresponding to such joint invention taking into account, *inter alia*, their respective contributions; b) the responsibilities, costs, and actions to be taken to establish and maintain patents or other forms of protection (in any country) for each such joint invention; and c) the terms and conditions of any license or other rights to be exchanged between the Parties or granted by one Party to the other Party.

D. With respect to all inventions created in the performance of this Agreement and involving a Related Entity, allocation of rights between a Party and its Related Entity to such invention, including any patents or other forms of protection (in any country) corresponding to such invention, shall be determined by such Party's laws, regulations, and applicable contractual obligations.

### 3. COPYRIGHTS

A. Nothing in this Agreement shall be construed as granting, either expressly or by implication, to the other Party any rights to, or interest in, any copyrights of a Party or its Related Entities created prior to the entry into force of, or outside the scope of, this Agreement.

B. Any copyrights in works created solely by one Party or any of its Related Entities, as a result of activities undertaken in performance of this Agreement, shall be owned by such Party or Related Entity. Allocation of rights between such Party and its Related Entities to such copyrights shall be determined by such Party's laws, regulations, and applicable contractual obligations.

C. For any jointly authored work, should the Parties decide to register the copyright in such work, they shall, in good faith, consult and agree as to the responsibilities, costs, and actions to be taken to register copyrights and maintain copyright protection (in any country).

D. Subject to the provisions of Articles 5 and 7 (Transfer of Goods and Technical Data, and Publication of Public Information and Results), each Party shall have, for its own purposes, a non exclusive, irrevocable, royalty free right to reproduce, prepare derivative works from, display publicly and distribute to the public copies of any copyrighted work resulting from joint activities undertaken in the performance of this Agreement. Each Party has the right in addition to authorize its Related Entities to reproduce, prepare derivative works from, display publicly and distribute to the public copies of such copyrighted work for its own purposes and under its direction. Specific implementing provisions may be included, if appropriate, in the Implementing Arrangements. Mention

of the name of the author shall be acknowledged in each copyrighted work.

#### ARTICLE 7 – PUBLICATION OF PUBLIC INFORMATION AND RESULTS

1. The Parties retain the right to release public information regarding their own activities under this Agreement. Subject to the provisions of paragraph 3 hereafter, the Parties shall coordinate with each other in advance concerning releasing to the public information that relates to the other Party's responsibilities or performance under this Agreement. Appropriate acknowledgment shall be made by both Parties of their respective roles.

2. A. The Parties shall make the scientific results obtained under this Agreement available to the general scientific community through publication in appropriate journals or by presentations at scientific conferences as soon as possible and in a manner consistent with each Party's laws and regulations and with good scientific practices.

B. Each Party shall have for its own purposes an irrevocable, royalty free right to reproduce, prepare derivative works from, distribute to the public copies of and present publicly the scientific results included in each such publication or presentation. Each Party has the right in addition to authorize its Related Entities (as defined in Article 6) to undertake these activities for its own purposes and under its direction. The royalty free right shall exist irrespective of any copyright protection applicable to each such publication or presentation.

C. The Implementing Agencies shall include data sharing provisions in the Implementing Arrangements.

3. The Parties acknowledge that the following data or information does not constitute public information and that such data or information shall not be included in any publication or presentation by a Party under this article without the other Party's prior written permission: 1) data furnished by the other Party in accordance with Article 5 (Transfer of Goods and Technical Data) of this Agreement which is export-controlled, classified or proprietary; or 2) information about an invention of the other Party before a patent application has been filed covering the same, or a decision not to file has been made.

#### ARTICLE 8 - EXCHANGE OF PERSONNEL

To facilitate coordination related to activities conducted under this Agreement, the Implementing Agencies may support the exchange of a limited number of personnel, at a time and under conditions mutually agreed between them. Such arrangements may include provision of office space and administrative support at the host location. Unless agreed otherwise, salary and all other expenses shall be borne by the sending Implementing Agency for the duration of the assignment.

#### ARTICLE 9 - CROSS-WAIVER OF LIABILITY

With respect to cooperative activities performed under this Agreement, the Parties agree that a comprehensive cross-waiver of liability between the Parties and their Related Entities will further participation in space exploration and use. The cross-waiver of liability shall be broadly construed to achieve this objective. The terms of the waiver are set out below:

A. As used in this Article:

- (1). The term "Party" means each Party to this Agreement, including their respective Implementing Agencies;
- (2). The term "Related Entity" means:
  - (i) a contractor, subcontractor, cooperating entity or sponsored entity of a Party at any tier;
  - (ii) a user or customer of a Party at any tier;

(iii) a contractor or subcontractor of a user or customer or cooperating entity or sponsored entity of a Party at any tier; or

(iv) scientific investigators.

The term "Related Entity" may also apply to a State, an international organization or an agency or institution of a State, having the same relationship to a Party as described in article 9.A.2(i) through 9.A.2(iv) above or otherwise engaged in the implementation of Protected Space Operations as defined in article 9.A.6 below.

The terms "contractors" and "subcontractors" include suppliers of any kind.

(3). The term "damage" means:

(i) bodily injury to, or other impairment of health of, or death of, any person;

(ii) damage to, loss of, or loss of use of any property;

(iii) loss of revenue or profits; or

(iv) other direct, indirect, or consequential damage.

(4). The term "launch vehicle" means an object or any part thereof intended for launch, launched from Earth into air space or outer space, or returning to Earth which carries payloads or persons, or both;

(5). The term "payload" means all property to be flown or used on or in a launch vehicle; and,

(6). The term "Protected Space Operations" means all activities pursuant to this Agreement, or any Implementing Arrangement concluded hereunder, including launch vehicle activities and payload activities on Earth, in outer space, or in transit between Earth and air space or outer space in implementation of this Agreement. It includes, but is not limited to:

(i) research, design, development, test, manufacture, assembly, integration, operation, or use of launch or transfer vehicles, payloads, or instruments, as well as related support equipment and facilities and services; and

(ii) all activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services.

The term "Protected Space Operations" excludes activities on Earth that are conducted on return from space to develop further a payload's product or process for use other than for activities in implementation of this Agreement.

- B. (1). Each Party agrees to a cross-waiver of liability pursuant to which each Party waives all claims against any of the entities or persons listed in sub-paragraphs (i) through (iii) below based on damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for damage, whatever the legal basis for such claims, including but not limited to delict and tort, and contract, against:

(i) the other Party;

(ii) a Related Entity of the other Party;

(iii) the employees of any of the entities identified in sub-paragraphs (i) and (ii) immediately above.

- (2). In addition, each Party shall extend the cross-waiver of liability as set forth in sub-paragraph 9.B.1 above to its own Related Entities by requiring them, by contract or otherwise, to agree to

(i) waive all claims against the entities or persons identified in sub-paragraphs 9.B.1(i) through 9.B.1(iii) above,

(ii) require that their Related Entities waive all claims against the entities or persons identified in sub-paragraphs 9.B.1(i) through 9.B.1(iii) above.

(3). For avoidance of doubt, this cross-waiver of liability shall be applicable to claims arising from the Convention on International Liability for Damage Caused by Space Objects, which entered into force on 1 September, 1972 (Liability Convention), where the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

(4). Notwithstanding the other provisions of this Article, this cross-waiver of liability shall not be applicable to:

(i) claims between a Party and its own Related Entity or between its own Related Entities;

(ii) claims made by a natural person, his/her estate, survivors, or subrogees for bodily injury, other impairment of health or death of such natural person, except where a subrogee is a Party or an agency of a Party;

(iii) claims for damage caused by willful misconduct;

(iv) intellectual property claims;

(v) claims for damage resulting from a failure of the Parties to extend the cross-waiver of liability as set forth in sub-paragraph 9.B.2 or from a failure of the Parties to ensure that their Related Entities extend the cross-waiver of liability as set forth in sub-paragraph 9.B.2; or

(vi) contract claims between the Parties based on express contractual provisions.

(5). Nothing in this Article shall be construed to create the basis for a claim or suit where none would otherwise exist.

(6). In the event of third-party claims for which the Parties may be liable, the Parties shall consult promptly to determine an appropriate and equitable apportionment of any potential liability and on the defence of any such claims.

#### ARTICLE 10 – REGISTRATION OF SPACE OBJECTS

In Implementing Arrangements involving a launch, the Implementing Agencies shall agree as to which shall request its Government to register the spacecraft as a space object in accordance with the Convention on the Registration of Objects Launched into Outer Space of 14 January, 1975 (the Registration Convention). Registration pursuant to this Article shall not affect the rights or obligations of either Party under the Liability Convention.

#### 11 – CONSULTATIONS – SETTLEMENT OF DISPUTES

1. The Implementing Agencies shall consult, as necessary and appropriate, to review the implementation of cooperative activities conducted in accordance with this Agreement and to exchange views on potential areas of future cooperation.

2. In the event questions arise regarding the implementation of cooperative activities conducted in accordance with this Agreement, the appropriate program managers of the Implementing Agencies shall endeavor to resolve the questions. If they are unable to come to an agreement, then the matter shall be referred to a more senior level of the Implementing Agencies or to their designated representatives for cooperative resolution.

3. Any disputes arising under any Implementing Arrangements shall be settled amicably by the Implementing Agencies.

4. If the Implementing Agencies are unable to settle the dispute, either may request that the Governments consult with each other on the dispute to reach an amicable resolution.

#### ARTICLE 12 - EFFECT ON OTHER AGREEMENTS

This Agreement shall not prejudice existing agreements between the Parties, or the ability of the Parties to conclude other agreements or arrangements regarding matters outside the scope of this Agreement, as mutually agreed. This Agreement shall be without prejudice to cooperation of either Party or its Implementing Agencies with other states and international organizations.

#### ARTICLE 13 - AMENDMENTS

This Agreement may be amended or extended through mutual written agreement by the Parties.

#### ARTICLE 14 - ENTRY-INTO-FORCE AND DURATION

1. Each Party shall notify the other of the completion of all internal procedures necessary for the entry into force of this Agreement, which shall enter into force on the date of the last notification.

2. This Agreement shall remain in force for ten (10) years unless terminated in accordance with Article 15. Thereafter, it shall be extended automatically for additional five-year periods, unless one Party gives the other Party six months written notification of its intention not to extend the Agreement.

#### ARTICLE 15 - TERMINATION

1. Either Party may terminate this Agreement by providing at least six months written notice to the other Party.

2. Notwithstanding the termination or expiration of this Agreement, its provisions shall continue to apply to any Implementing Arrangements in effect at the time of termination or expiration, for the duration of such Implementing Arrangements.

3. Notwithstanding the termination or expiration of this Agreement, the obligations of the Parties set forth in Articles 5, 6, and 9 of this Agreement (concerning Transfer of Goods and Technical Data, Intellectual Property Rights, and Cross-waiver of Liability) shall remain in effect.

Done in Paris, this       day of January, 2007, in duplicate, in the English and French languages, both texts being equally authentic.

FOR THE GOVERNMENT OF  
THE UNITED STATES OF  
AMERICA :

FOR THE GOVERNMENT OF  
THE FRENCH REPUBLIC :

## SPACE LAW AND RELEVANT PUBLICATIONS

Macey L. Edmondson<sup>1</sup>

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*Space Tech. Dev. Corp. v. Boeing Co.*, Docket No. 05-1671, 2006 U.S. App. LEXIS 30489 (4<sup>th</sup> Cir. 2006).

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<sup>1</sup> Macey L. Edmondson is a University of Mississippi School of Law, Law Library, public service librarian and legal research instructor.

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## ERRATA

Footnote 10 in Dr. P.P.C. Haanappel's article, *A Competitive Environment In Outer Space*, 32 J. SPACE L. 1 (2006) was erroneously stated. It should read:

<sup>10</sup> See also F.G. VON DER DUNK, PRIVATE ENTERPRISE AND PUBLIC INTEREST IN THE EUROPEAN "SPACESCAPE", TOWARD HARMONIZED NATIONAL SPACE LEGISLATION FOR PRIVATE SPACE ACTIVITIES IN EUROPE, 249-253 (1998).

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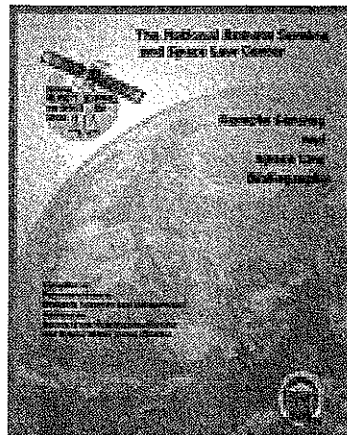
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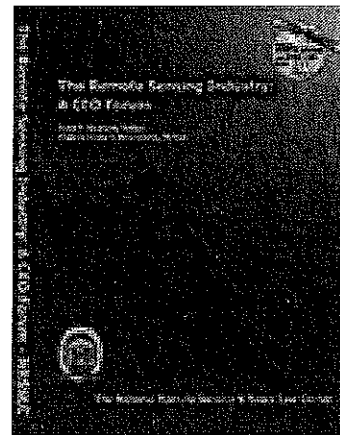
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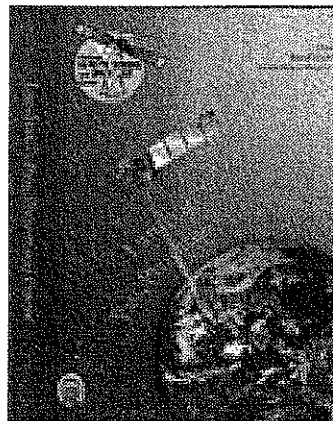
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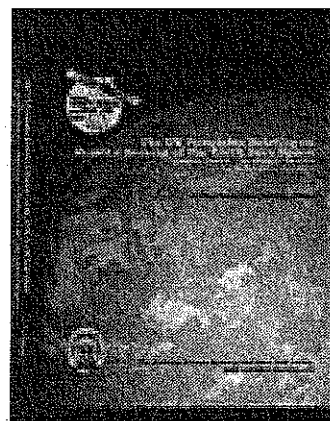
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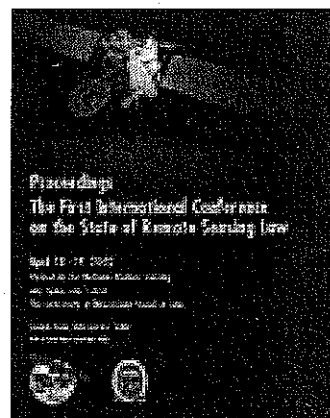
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