

FINANCING FOR COMMERCIAL SPACE:  
ASSET-BACKED FINANCING, INTERNATIONAL SPACE LAW  
AND THE UNIDROIT DRAFT PROTOCOL ON SPACE ASSETS

*A thesis submitted in partial fulfillment of the requirements for the degree of  
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*by*

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# TABLE OF CONTENTS

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I.	ABBREVIATIONS & ACRONYMS .....	iv
II.	INTRODUCTION .....	1
III.	BUSINESS IN SPACE .....	4
	A. THE NEW COMMERCIAL SPACE AGE .....	4
	1. <i>US Space Policy: Focus on Commercialization</i> .....	4
	2. <i>The Satellite Industry</i> .....	7
	3. <i>New Space</i> .....	9
	B. LENDERS & BORROWERS, CREDITORS & DEBTORS .....	14
	1. <i>Asset-Backed Financing</i> .....	14
	2. <i>Interests in Assets Used as Collateral</i> .....	16
	3. <i>Conflict of Laws Rules</i> .....	18
	C. FINANCING COMMERCIAL SPACE .....	20
IV.	LAWS AFFECTING COMMERCIAL SPACE .....	22
	A. THE CORPUS IURIS SPATIALIS .....	22
	1. <i>Responsibility &amp; Liability</i> .....	22
	2. <i>Jurisdiction &amp; Control</i> .....	23
	3. <i>Assistance to Astronauts</i> .....	24
	4. <i>Return of Space Objects</i> .....	25
	5. <i>Conclusion</i> .....	25
	B. NATIONAL LEGISLATION .....	27
	1. <i>Financial Implications of National Space Legislation</i> .....	28
	2. <i>Other National Legislation</i> .....	29
V.	HIGH-VALUE MOBILE EQUIPMENT .....	30
	A. INTERNATIONAL CUSTOM – THE LEX REI SITAE .....	31
	B. INTERNATIONAL CONVENTION .....	33
	C. EU LAW .....	34
	D. US LAW .....	36

VI.	EMERGING PRIVATE INTERNATIONAL LAW .....	38
A.	UNIDROIT .....	38
B.	THE CAPE TOWN CONVENTION .....	39
1.	<i>Main Aspects of the Convention</i> .....	41
2.	<i>The International Interest</i> .....	43
3.	<i>The International Registry</i> .....	44
4.	<i>Uniform Default Remedies</i> .....	45
C.	THE AIRCRAFT PROTOCOL .....	46
D.	THE DRAFT SPACE ASSETS PROTOCOL .....	48
1.	<i>Early Development of the Protocol</i> .....	48
2.	<i>Recent Development of the Protocol</i> .....	50
3.	<i>Public Service Issues</i> .....	50
4.	<i>UK Comments to the Draft</i> .....	52
5.	<i>Canadian Comments to the Draft</i> .....	54
6.	<i>Satellite Industry Association Comments</i> .....	56
7.	<i>Future Prospects for the Protocol</i> .....	60
VII.	THE FUTURE OF BUSINESS IN SPACE .....	64
A.	OUTLINE OF LAWS ON COMMERCIAL SPACE FINANCING .....	64
VIII.	BIBLIOGRAPHY .....	68

## I. ABBREVIATIONS & ACRONYMS

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*The following abbreviations and acronyms appear in this thesis*

AEP	Aircraft Protocol to the Cape Town Convention
AST	Office of Commercial Space Transportation (US)
C.G.E.	Committee of Governmental Experts (Unidroit)
COPUOS	Committee on the Peaceful Uses of Outer Space (UN)
COTS	Commercial Orbital Transportation System (NASA)
CRS	Commercial Resupply Services
ESA	European Space Agency
ESPI	European Space Policy Institute
EU	European Union
EUTELSAT	European Telecommunications Satellite Organization
FAA	Federal Aviation Administration (US)
GAGAN	GPS Aided Geo Augmented Navigation (India)
GLONASS	Global Navigation Satellite System
GMES	Global Monitoring for Environment and Security
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GSO	Geostationary orbit
IAA	International Academy of Astronautics
IAF	International Astronautical Federation
IAU	International Astronomical Union
ICAO	International Civil Aviation Organization
ICG	International Committee on GNSS
IGO	Inter-governmental organizations
IISL	International Institute for Space Law
ILA	International Law Association

I.L.M.	International Legal Materials
ITAR	International Traffic in Arms Regulations (US)
ITU	International Telecommunications Union
L.N.T.S.	League of Nations Treaty Series
NASA	National Aeronautics and Space Administration (US)
OOSA	United Nations Office for Outer Space Affairs
REIO	Regional Economic Integration Organization
Res.	Resolution
Rev.	Revised
SIA	Satellite Industry Association (US)
SITA	Société Internationale de Télécommunications Aéronautiques
U.C.C.	Uniform Commercial Code (US)
UNCITRAL	United Nations Commission on International Trade Law
UNGA	United Nations General Assembly
Unidroit	International Institute for the Unification of Private Law
U.N.T.S.	United Nations Treaty Series
US	United States
USC	United States Code
USD	United States Dollar
U.S.T.	United States Treaties
Vol.	Volume

## II. INTRODUCTION

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Outer space is a distant and unforgiving environment. Getting there and performing purposeful activity requires tremendous effort, exacting knowledge, and even some luck. Additionally, vast sums of capital are required to finance the various planning, research, development, training, building, testing, launching, maintaining, controlling and disposal efforts of space-bound endeavors. With few exceptions, only the national space agencies of wealthy, developed countries have had the initiative, expertise and resources to reach outer space.

This has slowly but fundamentally changed. Non-governmental entities have taken a greater role in many national space activities, and private capital for their funding has grown from a trickle to a steady flow — a stream of capital that once begun will surely continue. However, in order for private capital to be a reliable source of financing for space endeavors, investors must be able to consider space projects merely another class of capital investment. Financing for space must be transparent, reliable, fair, and with as little risk as possible. Although rocket launches will always be a riskier endeavor than the more traditional classes of investment, one way to reduce investor risk and uncertainty is to ensure uniform rules governing investments.

In some markets, borrowers are not able to use movable assets as collateral on their loans from lenders. In other, more flexible markets, borrowers are able to use these movable assets to secure loans (called secured transactions because the loan transaction is *secured* by a right in an asset). However, when the lender gives the loan and receives a right (called an “interest”) in the asset, a number of different rules may apply in making that interest over the asset legally sound and valid (in both *attachment* and *perfecting* the interest). Depending on the jurisdiction, other lenders (as creditors) may have a better claim over the asset, and a potential creditor may not be able to discover these competing claims.

The primacy and safety of their interests over movable assets is a continuing source of anxiety for creditors, and they respond by being less willing to engage in secured



transactions. Alternatively, lenders will hedge their risks and charge more. Movable assets, the types of objects used in space projects, fall into this particular class of collateral. Furthermore, space projects are often international and the financing for them can come from anywhere in the world. Therefore, international harmonization of the rules governing investment in them should be done with effective international law.

In order to widen the class of actors (companies, entrepreneurs, international organizations) to whom capital might be made available, uniform rules (such as the Unidroit draft Protocol on Space Assets, providing both an international registry and uniform default remedies) create a more secure business environment, because these rules reassure potential lenders and creditors that their loans are backed by identifiable assets, and that their interests in those assets can be perfected. Uncertainty is thereby reduced, as is the creditor's risk. Consequently, the cost of credit can also be reduced, which is good for the entire space industry.

The age of commercial ventures in space is upon us. In order to “make space commonplace” — as the new generation of space enthusiasts and entrepreneurs would have it, a wider source of capital is absolutely indispensable. Properly incentivized by the opportunities in outer space, and now with a conducive political climate, an appropriate legal framework is necessary. Potential lenders and creditors desire greater predictability, transparency, and uniformity. Additionally, the existing commercial space industry in satellites may widen to new actors, and the beneficial use of satellite technology may expand to a greater proportion of the world's population.

This thesis will examine the new political and technological climate of commercial space; the different types of financing available for space projects; various national and international rules that govern these projects — including the above-mentioned draft Protocol on Space Assets; and the peculiar situation regarding the draft Protocol (why it might not be successfully adopted and widely ratified, along with why it should be). Finally, some guidelines for legal counsel assisting commercial space firms seeking financing for their space projects.



### III. BUSINESS IN SPACE

#### A. THE NEW COMMERCIAL SPACE AGE

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It is now more than fifty years since the first man-made object orbited the Earth. The first half of mankind's first century in space began with states as the sole actors and national space agencies from the space-faring nations as the dominant force in all outer space activity. Driven by national pride and in competition with other nations, states have amassed an impressive list of firsts in space. And while always present as contractors and subcontractors for national space agencies in various capacities, commercial enterprises were often little more than an expedient junior partner in furthering a state's national missions in space.<sup>1</sup> While the technicians who sealed the escape hatches into place during the early Mercury, Gemini, and Apollo projects wore “McDonnell Aeronautics” logos on the backs of their white overalls, it was — and could only be — the US “Stars and Stripes” emblazoned on the side of the astronaut crew capsules and on the sides of the Atlas and Titan rockets they rode.<sup>2</sup>

##### 1. *US Space Policy: Focus on Commercialization*

As we continue into the second half of mankind's first century in space, this has fundamentally and perhaps permanently changed.<sup>3</sup> On June 28<sup>th</sup> 2010, US President Barack Obama announced the latest iteration of US National Space Policy.<sup>4</sup> This new

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<sup>1</sup> GEORGE V. D'ANGELO, AEROSPACE BUSINESS LAW 101 (1992) [herein AEROSPACE BUSINESS LAW].

<sup>2</sup> *When We Left Earth: The NASA Missions* (Discovery Channel Documentary, 2008).

<sup>3</sup> Hisashi Owada, *Preface to COLOGNE COMMENTARY ON SPACE LAW — VOLUME 1 THE OUTER SPACE TREATY XV* (Stephan Hobe, Bernhard Schmidt-Tedd & Kai-Uwe Schrogl et al. eds., 2009) [herein COLOGNE COMMENTARY ON SPACE LAW].

<sup>4</sup> THE WHITE HOUSE, NATIONAL SPACE POLICY OF THE UNITED STATES OF AMERICA (2010), *available at* [http://www.whitehouse.gov/sites/default/files/national\\_space\\_policy\\_6-28-10.pdf](http://www.whitehouse.gov/sites/default/files/national_space_policy_6-28-10.pdf)

US National Space Policy demonstrates the degree to which the US is dedicated to advancing commercial space.

The US National Space Policy articulates five principles that the world's leading space-faring nation will adhere to in conducting activities in outer space. Among them is the principle that a “robust and competitive space sector is vital to continued progress in space.” It continues: “the United States is committed to encouraging and facilitating the growth of a US commercial space sector that supports US needs, is globally competitive, and advances US leadership in the generation of new markets and innovation-driven entrepreneurship.”<sup>5</sup>

Regarding specific guidelines for the commercial sector, the policy statement is even more explicit in highlighting the importance of commercial space. In order to promote a robust domestic commercial space industry, US departments and agencies shall purchase and use commercial space capabilities and services to the “maximum practical extent when such services are available in the marketplace”, along with modifying “commercial space capabilities and services to meet governmental requirements” and “actively explore the use of inventive, nontraditional arrangements for acquiring commercial space goods and services.”<sup>6</sup>

Putting it more strongly, the policy statement then mandates that US departments and agencies shall develop “governmental space systems only when it is in the national interest and there is no suitable, cost-effective US commercial or, as appropriate, foreign commercial service or system that is or will be available.” Furthermore, these departments and agencies shall refrain from conducting US governmental space activities that “preclude, discourage, or compete with US commercial space activities, unless required by national security or public safety.”<sup>7</sup>

The mandate is strong enough to compel governmental agencies to pursue “potential opportunities for transferring routine, operational space functions to the

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[herein US NATIONAL SPACE POLICY 2010]; *See* WHITE HOUSE, OFFICE OF THE PRESS SECRETARY, FACT SHEET: THE NATIONAL SPACE POLICY (2010), *available at* <http://www.whitehouse.gov/the-press-office/fact-sheet-national-space-policy> (last visited Aug. 6, 2010).

<sup>5</sup> US NATIONAL SPACE POLICY 2010, 10.

<sup>6</sup> *See id.*

<sup>7</sup> *See id.*

commercial space sector where beneficial and cost-effective, except where the government has legal, security or safety needs that would preclude commercialization.”<sup>8</sup> And while an explicit outline of US space programs and missions is still less than completely finalized (and subject to change depending on the political climate and the administration in office at the time) the US commitment to the commercialization of space has been firmly established. In fact, the new 2010 US National Space Policy develops the themes on commercialization found in the 2006 version of the policy.<sup>9</sup>

The US National Space Policy will both increase efficiencies and free NASA resources for missions further afield that require more advanced and time-consuming research and development. There are many justifications for this, but it seems evident that while NASA's track record for space research and development is both long and distinguished, its history in space transportation and space station construction has been viewed as less successful — long behind schedule, far over budget, and prone to solving problems by reducing expectations.<sup>10</sup>

Earlier this year, the US cancelled Project Constellation (a project announced by President Obama's predecessor) to send astronauts back to the Moon. It was already behind schedule and over budget, and while the cancellation of this program will cost jobs and lead to temporary uncertainty in the domestic space industry, many feel that it was the correct decision.<sup>11</sup> NASA is no longer in the rocket manufacturing business or the commercial launching business, both of which it has handed over to commercial ventures.<sup>12</sup> Under the COTS and CRS program it will no longer be responsible for ferrying astronauts to space. The NASA Commercial Orbital

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<sup>8</sup> US NATIONAL SPACE POLICY 2010, 10.

<sup>9</sup> Mariel John, US National Space Policy Comparison — Comparing the 2010 National Space Policy to the 2006 National Space Policy, SPACE FOUNDATION, available at <http://www.spacefoundation.org/docs/USNationalSpacePolicy-2010vs2006.pdf>.

<sup>10</sup> Joseph N. Pelton, *A New Space Vision for NASA — And For Space Entrepreneurs Too?*, 26 SPACE POLICY 78, 79 (2010) [herein *Pelton — A New Vision*].

<sup>11</sup> *See id.*

<sup>12</sup> GLENN H. REYNOLDS & ROBERT P. MERGES, OUTER SPACE — PROBLEMS OF LAW AND POLICY 309 (2d ed., 1997).

Transportation Services (COTS) program allows private companies to bid for contracts to develop vehicles and launch platforms to take crew and cargo to the International Space Station.<sup>13</sup> A related American program is the Commercial Resupply Program (CRS), for the actual delivery of crew and cargo.<sup>14</sup> Under the CRS program, NASA has entered into agreements with both SpaceX and Orbital Sciences.<sup>15</sup>

It is evident that US space policy will continue to embrace the synergies possible through public-private partnerships with both the existing and the emerging commercial space industry actors, an approach that has been welcomed by observers eager to see more dynamism in the space industry.<sup>16</sup> There is every reason to believe that commercial space firms in the US and elsewhere may be able to benefit from the new focus on commercialization of space projects.

## 2. *The Satellite Industry*

Looking at the global commercial satellite industry reveals what might, and should, happen for more sectors of commercial space industries. Commercialization, privatization, deregulation, and globalization in the satellite and telecommunications

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<sup>13</sup> NASA Commercial Orbital Transportation Services,  
<http://www.nasa.gov/offices/c3po/about/c3po.html> (last visited Aug. 6, 2010).

<sup>14</sup> Commercial Crew & Cargo Program Home Office,  
<http://www.nasa.gov/offices/c3po/home/index.html> (last visited Aug. 6, 2010).

<sup>15</sup> NASA Awards Space Station Commercial Resupply Services Contracts,  
[http://www.nasa.gov/home/hqnews/2008/dec/HQ\\_C08-069\\_ISS\\_Resupply.html](http://www.nasa.gov/home/hqnews/2008/dec/HQ_C08-069_ISS_Resupply.html)  
(last visited Aug. 6, 2010).

<sup>16</sup> Andre Bourmanis, *Critical Partnerships For the Future of Human Space Exploration*, THE SPACE REVIEW, July 19, 2010,  
<http://www.thespacereview.com/article/1667/1>; cf. European space policy, which notable lacks an emphasis on possible synergies from commercial activities, see <http://www.espi.or.at/>

industry over the past few decades has brought about new actors undertaking new roles in a larger and more competitive environment.<sup>17</sup>

Prior to the 1980s, corporate and sovereign credit were the only sources of financing for the manufacturing and launching of satellites. Soon, regional commercial satellite operators began using financing techniques from conventional “project finance” schemes, where the manufacturing and launching of satellites was funded from the expected cash flows to be generated from commercial satellites and their transponders.<sup>18</sup> In the 1990s, finance became even more open as satellite networks and their uses grew.<sup>19</sup>

Various developments powered this growth: the capacity to launch satellites grew, both in the number of actors and in their respective capacity to launch larger satellites.<sup>20</sup> Consequently, the number of transponders on them increased.<sup>21</sup> Concurrently, the transponders themselves were able to handle more signals.<sup>22</sup> And while the technology got smaller, cheaper, more advanced, and more widely available, costs for manufacturing satellites went down.<sup>23</sup> Satellites could now do more, for less. And they could be used by more people and for more purposes. Initially used by governments surveiling foreign states, satellites and satellite networks came to be used for remote sensing of the earth's surface, telecommunications for all manner of media, and Global Network Navigation Services (GNSS) such as GPS, GLONASS

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<sup>17</sup> FRANCIS LYALL & PAUL B. LARSEN, *SPACE LAW — A TREATISE* 443 (2009) [herein LYALL & LARSEN — TREATISE]; See Peter D. Nescos, *New Developments in Space Law Concerning Financing and Risk Management: Introductory Remarks*, 27 ANNALS AIR & SPACE L. 477, 477 (2002) [herein *Nescos — New Developments*].

<sup>18</sup> *Nescos — New Developments*, 478; See ROBERT ZUBRIN, *ENTERING SPACE* 39 - 57 (2009) [herein *ENTERING SPACE*].

<sup>19</sup> *Nescos — New Developments*, 478.

<sup>20</sup> Paul B. Larsen & Juergen A. Heilbock, *Unidroit Project on Security Interests: How the Project Affects Space Objects*, 64 J. AIR L. & COM. 703, 706 (1998 - 1999) [herein *Larsen & Heilbock*].

<sup>21</sup> *Id.* at 706.

<sup>22</sup> *See id.*

<sup>23</sup> *See id.*

(and soon GAGAN and the European Galileo).<sup>24</sup> The privatization of operations by Eutelsat, Intelsat, Inmarsat and others has brought funds from private investment firms.<sup>25</sup>

Additionally, because the power sources on satellites are limited in nature (though this is improving), satellites have on average a commercially viable life span only as long as their power source remains operational. As they must therefore be replaced, demand will not decrease in the foreseeable future. In fact, it will likely increase, as the number of people reliant on satellite technology is far less than the number of people who would like to avail themselves of such technology.

The satellite industry has grown to see more actors in more markets, and it can rightly be called a mature industry, the only field in space activities truly affected by world markets, world commerce and the globalization and interconnectedness globalization has brought over the past few decades.<sup>26</sup> However, while large satellite operators draw private money, smaller entrepreneurial start-up companies and even less-wealthy states cannot always secure adequate financing — and the further opening of this industry, begun in the past few decades, may allow for an even greater leveling of the playing field and the dynamism that competition brings.

### 3. *New Space*

Turning to other areas of space activity, there are many opportunities. The last few decades have seen the rise of smaller, faster computers for increasingly cheaper prices. This miniaturization of computers, along with increases in performance and storage capacity (*i.e.*, Moore's Law) means that the modern smart phone has much more computing power than some of the earliest spacecrafts (consider: NASA's Lunar Lander existed before home VCRs and cellular telephones, and when primitive computers were run only by governments and large universities; the last human on the Moon left half a decade before the first home computers). The massive leaps in computing power and miniaturization means that off-the-shelf computing is more than

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<sup>24</sup> *E.g.* <http://www.gps.gov/>.

<sup>25</sup> *Nesgos — New Developments*, 478.

<sup>26</sup> AEROSPACE BUSINESS LAW 101.



capable of performing many of the tasks necessary for space activities and management, cheaper and with greater reliability.

In addition to the aforementioned technology, the political and economic framework is in place, or coming into place, for a more mature global commercial space industry.<sup>27</sup> Along with technology, equally important is the realization by relevant actors that private space companies and market forces have a beneficial role to play in space activities. In 2004, the US passed the Commercial Space Transportation Services Amendment Act,<sup>28</sup> and its Federal Aviation Authority even has an office of Commercial Space Transportation<sup>29</sup> to license and regulate commercial space flight. NASA's Commercial Crew and Cargo Program Office dedicated to stimulating the private sector as partner to its national space activities.<sup>30</sup>

The traditional space industry has been bolstered by a new generation of commercial firms, and has seen the revival of competitions to spur innovation and achievement in much the same way that competition and prizes spurred innovation at the beginning of the air age.<sup>31</sup> XPrize founder Peter Diamandis has pointed out that “we don't have governments operating taxi companies, building computers, or running airlines — and this is for a very good reason. Commercial organizations are, on balance, better managed, more agile, more innovative, and more market responsive than government agencies.”<sup>32</sup> Clearly, both the technology and the cultural climate are propitious for a new space age, the first truly commercial space age.

The commercial space industry can be defined as all entities conducting commercial space activities, “including spacecraft manufacturers, resellers, financiers, and insurance brokers and underwriters, all of which play vital roles in the

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<sup>27</sup> COLOGNE COMMENTARY ON SPACE LAW, 14 – 15; *See* ENTERING SPACE 54.

<sup>28</sup> 49 USC § 701 (2004).

<sup>29</sup> Federal Aviation Administration Office of Commercial Space Transportation, [http://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/](http://www.faa.gov/about/office_org/headquarters_offices/ast/) (last visited July 22, 2010).

<sup>30</sup> Commercial Crew & Cargo Program Home Office, <http://www.nasa.gov/offices/c3po/home/index.html> (last visited Aug. 6, 2010).

<sup>31</sup> ENTERING SPACE 55 - 57.

<sup>32</sup> *Pelton — A New Vision*, 78.

implementation of any space project.”<sup>33</sup> More specifically, the essential ingredient of commercialization of space activities, it has been suggested, is the “sale / purchase of products and service in the open market” — which includes actions taken by both private enterprises and government-initiated projects involving the commercial sector in some capacity.<sup>34</sup>

However, looking to the actual economic activity currently conducted in space, we find a few broad categories of activities which are commercialized: satellite telecommunications, remote sensing by satellite, launch services, payload processing, and support facilities for the above.<sup>35</sup> The mature satellite industry will continue to expand despite the current economic conditions.<sup>36</sup> Presently, almost everything else launched into outer space is owned and controlled by states. Under the relevant law to be discussed below, these objects, from unmanned space probes that visit other celestial bodies and asteroids, to the manned International Space Station, and even the craft that leave the solar system are under the jurisdiction and control of sovereign states, either solely or jointly with other launching states. While these craft may generate revenue and profit, their use is not seen as commercial. Rather, it is scientific, exploratory, and even diplomatic (*e.g.*, the ISS furthers international cooperation and coordination).

The question then arises — where is the room for commercial space? There are, in fact, many commercial opportunities in outer space. More launch companies will expand the satellite industry to new markets and more customers. Emerging commercial firms will partake of a newly freed and enlarged NASA budget under its COTS and CRS programs (and otherwise in accordance with its policies and guidelines towards commercialization) in doing routine tasks cheaper and more

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<sup>33</sup> PAMELA L. MEREDITH & GEORGE S. ROBINSON, *SPACE LAW: A CASE STUDY FOR THE PRACTITIONER — IMPLEMENTING A TELECOMMUNICATIONS SATELLITE BUSINESS CONCEPT 19* (1992) [Herein MEREDITH & ROBINSON – A CASE STUDY].

<sup>34</sup> MEREDITH & ROBINSON — A CASE STUDY 19.

<sup>35</sup> AEROSPACE BUSINESS LAW 101.

<sup>36</sup> I. Jarritt, W. Peeters & M. Simpson, *Report — Space Financing in the Aftermath of the Financial Crisis*, 26 *SPACE POLICY* 119 - 120 (2010) [herein *IISC Workshop 2009*].

effectively, in much the same way as airspace was first used by military and postal services, and are now a mix of both governmental and commercial industries.

There are further opportunities: one is orbital research labs, which conduct research and experiments that can only be conducted in the micro-gravity environment of space.<sup>37</sup> These labs can be manned or un-manned (though manned is far preferable for scientific work). While research occurs on the ISS, it will be tremendously cheaper on stations which are not hugely expensive to build and maintain, as the ISS has been. Commercial forces will drive this efficiency. These labs will produce new knowledge — and as knowledge is massless, the fuel costs for delivering back to Earth what these on-orbit labs produce is further minimized.

More opportunities exist in orbital industries. The microgravity and vacuum environment of outer space is very desirable for producers of vaccines, synthetic collagen, pharmaceuticals, crystal materials for computer chips and other unique polymers and alloys, all of which can be made to purer and more exacting standards than possible on the surface of the Earth.<sup>38</sup>

Opportunities also exist for orbital hotels, like those currently being pioneered by Bigelow Aerospace, a private space technology startup company.<sup>39</sup> Despite the high launch costs, enough individuals exist with bank accounts capable of paying their way to space.

And lastly, and perhaps most importantly in the near-term, is space asset servicing.<sup>40</sup> The limited lifespan of satellites is due to their power supply. And even with nuclear power sources, satellites have limited operational lives. Additionally, with the proliferation of space debris, damage is increasingly likely.<sup>41</sup> For satellites worth hundreds of millions of dollars, many owners, operators, and even the states which benefit from their services might find it worthwhile to pay for launches by

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<sup>37</sup> ENTERING SPACE 59 - 61.

<sup>38</sup> ENTERING SPACE 60.

<sup>39</sup> Bigelow Aerospace Orbital Complex Construction, <http://www.bigelowaerospace.com/orbital-complex-construction.php> (last visited July 22, 2010); *See* ENTERING SPACE 62 – 64.

<sup>40</sup> ENTERING SPACE 66 - 70

<sup>41</sup> COLOGNE COMMENTARY ON SPACE LAW 15.

private companies to repair, refurbish, or even return these objects. Tentative forays into this business have already begun.<sup>42</sup>

The geosynchronous orbit at roughly 36,000 kilometers above the Earth's equatorial plane is both the “province of all mankind”<sup>43</sup> and a “limited natural resource.”<sup>44</sup> However, areas of it have become cluttered with satellites and become more cluttered with each passing year.<sup>45</sup> Developing nations, and nations which are space-benefiting but not yet space-capable, have expressed interest and voiced concerns over the use of the geosynchronous orbit.<sup>46</sup> However, commercial interests will continue to use the geosynchronous orbit. Accordingly, there is a need to maintain and preserve it. As the techniques for rendezvous and docking with space objects are well-established, the potential market for on-orbit services must surely be considered ripe for growth.

Taken into consideration all of the aforementioned, and without mentioning more speculative, visionary, and inspiring endeavors such as asteroid mining,<sup>47</sup> and private commercial sub-orbital and orbital space tourism, commercial enterprises undoubtedly have the potential to help drive innovation in the next phase of worldwide space activities. The commercial uses of outer space are not limited by the presently apparent commercial benefits from outer space. They are only limited by our imagination and creativity in devising new uses of outer space, and new ways of utilizing the limitless resources and facing the unexpected challenges we will find there.

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<sup>42</sup> Orbital Satellite Services, <http://www.orbitalsatelliteservices.com> (last visited July 22, 2010).

<sup>43</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. 1. Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [herein Outer Space Treaty].

<sup>44</sup> International Cooperation in the Peaceful Uses of Outer Space, GA. RES. 55/122, U.N. DOC. A/AC.105/738 ANN. III (Dec. 8, 2000).

<sup>45</sup> LYALL & LARSEN — TREATISE 301 - 311.

<sup>46</sup> *Id.* at 61 – 62.

<sup>47</sup> Duncan Geere, *Making Space Exploration Pay with Asteroid Mining*, WIRED NEWS, July 15, 2010, <http://www.wired.co.uk/news/archive/2010-07/15/asteroid-mining> (last visited July 23, 2010); *See* ENTERING SPACE 146 – 150.

## B. LENDERS & BORROWERS, CREDITORS & DEBTORS

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Back here on Earth, one of the main sources of stability, growth and progress in a market economy is the efficient allocation of capital. The publicly offered and traded fractional ownership of commercial undertakings as stocks (equity) allows new and growing firms to amass the funds needed to build their businesses. Likewise, these equity offerings give investors an opportunity to share in the future profits of the company. Firms may retain the ownership of their company and raise money for current projects by selling debt instruments like corporate bonds, whose worth is derived from the company's expected future profitability.

Besides offering equity or going to the debt markets to sell bonds, firms may seek funds from investors for specific projects they are planning and offer these investors a share in the expected future returns from these projects. This arrangement, called project finance, is seen in increasing levels on an international plane.<sup>48</sup> These firms might seek to secure capital from investors and offer to them an interest in their assets. Indeed, the ability to receive capital *via* freely contracting for it with others is incredibly important in the life of all enterprises.<sup>49</sup> The following subsections provide a general overview of the structure of large financial investments that would be appropriate for commercial space projects.

### 1. *Asset-Backed Financing*

In order for a commercial enterprise to have the chance to grow and become profitable, it usually has to first spend money on various necessities to establish its business, and this usually means that it must borrow money from an available source. When deciding whether to extend credit (credit being defined as a financial

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<sup>48</sup> RALPH H. FOLSOM, MICHAEL WALLACE GORDON & JOHN A. SPANGLE JR., INTERNATIONAL BUSINESS TRANSACTIONS 1044 - 1077 (5<sup>th</sup> ed. 2005); *See* HAL S. SCOTT & PHILIP A. WELLONS, INTERNATIONAL FINANCE 1194 - 1241 (9<sup>th</sup> ed. 2002).

<sup>49</sup> GOODE ON COMMERCIAL LAW 619 (Ewan McKendrick ed., 4<sup>th</sup> rev. ed. 2009) [herein GOODE ON COMMERCIAL LAW].

“accommodation of some kind; the provision of a benefit [such as cash] for which payment is to be made by the recipient in money at a later date”),<sup>50</sup> the potential lender or creditor will first try to ascertain whether their money is likely to be repaid.<sup>51</sup> They will look to assets the potential debtor owns which they could repossess in case the potential debtor cannot subsequently repay the money loaned to them. In so doing, they will look to have their extension of credit *secured* by the debtor’s asset. This makes their extension of credit more protected than would otherwise be the case, and they will want their interests in the asset protected against other creditors who have extended credit to the debtor.<sup>52</sup>

These secured transactions might be desirable where an enterprise has assets which creditors would view as having an ascertainable value. The benefit to asset-backed financing is that, in the unfortunate case where the debtor cannot repay its debt to the creditor, the asset itself, or interests in the asset, may come under the ownership and / or control of the creditor.<sup>53</sup> In this manner, the creditor will be paid back some of the credit they have extended to the debtor. This would of course be more desirable than offering to a creditor the profits of the enterprise, especially when the enterprise fails and the creditor would therefore receive little or no return on their outlay. According to the circumstances of the project and the preferences of the parties, asset-backed financing might be more desirable than other methods of accumulating capital.

The asset used by the firm to secure capital might be a factory, a plot of land, an expensive piece of equipment, or even intellectual property (in other words, tangible and intangible assets, and movable and immovable property).<sup>54</sup> In such a fashion, as a remedy for default on the creditor’s loan, the asset as a source securing

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<sup>50</sup> GOODE ON COMMERCIAL LAW 621.

<sup>51</sup> Heywood Fleissig, *The Power of Collateral*, Note 43 THE WORLD BANK – PUBLIC POLICY FOR THE PRIVATE SECTOR 1 (Apr. 1995) [herein *Fleissig — The Power of Collateral*], available at <http://rru.worldbank.org/documents/publicpolicyjournal/043fleisi.pdf>.

<sup>52</sup> Thomas H. Jackson & Anthony T. Kronman, *Secured Financing and Priorities Among Creditors*, 88 YALE L.J. 1143 (1978-1979) [herein *Jackson & Kronman — Secured Financing*].

<sup>53</sup> *Id.* at 1147.

<sup>54</sup> *Fleissig — The Power of Collateral*, 1 - 3.

the loan is easily identified and ownership of it may be more easily taken by the creditor. The creation of an equitable interest held by the creditor will favor them in two ways: 1) it will reduce the riskiness of the extension of credit, by making it more likely that the amount loaned will be repaid if the debtor becomes insolvent;<sup>55</sup> and 2) the creditor reduces their burden of monitoring the debtor absconding with the credit, because the creditor now has only to monitor the asset securing the loan, and not the overall business and profitability of the debtor's enterprise.<sup>56</sup>

The matter becomes complicated when the asset is movable. Certain forms of assets might be very valuable and very desirable to creditors. However, these assets might be difficult for creditors to get a hold of. Movable assets include commercial airplanes, which might be valued in the hundreds of millions of dollars (USD) and even jet engines valued in the tens of millions. Rolling stock such as trains and sections of trains are similarly valuable. On a smaller scale, cars, boats and even cattle may be used by individuals as collateral to secure loans.<sup>57</sup>

## 2. *Interests in Assets Used as Collateral*

Firms which possess these assets might see them as the most valuable items on their balance sheets, and potential lenders might agree. However, because laws on the seizure or forfeiture of assets by lenders differ from one country to another, a potential problem arises when potential borrowers seek to offer potential lenders interests in these movable assets as collateral.<sup>58</sup>

This problem arises because the laws differ from country to country, and from jurisdiction to jurisdiction, on the three stages of the life of an equitable interest in an asset.<sup>59</sup> Firstly, there is the creation of a security interest and whether the jurisdiction even recognizes the potential lender's asset as worthy of creating a security interest. If a creditor can create an equitable interest in the debtor's asset, binding upon the

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<sup>55</sup> *Fleissig — The Power of Collateral*, 1 - 3.

<sup>56</sup> *Jackson & Kronman — Secured Financing*, 1152 – 1153.

<sup>57</sup> *Fleissig — The Power of Collateral*, 1 - 3.

<sup>58</sup> *Fleissig — The Power of Collateral*, 1.

<sup>59</sup> *See id.*

debtor as a matter of the contractual relationship they have entered upon, this is labeled *attachment* of the interest, and is binding upon the debtor.<sup>60</sup>

The creation of these equitable interests differs depending on the asset offered, the creditor's policies, and the legal system applicable to the parties. Regrettably, many of the world's economies suffer because movable assets cannot be used as collateral.<sup>61</sup> In such places, only those with sufficient credit can receive any financing, and to borrow capital without credit they must have fixed assets. As the interests in fixed assets can be recorded, only those who have a certain class of asset can receive financing. Those with movable assets cannot record their interests, and are denied the opportunity to use their movable property as collateral on loans. The World Bank has even stated that this problem is one of the factors that prevent economic and social development in developing countries, because these movable assets simply cannot be used as collateral.<sup>62</sup>

Secondly, assuming the movable asset can indeed be used as collateral, the next problem deals with the *perfection* of the security interest. Separate from attachment, the perfection of a security interest is when additional steps are taken, as prescribed by law, to give the public notice of the security interest, and so bind third parties.<sup>63</sup>

Before lending credit, the creditor may try to ensure that neither any prior nor superior claims to the asset exist.<sup>64</sup> Proving the non-existence of such an interest is a daunting task. How can the creditor be sure that the asset lawfully belongs to the potential debtor, and that the debtor have the right to use it as collateral? How can the creditor be sure that the asset itself has not been used to secure a loan elsewhere, or that the asset had not been purchased on credit?

The creditor may be able to avail themselves of the information contained in a registry of interests in movable property.<sup>65</sup> Depending on the jurisdiction, the security interest may be filed with such a registry. However, if a registry exists, it might list

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<sup>60</sup> GOODE ON COMMERCIAL LAW 665.

<sup>61</sup> *Fleissig — The Power of Collateral*, 2.

<sup>62</sup> *Fleissig — The Power of Collateral*, 1 - 3.

<sup>63</sup> GOODE ON COMMERCIAL LAW 665.

<sup>64</sup> *Id.* at 697.

<sup>65</sup> *See id.*



interests filed chronologically, or under the name of the creditor, or under the debtor. The potential lender is then faced with the task of eliminating all possibilities that their interest would not be inferior and lose out to any other competing claims. Alternatively, were they to find interests superior to their interest in the asset, they may wish to proceed with their now riskier extension of credit, and merely charge the debtor at a high rate for this credit.<sup>66</sup>

Thirdly, there are issues in the enforcement of security interests. Potential remedies a creditor might seek over assets include possession of the asset, sale of the asset to satisfy their debt, or the appointment of a receiver of the asset.<sup>67</sup> There are potential difficulties in the actual repossession of the asset. In some jurisdictions the repossession may be lengthy and difficult, and in other jurisdictions the repossession process is speedier and along uniform and predictable lines.<sup>68</sup>

All of these factors, in the creation and attachment of security interests, the perfection of security interests, and the enforcement of equitable rights related to security interests, are issues the parties face when seeking to engage in a secured transaction.

### 3. *Conflict of Laws Rules*

A multiplicity of conflicting rules exist depending on the jurisdiction where the issues related to rights over an asset are adjudicated, and no international uniformity exists regarding the hierarchy of rules to resolve the potential conflicts.<sup>69</sup> Potential creditors might be wary of offering capital to potential debtors because they are wary of the laws applicable to the movable asset, and uncertain of how an insolvency would play out. Uncertainty therefore may cloud the situation for potential creditors. Creditors want secure and readily enforceable rights over the assets, otherwise their investment — meant to be backed by the debtor's asset — is needlessly risky, and they will take steps to mitigate that risk, including charging more, or refusing to extend credit altogether.

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<sup>66</sup> *Jackson & Kronman — Secured Financing*, 1147 -1149.

<sup>67</sup> GOODE ON COMMERCIAL LAW 680 – 684.

<sup>68</sup> *Fleissig — The Power of Collateral*, 3.

<sup>69</sup> GOODE ON COMMERCIAL LAW 1187 – 1215, 1234 – 1238.

The situation is especially true for assets which are movable and leave the jurisdiction of either the creditor or the debtor,<sup>70</sup> such as space objects which enter outer space (where there is no sovereignty — merely the jurisdiction and control over space objects by the states on whose national registry they appear.)<sup>71</sup>

In the aerospace field, equity financing (offering stocks as equity) exists but is usually in the start-up phase of an enterprise.<sup>72</sup> Debt financing (selling bonds) also exists but only for space projects by companies with proven creditworthiness, or where tangible assets can be used as collateral.<sup>73</sup> However, debt financing through bonds is usually not applicable for new space projects, as their expected future revenue is too distant to project cash flows to pay back the debt offerings.<sup>74</sup>

Asset-backed financing for such space objects would normally be next to impossible, and those seeking to raise capital would have to rely on either their creditworthiness to take loans, their ability to sell bonds in the bond market, or by selling equity of their firm — all options which might be impracticable or unfeasible for startup space companies, or established firms held privately, or firms with less than triple-A credit ratings.<sup>75</sup>

Consequently, efficient, reliable, and transparent rules for the taking of security interests in movable assets is a market innovation and maturation which will allow actors to more efficiently and effectively allocate capital, grow their businesses and reach their goals. On an international level, the harmonization of international commercial law through international convention is a difficult, though desirable, exercise.<sup>76</sup> The paucity of effective laws permitting investment *via* asset-backed finance is discussed in Chapter V.

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<sup>70</sup> Goode on Commercial Law 1237 – 1238.

<sup>71</sup> Outer Space Treaty, Art. VIII; *See* COLOGNE COMMENTARY ON SPACE LAW 156.

<sup>72</sup> AEROSPACE BUSINESS LAW 103 – 104.

<sup>73</sup> AEROSPACE BUSINESS LAW 103.

<sup>74</sup> *See id.*

<sup>75</sup> AEROSPACE BUSINESS LAW 102 [pointing out that a Standard and Poor type credit rating for space ventures may only be credible after substantial experience can be used to demonstrate the accuracy and credibility of such ratings].

<sup>76</sup> Roy Goode, *Rule, Practice, and Pragmatism in Transnational Commercial Law*, 54 INT'L & COMP. L. Q. 539, 554 (2005).

### C. FINANCING COMMERCIAL SPACE

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At present, the financing for space is unlike many other large, industrial, international industries.<sup>77</sup> Financing is based on the creditworthiness of the borrower, rather than a mix of credit-backed and asset-backed financing.<sup>78</sup> As explained above, the satellite industry, the most commercially mature space industry, does not currently record interests in an open, international registry. Consequently, actors in the satellite business must rely on either their cash at hand or their creditworthiness for the financing of new projects (and interests in those assets may attach and be binding as between the parties, but it is hard to believe that those interests may be perfected and so bind third parties).

Indeed, asset-backed satellite transactions seem counter-intuitive. Who would want to repossess a satellite? And could they? Rather, the creditors would much rather have assurances based on the credit of a counterparty than on the seizure rights to an asset the counterparty is planning on launching 36,000 kilometers into outer space. This, however, is a rather illusory insight, as it is not the asset *per se* which creditors are interested in, it is in the use and control (and subsequent revenue and profit) which that asset can provide (as a telecommunications satellite), which the creditor is interested in.

This makes it rather tricky for less credit-worthy firms to finance their space-related projects. Start-up space companies may be able to attract seed capital from early-stage investors and the personal assets of the company's organizers, but this is unlikely to fulfill all of their capital requirements.<sup>79</sup>

Public offerings through equity may be infeasible for smaller firms, especially in the current economic climate. In fact, only large aerospace and satellite firms such as Boeing, Northrop Grumman, Lockheed Martin, Honeywell, and SES S.A. (the parent of Ses Astra, the world's largest satellite provider) are publicly traded, and Ses S.A. is owned in large part by the government of Luxembourg.

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<sup>77</sup> AEROSPACE BUSINESS LAW 101.

<sup>78</sup> *Larsen & Heilbock*, 706.

<sup>79</sup> AEROSPACE BUSINESS LAW 102, 103.

Other sources of capital are venture capital firms, direct investment institutions, investment banks, and commercial banks - all of whom will all be looking for repayment and looking for their outlays of credit to be as secure as possible.<sup>80</sup>

The financial models that worked for the first fifty years of space were between national agencies and their contractors, and then between a small group of satellite manufacturers and operators. These models will continue to work, but if they are joined by the efficiency and innovation of more open and more vibrant models suited for commercial space — including ones which allow for asset-backed financing — the second half of our first century in space will begin to deliver on the true promise of space and all of its possibilities. It will open up the market to smaller actors, emerging firms running out of seed money and not planning or capable of going public or of selling debt based on their credit rating, and to those with movable assets as main source of collateral. It makes sense that technologically advanced activities in outer space should be complemented with the most progressive and sophisticated financial models supporting them down on Earth.

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<sup>80</sup> AEROSPACE BUSINESS LAW 103.

## IV. LAWS AFFECTING COMMERCIAL SPACE

### A. THE CORPUS IURIS SPATIALIS

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The body of space law (or *corpus iuris spatialis*) is largely comprised of public international law and describes the rights and obligations of states in relation to other states in their use and exploration of outer space.<sup>81</sup> The 1963 Principles Declaration ratified by the United Nations General Assembly<sup>82</sup> — and the subsequent Outer Space Treaty which further developed and expanded that declaration — outline the principles whereby the nations of the world would explore and utilize outer space. Here we find that since the beginning of the space age, the role of commercial entities has taken a role within the broader boundaries of state action.<sup>83</sup>

It is worth outlining those aspects of the *corpus iuris spatialis* which may affect commercial space endeavors, and the financing of commercial space endeavors, so as to make commercial actors cognizant of the larger public international law framework within which they operate.

#### 1. *Responsibility & Liability*

Under the Outer Space Treaty, states parties to the treaty bear international responsibility for all their national activities in outer space, whether conducted by their governmental agencies or by non-governmental entities.<sup>84</sup> International responsibility is coupled with a state's international liability for damage resulting

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<sup>81</sup> IAN BROWNLIE, *PRINCIPLES OF PUBLIC INTERNATIONAL LAW* 255 - 259 (7<sup>th</sup> ed. 2008); *See* PETER MALANCZUK, *AKEHURST'S MODERN INTRODUCTION TO INTERNATIONAL LAW* 198 - 207 (7<sup>th</sup> rev. ed. 1997); *See* LYALL & LARSEN — *TREATISE* 39 - 42.

<sup>82</sup> Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, G.A. RES. 1962 (XVIII), U.N. DOC. ST/SPACE/11/REV.2 (Dec. 13, 1963).

<sup>83</sup> LYALL & LARSEN — *TREATISE* 559.

<sup>84</sup> Outer Space Treaty, Art. VI.

from its space object (or its component parts) to another state party, or to its natural or juridical persons, whether in air space or in outer space.<sup>85</sup> This liability is for a state's space object that it either launches, procures the launching of, or from whose facility or territory the object is launched.<sup>86</sup>

A state party, being responsible for its national activities by both governmental agencies and non-governmental entities, is also responsible for assuring that those activities are carried out in conformity with the Outer Space Treaty, which incorporates general public international law (*via* Art. III, including the Charter of the United Nations) and additionally, in “the interest of maintaining international peace and security and promoting international cooperation and understanding.”<sup>87</sup>

In addition to those duties, state parties are also responsible for the authorization and continuing supervision of their non-governmentally conducted national activities. These seem like heavy burdens to place on state parties concerning their relationship with non-governmental agencies (commercial actors). It can be seen as a way of preventing a state party from avoiding its international obligations under the space treaties by merely having commercial agencies carry out these activities on their behalf.<sup>88</sup> In space, the attribution to states of non-governmental actors is direct, “as though the state had conducted those activities itself.”<sup>89</sup> Seen as an innovation in international law, it nevertheless compels states to observe a high level of care, attention and continuing supervision over the entire scope of their national activities.

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<sup>85</sup> Outer Space Treaty, Art. VII.

<sup>86</sup> *See id.*

<sup>87</sup> *Id.* at Art. VI, III.

<sup>88</sup> Bin Cheng, *International Responsibility for National Activities in Outer Space*, in 11 ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW 299 (R. Bernhard & R. Bindschedler eds., 1989).

<sup>89</sup> *See id.*

## 2. *Jurisdiction & Control*

Under the 1967 Outer Space Treaty, states are encouraged to establish a national registry of their space object.<sup>90</sup> Under the 1975 Registration Convention, registration with the UN registry of space objects is mandatory.<sup>91</sup> If a state is not a party to the Registration Convention, it may still inform the UN of its space objects under UNGA Res. 1721 B.<sup>92</sup> This registration is for the purposes of a state retaining jurisdiction and control of its space objects, and it also makes it easier for parties to establish the launching state of objects in the event they should cause damage.

While the four categories of launching state may give rise to conflicts over which state has responsibility and liability over the space object, only the one registering state can assert jurisdiction over the object, and therefore that registering state decides which rules apply to interests, including financial interests, related to the object.

Additionally, while this international registration is for the purposes of jurisdiction and control, and possibly responsibility and liability, it is not directly related to the *commercial ownership* of the space object, or of the beneficial rights which might derive from that ownership (*e.g.* the right to derive revenue from a satellite). However, jurisdiction over a space object means the right to decide which laws apply, including those laws concerning financial interests in the space object. Therefore, the registration of a space object directly relates to the applicable laws over that object, and therefore the financial laws and rules over that space object. Which state will be registering a space object is therefore of crucial interest to financiers of any space project.

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<sup>90</sup> Outer Space Treaty, Art. VIII.

<sup>91</sup> Convention on Registration of Objects Launched into Outer Space, Jan.14, 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15.

<sup>92</sup> International Cooperation in the Peaceful Uses of Outer Space, G.A. RES. 1721 (B) (XVII), U.N. Doc. ST/SPACE/11/REV.2 (Dec. 20, 1961).

### 3. *Assistance to Astronauts*

The Outer Space Treaty, the Rescue Agreement and the Moon Agreement all contain provisions which require states to render “all possible assistance to astronauts in outer space.”<sup>93</sup> The Moon Agreement even requires that states make their facilities and property on the Moon available to persons in distress. A state may assert the right of its astronauts to receive assistance in a way that interferes with a lender or creditor's rights to an asset to be used in the assistance. Could the observance of these duties affect or even subvert the interests a creditor has over an asset, such as its right to seize or sell the asset?

### 4. *Return of Space Objects*

As we have seen, the launching state may not necessarily be the state of registry. And while the state of registry of a space object retains jurisdiction and control, Art. 5 of the Rescue Agreement mandates, in part 3 thereof, that upon request of the launching authority of a space object found within the jurisdiction of a state party to the Rescue Agreement, the return of that space object, or its component parts, to representatives of the launching authority.

This return to the launching state's authorities might blur the jurisdictional power of the state of registry, and in turn, the security rights protected by the laws of that state of registry. Additionally, costs incurred in the recovery and return of space objects are reimbursable by the launching state,<sup>94</sup> which may further obfuscate a creditor's rights of title or possession related to the space asset. These hidden conflicts, while academic, may one day become actual and might therefore affect the financing of commercial space enterprises.

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<sup>93</sup> Outer Space Treaty, Art. V; *Cf.* Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, Arts. II – VIII, Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119 [herein Rescue Agreement]; *Cf.* Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 18, 1979, 1363 U.N.T.S. 3, I.L.M. 1434.

<sup>94</sup> Rescue Agreement, Art. 5.



## 5. *Conclusion*

There is little in the *corpus iuris spatialis* that directly aids the development of commercial space business, or the protecting of property rights in space objects, as the *corpus iuris spatialis* exists for public international law purposes such as state responsibility and liability. However, there are some implicit aspects of the space treaties which may affect privately held assets or interests in those assets.

Additionally, there are implicit aspects of the space treaties (and the rights and obligations which they create) which may affect private international law and conflict of laws conventions.

It is worth remembering that not all states are space-faring, and not all those states which are space-faring view the commercialization of space as an important or even desirable goal. The wide variety of economic, legal and political circumstances across the globe must never be forgotten when analyzing either commercial space financing or making suggestions for laws and practices aimed at furthering commercial space and financing for commercial space. Due to the no-doubt laudable humanitarian and progressive elements of the space treaties and the international organizations which have crafted them, some provisions might in some circumstances be seen as a possible source of friction to the development of commercial space and the viability of commercial enterprises using space. A burgeoning commercial space company seeking to develop a commercially viable and profitable space business might look to some provisions of the international space law regime, and the various declarations promulgated by the United Nations,<sup>95</sup> and ask just what rights and protections they have, or just what obligations they may be under. All of this further complicates the financing for space as it creates vagaries where only the bravest creditors may fear to tread.

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<sup>95</sup> *E.g.* 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. ST/SPACE/11/REV.2 (Dec. 13, 1996).

## A. NATIONAL LEGISLATION

Besides the various principles and resolutions and the major UN treaties on outer space, many other source of law exist and will have an impact on commercial enterprises in outer space. These might include insurance provisions related to a contract between companies which deal in outer space (e.g. a launch contract), as well as the general contract law applicable to that situation.<sup>96</sup> Any law applicable or governing activities in outer space must be taken into consideration when planning commercial enterprises.<sup>97</sup> A host of areas of law, including the broadest principles pertaining to the roles and responsibilities as between states, like as the Charter of the United Nations, might impact commercial undertakings.

A non-exhaustive list might include international regulation of telecommunications satellites, national regulation of telecommunications satellites, national regulation of launch vehicles (such as exists in many countries throughout the world), domestic regulation respecting trading in arms, intellectual property laws and patent regimes; even tax law and corporate and securities law may apply.<sup>98</sup> The commercial and financial aspects of space activities may be governed by the laws otherwise applicable to contracts, insurance, copyright and intellectual property, and so on.<sup>99</sup> Ultimately, all these sources of law must be considered when dealing with the financial aspects of commercial space.

However, many states have adopted national space legislation implementing their international obligations under the space treaties, including Australia, China, India, Russia, the United Kingdom, and the United States (amongst others).<sup>100</sup> A look

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<sup>96</sup> *Id.* at 559.

<sup>97</sup> LYALL & LARSEN – TREATISE 2, 559.

<sup>98</sup> Aerospace Business Law 10 – 13.

<sup>99</sup> *See id.*

<sup>100</sup> *Id.* at 468, 473 – 497; *See* Matxalen Sánchez Aranzamendi, *Economic and Policy Aspects of Space Regulations in Europe, Part 1: The Case of National Space Legislation – Finding the Way between Common and Coordinated Action*, ESPI REP. 21, 10 - 25 (2009) [herein *Sánchez Aranzamendi – Regulations*], available at <http://www.espi.or.at/images/stories/dokumente/studies/espi%20report%2021.pdf> [provides overview of national space legislation and commercial aspects thereto].

at the national legislation applicable to commercial space activities then falls into two broad categories – those laws which are space specific, and those laws which are otherwise applicable to the venture regardless of the space-related aspects of the venture.

### 1. *Financial Implications of National Space Legislation*

As states are the ultimate source of responsibility and liability for national activities in outer space, they have enacted liability provisions in their national space legislation which private commercial entities must observe before they are permitted to engage in such activities. As an example, national regulation in the United States directly pertaining to space has two avenues 1) rules and actions by its national space agency, NASA; and 2) rules governing the civilian use of outer space, *e.g.*, that portion of the US Code entitled the “Commercial Space Launch Activities Act”, first passed in 1984 and amended in 2004.<sup>101</sup> The principal body administering these rules is the Office of Commercial Space Transportation, an arm of the Federal Aviation Administration.<sup>102</sup>

Under the Commercial Space Launch Activities Act, this office requires that a commercial operator obtain third party liability insurance in excess of \$500 Million USD, and liability launch insurance of \$100 Million USD.<sup>103</sup> The purpose of these liability provisions is to limit the extent to which the US government would be liable for potential damage.<sup>104</sup> These specific provisions of the US act are mentioned only to note the financial constraints which a commercial space enterprise will probably find itself under US national space legislation. The US legislation has been used as a model for national space legislation elsewhere,<sup>105</sup> and it should therefore serve as notice to the financiers, creditors and other interested parties, across the globe, as to

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<sup>101</sup> 49 USC §701, *available at*

[http://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/licenses\\_permits/media/701Complete.pdf](http://www.faa.gov/about/office_org/headquarters_offices/ast/licenses_permits/media/701Complete.pdf) (2004) ; *See* LYALL & LARSEN — TREATISE 489 – 495.

<sup>102</sup> LYALL & LARSEN – TREATISE 490.

<sup>103</sup> 49 USC § 70112; *See* LYALL & LARSEN – TREATISE 488 – 495.

<sup>104</sup> LYALL & LARSEN – TREATISE 492; *Sánchez Aranzamendi – Regulations, 24.*

<sup>105</sup> *Sánchez Aranzamendi – Regulations, 23* [noting Australian, Dutch and French use of the US legislation].

the large financial requirements of commercial space enterprises – and therefore the necessity of securing their loans to commercial space firms.

## 2. *Other National Legislation Applicable to Financing*

While an in-depth examination of the host of national laws applicable to commercial undertakings, even laws applicable to commercial undertakings by the commercial space industry, is well beyond the scope of the present thesis, a broad outline should be offered of at least those laws which might affect the financing of commercial space enterprises in one way or another. The applicable law might be governmental contracts, securities laws, and corporate law, all applicable to the venture on the basis of the venture being incorporated as a commercial venture in that state.<sup>106</sup> Antitrust and competition law may impact upon the business plans of the venture,<sup>107</sup> as well as intellectual property and technology transfer and spin-off related laws.<sup>108</sup> The insurance provisions related to commercial space launch, separate from the provisions on liability in relation to the states licensing regime discussed above, may also provide a source of concern when developing a business plan for a commercial space enterprise.<sup>109</sup>

This thesis will now discuss legislation on an international plane related to the taking of security interests in movable assets such as space assets, as 1) the prospects for commercial activity are international in nature; and 2) the ability to secure financing using assets as collateral seems to be the best way for emerging firms to bridge the gap between seed-capital from smaller investors and organizers to the more robust sources of capital available to the largest, publicly-traded and rated firms.<sup>110</sup> It is those firms in the burgeoning stages that need efficient legal frameworks if the global commercial space industry is to truly grow.

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<sup>106</sup> AEROSPACE BUSINESS LAW 101.

<sup>107</sup> *Id.* at 129 – 134.

<sup>108</sup> *Id.* at 135 – 150, 150 – 174.

<sup>109</sup> *Id.* at 66 – 79.

<sup>110</sup> *Id.* at 102.

## V. HIGH-VALUE MOBILE EQUIPMENT

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As we have seen, compared to other large industrial projects, space business is “for the most part, based on the creditworthiness of the borrower, and not on a mixture of credit-based and asset-based project finance.”<sup>111</sup> Before examining the opportunities for growth using more dynamic financing models, the laws of secured transactions involving movable assets in various jurisdictions should be examined. There is no global uniformity of national laws addressing legal aspects of cross-border financing, or the use of asset-based financing. Rather, different legal regimes allow for different financing methods.

Important for this discussion is the security interests a creditor might take over property. Here, movable property, which moves from state to state. In more common circumstances, a creditor might take security interest in an object while the object and the creditor were situated in the same state. In this simple example, the laws of this state, State A, govern. In distinction from contract law, property law follows more uniform lines regarding interests in property.<sup>112</sup> The law of the state (or *lex situs*) rule determines that the law of the place where the object is at the time of the contract governs the legal relationships over the object.<sup>113</sup>

However, suppose the object were moved to a different state, State B. In State B, the laws over security interests might be different. The creditor’s interests over the object might not be allowed, or other rights might be given priority over the object regardless of the circumstances. The *situs* of the object has changed. Which property laws apply to the object – the laws of the state where the interests were created, State A, or the laws where the object is now currently situated, State B? Does the security interest created in state A have extra-territorial effect in State B? If so, do those rights

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<sup>111</sup> *Larsen & Heilbock*, 706; Cf. Ronald C.C. Cuming, *Study of International Regulation of Aspects of Security Interests in Mobile Equipment*, LXXII UNIDROIT STUDY DOC-1 6 (1989) available at <http://www.unidroit.org/english/documents/1992/study72/s-72-05-e.pdf> [herein *Unidroit Study*].

<sup>112</sup> *Unidroit Study*, 7; See GOODE ON COMMERCIAL LAW 1215.

<sup>113</sup> GOODE ON COMMERCIAL LAW 1235.

have priority over any rights against the object which may have been created in State B? The apparent simplicity of property laws in one state governing property in that state now becomes complex when the object moves beyond that state and its property laws, and when property laws from different states attach to the same object. The problem then involves examining how each state treats the laws of different states, in its conflict of laws rules. Regarding interests in property, some states respect the property laws (and the rights created under those laws) from other states. Unfortunately, others do not.<sup>114</sup>

#### A. INTERNATIONAL CUSTOM — THE LEX REI SITAE

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Latin for “law of the place of the situation of the thing”<sup>115</sup> (slightly different from *lex situs*<sup>116</sup>), the legal phrase *lex rei sitae* is a phrase embodying a doctrine which exists in international private law.<sup>117</sup> If a legal right in property is created in State A, the laws of State A govern that property and the rights attached to it. Such a right might include the right held by the owner, such as the right of possession, or the right of quiet enjoyment. They may be rights vested in the seller of the property, such as the right to repossess the property if the buyer fails to pay the full sum of the purchase price.

However, once the property is in State B, with different property laws, there is a possible conflict between the laws of the two states. This conflict between the laws is solved by an application of the *lex rei sitae* maxim, which determines simply that the laws of State B apply, because the laws of the state where the property is situated

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<sup>114</sup> GOODE ON COMMERCIAL LAW 1236.

<sup>115</sup> BLACK'S LAW DICTIONARY 935 (6<sup>th</sup> ed. 1994).

<sup>116</sup> GOODE ON COMMERCIAL LAW 1215.

<sup>117</sup> B. Patrick Honnebier and J. Michael Milo, *The Convention of Cape Town: The Creation of International Interests in Mobile Equipment*, 1 EUR. REV. PRIVATE L. (2004) 3 - 8 [herein *Honnebier & Milo*]; See Roy Goode, *The International Interest as an Autonomous Property Interest*, 1 EUR. REV. PRIVATE L. 18 (2004) [herein *Goode — European Review*].

take precedence. The security rights created in State A are therefore governed by - and exist subject to, the laws of State B, merely because the object is now in State B.

This is a well-known problem in the financing of high-value mobile equipment, and it drives up the cost of credit (the cost of a buyer to secure funds).<sup>118</sup> For this reason, the *lex rei sitae* rule is “manifestly inadequate in relation to mobile equipment.”<sup>119</sup>

This problem exists at the international level, and in the European level in particular.<sup>120</sup> A seller / creditor will of course ask for more money up-front, because their risk is higher because this rule creates uncertainty when the object leaves the state and travels to other states. The seller is wary of the buyer absconding without paying the full price; the creditor is wary of the same risk. Depending on where their property goes, their position is uncertain regarding the recognition and enforcement of their security interests in that property.<sup>121</sup> This legal uncertainty creates economic inefficiency. This inefficiency, due to the application of a rule which should not apply, is at the heart of the need for international cooperation and legislation.<sup>122</sup> Efforts should, and have, been taken to rectify the situation and drive down the artificially inflated cost of credit for high-value mobile equipment. Some of these efforts have been less than completely successful.

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<sup>118</sup> *Honnebier & Milo*, 3 - 8; *See Goode — Driving Force*, 10 - 15.

<sup>119</sup> *Honnebier & Milo*, 4; *See Roy Goode, CONVENTION ON INTERNATIONAL INTERESTS IN MOBILE EQUIPMENT AND PROTOCOL THERETO ON MATTERS SPECIFIC TO AIRCRAFT EQUIPMENT OFFICIAL COMMENTARY 5, para. 10 (2002) [Herein CAPE TOWN OFFICIAL COMMENTARY]*.

<sup>120</sup> *Unidroit Study*, 7; *See Honnebier & Milo*, 4.

<sup>121</sup> *Honnebier & Milo*, 4.

<sup>122</sup> *See id.*

## B. INTERNATIONAL CONVENTIONS

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A number of conventions exist which have sought to solve the above problems through international harmonization of rules.<sup>123</sup> An analysis of the history of the financing of movable assets might look at the global airline industry, and therefore might focus on the 1948 Geneva Convention.<sup>124</sup> The 1948 Geneva Convention plays a role in the development of global financing of movable assets, and this history affects both the present and the future of applicable laws related to asset-backed financing with movable property. However, as private international law or conflicts of law rules, the above-referenced conventions were not successful at unifying and harmonizing rules related to interests in movable assets.<sup>125</sup> Many have not yet been widely ratified or are not otherwise in force.<sup>126</sup>

The 1948 Geneva Convention is, like the *lex rei sitae* conflicts of law rule, a conflict-of-laws convention rather than a substantive property law. It sought to solve problems between national laws of the different states party to the treaty regarding recognition of property rights in aircraft and how they are to be treated in states difference from where they are created. The 1948 Geneva Convention replaces the *lex rei sitae* rule with a *lex registry* conflict of laws rule.<sup>127</sup> Aircraft registered in a public

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<sup>123</sup> GOODE ON COMMERCIAL LAW 1234 [mentioning the Uniform Law of International Sales, the United Nations Convention on Contracts for the International Sale of Goods, the Hague Convention of 1955 on the Law Applicable to International Sales of Movable Corporeal Objects, the 1958 Convention on the Law Governing Transfer of Title in International Sales of Goods and the 1986 Hague Convention on the Law Applicable to Contracts for the International Sale of Goods]; *Cf.* The Convention for the Unification for Certain Rules Relating to the Precautionary Attachment of Aircraft, May 29, 1933, 291 L.N.T.S. 4479.

<sup>124</sup> Convention on the International Recognition of Rights in Aircraft, June 19, 1948, 310 U.N.T.S. 152, 4 U.S.T. 1830 [Herein 1948 Geneva Convention].

<sup>125</sup> GOODE ON COMMERCIAL LAW 1234.

<sup>126</sup> *See id.*

<sup>127</sup> *Honnebier & Milo*, 5.



registry in a state party to the Convention are subsequently accorded recognition in other state parties to the Convention.

Regrettably, the Geneva Convention only works in specific circumstances, does not allow aircraft engines to be separately registered,<sup>128</sup> and has not received widespread ratification in jurisdictions important for aircraft financing. Consequently, it does not further asset-backed financing in mobile equipment. However, the problems with the Geneva convention can rightly be said to have led to the formulating and drafting of the 2001 Cape Town convention, which does assist asset-back financing — more about which in the next chapter.

Because the financing for aircraft equipment is a large and mature field, it can be seen as a model for space assets. As both categories of high-value mobile equipment are meant to be addressed by Unidroit efforts under the Cape Town Convention framework,<sup>129</sup> the aircraft financing industry is especially relevant. However, because national property laws dominate the financing of mobile equipment, it is first necessary to look at national and regional legal systems.

### C. EU LAW

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In Europe, the financing of high-value mobile equipment is unnecessarily costly due to the fragmentation of national laws regarding property rights and interests in property rights.<sup>130</sup> Many continental states rely on *lex rei sitae* conflict of laws rule, as explained above, where the property law of the state in which the object is situated governs the validity of the creation and effects of the security interest.<sup>131</sup>

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<sup>128</sup> 1948 Geneva Convention, Art. XVI: “*For the purposes of this Convention, the term ‘air-craft’ shall include the airframe, engines, propellers, radio apparatus, and all other articles intended for use in the aircraft whether installed therein or temporarily separated therefrom.*”

<sup>129</sup> GOODE ON COMMERCIAL LAW 1237 – 1238.

<sup>130</sup> *Honnebier & Milo*, 6.

<sup>131</sup> *Unidroit Study*, 6 - 7.

French, German and Italian laws follow Roman law concerning pledges, which contained concepts of *fiducia*, *pignus* and *hypotheca*.<sup>132</sup> *Fiducia* is the transfer of title to the creditor, *pignus* is the transfer of possession to the creditor, and *hypotheca* is the transfer of neither title nor possession, but a registration of the security interest in a public registry.<sup>133</sup> In France, Germany and Italy, laws exist which allow for the registering of security interests, or at least the financial contract, in public registers. These registers exist for movable assets such as airplanes and ships. The creditor receives a privileged right in the asset, however, that right depends on the terms and conditions of the purchase agreement. Once the debt is repaid, the security right held by the creditor lapses.

In the Netherlands, the *lex rei sitae* generally applies and the 2008 Conflict of Laws Act (“Wet Conflictenrecht Goederenrecht”) codifies this rule as applied to tangible property, claims, shares and securities.<sup>134</sup> However, the *lex registry* rule applies to aircraft.<sup>135</sup>

In the United Kingdom, the Companies Act of 2006 contains registration requirements for interests in securities (which itself replaces prior legislation from 1925),<sup>136</sup> and under it, charges on a ship or aircraft, or on any share in ship, are capable of registration.<sup>137</sup> However, as movable property, conflict of laws issues may then arise, which have been dealt with inconsistently and depending on whether the issues involved are seen as contractual and between the parties, or as being governed by substantive property law rules.<sup>138</sup>

Again, however, because the laws between states in Europe were not uniform, lenders could not be certain that their interests in movable assets were assured in other

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<sup>132</sup> *Larsen & Heilbock*, 711.

<sup>133</sup> *See id.*

<sup>134</sup> Berend Crans, *Aircraft Finance: Recent Developments in the Netherlands*, WHO'S WHO LEGAL, Feb. 2010, <http://www.whoswholegal.com/news/features/article/27576/aircraft-finance-recent-developments-netherlands> (last visited July 20, 2010).

<sup>135</sup> *See id.*

<sup>136</sup> GOODE ON COMMERCIAL LAW 701- 704.

<sup>137</sup> *See id.*

<sup>138</sup> *Id.* at 1237.

European countries.<sup>139</sup> The situation has developed beyond this state-by-state analysis due to the widening and deepening of the European Union and the promulgation of EU-wide rules regarding property rights and interests therein, and the accession by the EU as a regional economic integration organization (REIO) to various international conventions such as Cape Town, as discussed below.<sup>140</sup> Additionally, the situation has become more complex due to the 2001 Rome (and Rome I) Convention on the Choice of Law for Contracts.<sup>141</sup> Were courts to find that the issues between creditors and debtors were related, as a procedural issue, more to the contract between them than the law applicable to the property in question, they might even decide to apply contracts rules and contracts conventions such as this to then decide the substantive issues.

#### D. US LAW

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In the satellite industry, a large number of actors use US laws to secure interests in mobile equipment.<sup>142</sup> They use the Uniform Commercial Code, which contains in *Section 9. Secured Interests*, the framework for securing interests in property as collateral for loans.<sup>143</sup> Section 9-103 of the UCC refers to movable assets and describes the rules applicable for securing interests in movable assets. The airline industry has traditionally availed itself of the UCC code on secured transactions. Additionally, Canada and New Zealand have used the UCC as a model for their own laws respecting secured transactions.

Notably, Section 9 of the UCC states that the laws of the US state in which the debtor is located govern the perfecting of the security interest (along with the effects of perfection and non-perfection).<sup>144</sup> However, if the debtor is located in a jurisdiction

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<sup>139</sup> *Honnebier & Milo*, 7.

<sup>140</sup> Berend Crans, *The Implications of the EU Accession to the Cape Town Convention*, 35 AIR & SPACE L. 1 - 7 (2010).

<sup>141</sup> GOODE ON COMMERCIAL LAW 1221.

<sup>142</sup> *Larsen & Heilbock*, 709.

<sup>143</sup> *See id.*

<sup>144</sup> U.C.C. §§ 9-103 (3) (b).

outside of the US, and which does not allow for the perfection of security interests by filing with a registry, then the applicable law from a US jurisdiction in which the debtor has a “major executive office” govern the perfection of the security interest (along with the effects of perfection and non-perfection).<sup>145</sup> Between the parties creating a security interest, it then seems crucially important and a matter of standard good business practices that the contract between the parties stipulates the applicable law in any agreement.

In correctly registering the security agreement and perfecting the security interest, Section 9-203 requires that 1) the agreement describes the collateral (the asset) involved; 2) that the loan be issued for value; and 3) that the debtor has rights in the collateral. The holder of the interest (the creditor) may then file the interest with the relevant registry in order to ensure their rights are protected.

UCC provisions also address the priority of security interests. Section 9-312 (5) gives priority to first to file the interest over the asset in the appropriate registry. The first is file is given priority over subsequent files.<sup>146</sup> Even if more than one interest exists over an asset, and they were created at separate times, when they are created doesn't matter. When they are filed determines the outcome of the situation. Because the rule is clear and has only a few exceptions,<sup>147</sup> a creditor may examine the registry for previous filed interests over the collateral, and if there is, they will know that when they file their own interest, that interest will be subsequent and therefore subordinate to that claim. This example of relative certainty and predictability is an outgrowth of the freedom to contract given to the parties, and so allow a debtor to favor some creditors over others with differing interests in the collateral in question.<sup>148</sup> However, the foregoing sections show the disparate treatments given secured transactions across different jurisdictions.

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<sup>145</sup> U.C.C. §§ 9-103 (3) (c).

<sup>146</sup> *Jackson & Kronman – Secured Financing*, 1161 – 1164.

<sup>147</sup> *Cf.* U.C.C. §§ 9-312 (4) [stating that purchase money security interests in collateral other than inventory have priority so long as they were perfected by the time the debtor takes possession of the collateral, or within 10 days afterwards]; *See Jackson & Kronman – Secured Financing*, 1143, 1164 – 1166.

<sup>148</sup> *Jackson & Kronman – Secured Financing*, 1168 – 1170.

## VI. EMERGING PRIVATE INTERNATIONAL LAW

### A. UNIDROIT

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The International Institute for the Unification of Private Law (herein Unidroit) is an independent intergovernmental organization headquartered in Rome, whose work is studying the “needs and methods for modernizing, harmonizing and co-ordinating private and in particular commercial law as between States and groups of States.”<sup>149</sup> Unidroit was established in 1926 as an auxiliary organ to the League of Nations, and re-established in 1940 under a multilateral statute.<sup>150</sup> Membership is restricted to states party to the Unidroit charter,<sup>151</sup> which now include countries from over five continents and a wide range of legal backgrounds including both common law and civil law countries. The working languages of Unidroit are English and French (like the United Nations).

Over the years, Unidroit has successfully drafted and submitted for state ratification at diplomatic conferences a number of international conventions. Those most familiar to an American trained attorney with an interest in commercial transactions would be the 1964 Convention relating to a Uniform Law on the International Sale of Goods,<sup>152</sup> and the 1980 United Nations Convention on Contracts for the International Sale of Goods,<sup>153</sup> where work by Unidroit served as a basis for the UN adopted convention. Unidroit began to be interested in the unification of law regarding security interests in mobile equipment following the completion of its work in the 1980s on the Convention on International Financial Leasing.<sup>154</sup>

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<sup>149</sup> *Larsen & Heilbock*, 721; cf. <http://www.unidroit.org>.

<sup>150</sup> GOODE ON COMMERCIAL LAW 17.

<sup>151</sup> Statute of the International Institute for the Unification of Private Law, (amended) Mar. 26, 1993, available at <http://www.unidroit.org/mm/statute-e.pdf>.

<sup>152</sup> GOODE ON COMMERCIAL LAW 17, 1015 – 1026.

<sup>153</sup> *See id.*

<sup>154</sup> Convention on International Financial Leasing, 27 I.L.M. 992, 1 UNIF. L. REV. 135; *See Larsen & Heilbock*, 721.

## B. THE CAPE TOWN CONVENTION

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With the working philosophy that uniform law tends to facilitate international trade, in 1968 UNCITRAL (the United Nations Commission on International Trade Law) began to investigate the fragmentation of national laws over security interests in movable assets. However, their investigations concluded that, due to the complexity of the issues involved, unifying the laws on movable assets would be too difficult.<sup>155</sup>

In 1988, Unidroit began investigating national laws on this issue and concluded that national rules, such as conflict of law rules like the *lex rei sitae* rule, inadequately resolved the problems created by the fragmented national laws on security interests in movable assets. A Canadian member of the Unidroit governing council authored a study which agreed with the UNCITRAL study, concluding that unifying national laws would be very difficult, and therefore that substantive international law on the issue would be more feasible.<sup>156</sup>

The Unidroit study looked at various legal traditions and how they addressed interests in movable property, and also at the national conflict of law rules applicable to interests in movable property created in foreign jurisdictions and their treatment in domestic forums. It found that current national conflict of laws rules on this topic fall within a spectrum, but that they were largely inappropriate for international commercial interests.<sup>157</sup>

Since the importance and need was felt for substantive law on an international level, which was also appropriate for commercial needs, Unidroit began work on a draft convention on international interests in movable assets.<sup>158</sup> By 2001, the long

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<sup>155</sup> *Larsen & Heilbock*, 722.

<sup>156</sup> *Larsen and Heilbock*, 723; *See Unidroit Study*, 5.

<sup>157</sup> *Unidroit Study*, 5: “Uniformly inappropriate conflict of laws rules are of no assistance to those whose economic interests depend upon commercially reasonable and fair treatment under the laws of nations in which those interests are secured.”

<sup>158</sup> CAPE TOWN OFFICIAL COMMENTARY, *Annex XI—Chronology of the development of the Cape Town Convention and Protocols thereto up to and including the Diplomatic Conference* 363 - 372.

work at Unidroit came to fruition as their Convention on International Interests in Mobile Equipment was submitted for ratification at a diplomatic conference held in Cape Town, South Africa.<sup>159</sup> At the behest of Unidroit,<sup>160</sup> the convention is now informally known as the Cape Town Convention.<sup>161</sup> The Convention entered into force in 2004 along with the Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Aircraft Equipment. The Cape Town Convention has 36 contracting states,<sup>162</sup> and the Aircraft Protocol has 31 contracting states.<sup>163</sup>

One of the main novel innovations of the Cape Town framework is its structure. The Cape Town Convention itself is supplemented by the protocols, each of which applies to a different class of high-value mobile equipment. The Convention and the Protocol are to be read and interpreted as a single instrument.<sup>164</sup> However, where and if the Convention and the Protocol differ, the Protocol takes precedence.<sup>165</sup> The two-instrument structure was chosen so as to avoid duplication and confusion, and so that a uniform set of rules (and interpretation of those rules) applies to mobile equipment, but equipment-specific provisions can be addressed in each relevant protocol.<sup>166</sup>

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<sup>159</sup> ROY GOODE, *The Cape Town Convention on International Interests in Mobile Equipment: A Driving Force for International Asset-Based Financing*, 1 UNIF. L. REV. 3 – 15 (2002) [herein *Goode – Cape Town, a Driving Force*]; See CAPE TOWN OFFICIAL COMMENTARY 1, 372.

<sup>160</sup> *See id.*

<sup>161</sup> *Goode – Cape Town, a Driving Force*, 12.

<sup>162</sup> Status of the Convention, <http://www.unidroit.org/english/implement/i-2001-convention.pdf>, (last visited July 12, 2010).

<sup>163</sup> Status of the Protocol, <http://www.unidroit.org/english/implement/i-2001-aircraftprotocol.pdf> (last visited July 12, 2010).

<sup>164</sup> Cape Town Convention, Art. 6 (1); See Dietrich Weber-Steinhaus, *Security Rights Over Satellites: An Update on the UNIDROIT Draft Protocol*, CONTRACTING FOR SPACE (Symposium, Nov. 27, 2009) [herein *Bremen Symposium*].

<sup>165</sup> Cape Town Convention, Art 6 (2); See *Bremen Symposium*.

<sup>166</sup> CAPE TOWN OFFICIAL COMMENTARY 7.

The Convention solves in a novel way the problems of the multiplicity of rules from state to state regarding the creation, perfection and execution of interests in assets (as discussed in Chapter III. B above) by subverting the relevance of national registers. It does not seek to unify the national registers or the national rules relating to interests. Rather, it creates an *international* registry for the recording of *international* interests. These international interests on the registry give notice to potential creditors without them having to search the different registries in the jurisdictions where they are created. The creditor's priority is thenceforth preserved (perfected), as the registration gives notice to third parties.<sup>167</sup> The impetus for this is to give greater confidence to financiers when granting credit, which has the further effect of lowering costs of financing to borrowers, lessees and operators. Lowering the cost of financing is precisely the crucial effect all concerning industries, including the entire space industry, is eager to secure.

#### 1. *Main Aspects of the Convention*

Looking to the structure of the Convention itself may give the appearance that it is a highly complicated source of law, and the presence of fourteen chapters containing sixty-two separate articles, as well as language unique to the Convention, may help to explain the trepidation felt when first approaching the text. A number of phrases were specially created for the Convention, including “associated rights”, “internal transaction”, “national interest” and “non-consensual right or interest”, and can only be understood in the context of the Convention as a whole and in accordance with their definition in the Convention.<sup>168</sup>

The Convention has three foundational innovations or points; 1) the existence of the Convention working with the specific provisions of the relevant Protocol; 2) the creation of an international interest, recorded on an international registry; and 3) the uniform default provisions. With these main points in mind, the subtle and complex particulars of the Convention can be explored as the need arises, or as curiosity demands.

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<sup>167</sup> CAPE TOWN OFFICIAL COMMENTARY 4.

<sup>168</sup> *Id.* at 8.



The first chapter gives general definitions, including the definition of the different labels attached to the parties involved - depending on what type of agreement they use for the creation of the international interest. The overarching label of “creditor” is given to the party which will be supplying funds and wishes to have their interests in the movable asset recorded under the Convention. The Official Commentary notes that a creditor is “a term use to denote a person to whom obligations are owed under an agreement where the relevant provision of the Convention does not distinguish between one form of agreement (*e.g.* a security agreement) or another (*e.g.* a title reservation agreement or leasing agreement).”<sup>169</sup> This creditor may be labeled either a “chargee” under a security agreement, a “conditional seller” under a title reservation agreement, or a “lessor” under a leasing Agreement.

In turn, the overarching label of “debtor” is given to the party which will be asking for funds or a loan, and using their movable asset as collateral to secure such funds. They will be the party giving the security interest to the creditor. The debtor is called the “chargor” under a security agreement, the “conditional buyer” under a title reservation agreement, or a “lessee” under a leasing agreement. These types of agreements: the security agreement, the title reservation agreement and the leasing agreement, are also given separate definitions by the Convention in Chapter 1, Article 1. The Official Commentary merely notes that a debtor is “the person who owes obligations under an agreement.”<sup>170</sup>

	CREDITOR	DEBTOR
<i>Security Agreement</i>	“Chargee”	“Chargor”
<i>Title Reservation Agreement</i>	“Conditional Seller”	“Conditional Buyer”
<i>Leasing Agreement</i>	“Lessor”	“Lessee”

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<sup>169</sup> CAPE TOWN OFFICIAL COMMENTARY 52.

<sup>170</sup> *Id.* at 52, §11.

In addition to subverting the fragmentation of national registers, the Convention applies to international interests regardless of where the creditor is situated. Of sole relevance is whether the debtor is in a contracting state to the Convention at the time of the conclusion of the agreement creating the interest.<sup>171</sup>

Additionally, the Convention establishes priority between competing claims with the first registered interest taking priority over subsequently registered interests and unregistered interests, similar to the U.C.C.<sup>172</sup> It likewise does not matter whether a creditor registering their interest has notice of any unregistered interests. So long as their interest is registered first, their interest has priority. These simplifications of applicable rules further make the registration system clearer and more uniformly applicable for all users.

### 1. *The International Interest*

Article 2 of the Convention creates a uniform class of international interests, establishing a uniform set of standards or requirements for their creation. Rather than the differing interests in property which may exist across the various property law regimes, these interests will be recognized by all states parties to the Convention and its relevant protocol.<sup>173</sup> These interests are essentially property rights that parties have in relation to the asset.

Article 7 of the Convention sets out formal requirements for the creation of an international interest: the agreement creating the interest must 1) be in writing; 2) relate to an object of which the chargor, conditional seller or lessor has power to dispose; 3) enable identification of the asset in conformity with whatever protocol in falls under; and 4) allow the security obligations to be determined (in the case where the agreement creating the interest is a security agreement).

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<sup>171</sup> Cape Town Convention, Art. 3; *See* CAPE TOWN OFFICIAL COMMENTARY 61, §1 – 2.

<sup>172</sup> Cape Town Convention, Art. 29; *See* CAPE TOWN OFFICIAL COMMENTARY 106 – 113; *See* GOODE ON COMMERCIAL LAW 1238.

<sup>173</sup> *See id.*

## 2. *The International Registry*

The Convention creates an international registry to record the interests to the each different protocol, together with a supervisory authority to that registry. For the Aircraft Equipment Protocol, the International Civil Aviation Organization (ICAO) serves as the Supervisory Authority to the registry.<sup>174</sup> The physical registry itself is situated in Dublin and a private firm, Aviareto Limited (a joint venture between the Société Internationale de Télécommunications Aéronautiques [SITA] and the Government of Ireland, incorporated in the Republic of Ireland,)<sup>175</sup> serves as Registrar to the Aircraft Equipment Protocol registry.<sup>176</sup> The registry is available online, but subject to user authorization by Aviareto.<sup>177</sup> Rights holders of the international interests register their rights, and this information is then available to third parties and to the public at large.

This registration gives priority over unregistered interests in the property in the case of insolvency. It should be stressed that over space objects such as satellites, this future Cape Town registry would be different from the national and international registries which concern physical objects and not necessarily property interests,<sup>178</sup> (See Chapter IV. A. on registry of space objects, above).

Chapters 6 and 7 of the Convention establish the privileges and immunities of the Supervisory Authority and the limitations of liability of the Registrar. The

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<sup>174</sup> Resolution No. 2 adopted by the Cape Town Diplomatic Conference on November 16<sup>th</sup>, 2001.

<sup>175</sup> C.G.E./Space Pr./3/W.P. 7 rev. 8.

<sup>176</sup> Aviareto Ltd., *Third Annual Statistical Report, 1 January 2008 to 31 December 2008* (2010), available at <https://www.internationalregistry.aero/irWeb/pageflows/work/Reports/DownloadAnnualReport/DownloadAnnualReportController.jspf>

<sup>177</sup> Aviareto Ltd., International Registry of Mobile Assets, <https://www.internationalregistry.aero/irWeb/Controller.jspf> (last visited July 22, 2010).

<sup>178</sup> OOSA, Online Index of Objects Launched into Outer Space, <http://www.oosa.unvienna.org/oosa/soindex.html>.

Supervisory Authority has legal personality,<sup>179</sup> and it and its officers and employees shall enjoy legal and / or administrative immunity as according to the protocol they supervise, including tax exemption from their host state.<sup>180</sup> The Registrar is, however, liable for “compensatory damages for loss suffered” resulting from their error or from preventable malfunctions of their system, but not for factual inaccuracies as received by the Registrar.<sup>181</sup>

### 3. *Uniform Default Remedies*

The Convention creates a uniform set of default rules for the unfortunate event of debtor’s default. Again, these do not have to depend on the particular laws of whatever foreign jurisdiction the movable asset happens to be in when the debtor defaults. It does not depend on the particular rules of the country for exercising of the remedies.<sup>182</sup> The Convention creates remedies for enforcement of rights or interests over the movable assets, including speedy interim relief, and including relief without judicial intervention.

Article 11 — “Meaning of default” states that the debtor and the creditor may agree in writing as to what constitutes a default giving rise to the remedies of the Convention. They may also specify what other conditions give rise to remedies under the Convention. If the parties do not specifically define in writing what is a default, or what otherwise give rise to the remedies, then default “for the purposes of Articles 8 to 10 and 13 means a default which substantially deprives the creditor of what it is entitled to expect under the agreement.”<sup>183</sup>

The Official Commentary stresses that while the availability of adequate and readily enforceable default remedies “is of crucial importance to the creditor, who must be able to predict with confidence its ability to exercise a default remedy expeditiously”, the remedies in Chapter 3 of the Convention are only basic remedies

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<sup>179</sup> Cape Town Convention, Art. 27 (1).

<sup>180</sup> *Id.* at Art. 27 (2).

<sup>181</sup> *Id.* at Art. 28 (1) and (2).

<sup>182</sup> *See id.*

<sup>183</sup> *Id.* at Art. 11.

in the even of default.<sup>184</sup> Registration is only to provide notice to third parties, and to protect the priority of the international interest against other subsequent interests. Any remedies held by the Creditor, as “chargee”, existing in the Convention are only basic remedies and may be supplemented by their actual written agreement. Remedies held by a chargee are contained in Articles 8 and 9, and those held by a “conditional seller” and a “lessor” are held in Art. 10.

### C. THE AIRCRAFT PROTOCOL

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The protocols to the Cape Town convention are threefold: the Aircraft Equipment Protocol, the Railway Rolling Stock Protocol, and the draft Protocol on Space Assets. Only the Aircraft Protocol is in force, as of March 1, 2006.<sup>185</sup> However, the Railway Protocol was concluded on February 23, 2007 in Luxembourg and currently has four states and one REIO signatory, the EU.<sup>186</sup>

The Aircraft Equipment Protocol may serve as a model for the other Protocols. The aircraft industry is already well-established industry with a long history and global scope, with large commercial actors who have been subject to market forces for many decades. However, many smaller countries and emerging economies host to smaller firms are eager to benefit from lowered costs of financing and the protections of the Cape Town Convention. Of note to many users and commentators of the Aircraft Protocol is the specificity under the Convention and the Aircraft Protocol which is given to interests which may be registered.

Under the 1948 Geneva Convention, financiers were not able to register component parts of the aircraft separately. The legal fiction of “accession” or “title annexation” was very problematical.<sup>187</sup> As discussed above, according the 1948

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<sup>184</sup> CAPE TOWN OFFICIAL COMMENTARY 13.

<sup>185</sup> GOODE ON COMMERCIAL LAW 1238.

<sup>186</sup> *See id.*

<sup>187</sup> 1948 Geneva Convention Art. XVI; *See* Mattias Reuleaux & Hein C. Tonnaer, *Financing Aircraft Engines – Pitfalls and Solutions*, 56 ZEITSCHRIFT FÜR LUFT–

Geneva Convention, an aircraft was defined to include its engines and other parts, and all other articles intended for use with the aircraft, regardless of whether they were even attached or temporarily separated from the aircraft itself. There was no possibility of separate registration of rights in the component parts of the aircraft, even though the financing for aircraft and aircraft engines are done separately, and aircraft engines are removed from the planes and replaced with alternative engines and engine parts.<sup>188</sup> This negatively affected the certainty that creditors and financiers of aircraft and aircraft engines desired.

The Cape Town Convention was drafted to be flexible enough to alleviate the problems of accession through a registry where any international interests in the asset may be registered (so long as the Convention's specific requirements are met).<sup>189</sup> Should similar problems exist in other Protocols, it is likely that the Protocols specific to whichever equipment they address may be skillfully crafted so as to encompass these complexities.

In satellites, for instance, there are issues regarding component parts of the satellite such as the transponders — the transceivers that receive and return signals on different wavelengths. While individuals from many sectors of commercial activity stress that their sector is a truly unique sector with unique needs, wholly *sui generis* from other areas of commercial activity, this belief, in turn, is widely held across many disparate fields of commercial activity and used as a justification for special treatment.

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UND WELTRAUMRECHT VOL.1, 33 (2007) [herein *Reuleaux & Tonnaer — Financing*].

<sup>188</sup> *Id.* at 1.2.

<sup>189</sup> Patrick Honnebier, *Clarifying the Alleged Issues Concerning the Financing of Aircraft Engines*, 56 ZEITSCHRIFT FÜR LUFT- UND WELTRAUMRECHT VOL.1, 383N (2007).

## D. THE DRAFT PROTOCOL ON SPACE ASSETS

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The development of a protocol to the Cape Town Convention on Matters Specific to Space Assets [hereinafter the draft Protocol on Space Assets] was envisioned along with the other protocols in the drafting phase of the Convention itself but, regrettably, the protocol on space assets is still in draft form. The following subsections explain the development of the draft Protocol on Space Assets, along with key features and undecided issues in the draft Protocol, an attempt at explaining the resistance and difficulties it has faced, and why a finalized protocol may still achieve the goals its drafters sought to achieve.

There has been a shift in support for the draft Protocol on Space Assets, perhaps because the lengthy drafting process has sapped enthusiasm towards it, or perhaps because the draft Protocol has become lengthy and complex. However, it is the view of this author that work on the draft Protocol on Space Assets should continue, taking into account the interests of all parties that it may eventually affect, and with a view to finalizing it and submitting it to states for ratification, so that it may be subsequently implemented by the commercial sector.

### 1. *Early Development of the Protocol*

Work toward the draft Protocol on Space Assets began prior to the completion of the Cape Town Convention.<sup>190</sup> In 2001, the United Nations Committee on the Peaceful Uses of Outer Space first considered the then working draft Protocol on Space Assets at the 40<sup>th</sup> session of its legal subcommittee and in 2001, COPUOS established an *ad hoc* joint consultative mechanism to review the draft Protocol.<sup>191</sup> Initially, the space assets protocol was much anticipated, and received much attention.<sup>192</sup> The first meeting of the Committee of Governmental Experts took place in December 2003,

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<sup>190</sup> CAPE TOWN OFFICIAL COMMENTARY 371.

<sup>191</sup> *See id.*

<sup>192</sup> Dee Ann Divis, *Pact to Make Aerospace Loans Obtainable*, SPACE.COM, July 7, 2000, [http://www.space.com/business/technology/business/space\\_treaty\\_000707.html](http://www.space.com/business/technology/business/space_treaty_000707.html).

and the second meeting of the committee took place in October 2004.<sup>193</sup> Subsequently, intersessional work continued on certain key outstanding issues, and various meetings of the steering committee to build consensus around the work (and subcommittees of the steering committees over other issues such as public service) have met from 2006 to 2009.<sup>194</sup>

At a meeting in New York in June 2007, it was recommended that the sphere of application of the draft Protocol be “narrowed down to concentrate essentially on the satellite in its entirety — considered to represent the category of space asset covered by 80% of the transactions subject to asset-based financing of the kind contemplated by the ... Cape Town Convention.”<sup>195</sup>

Subsequently, the matter of identification of space assets was discussed by the Steering Committee. It was considered that criteria should be spelled out in the Protocol, and that these may be supplemented by regulations promulgated by the Supervisory Authority when the Protocol comes into force.<sup>196</sup> For satellites, certain criteria might apply (description of the satellite, name of manufacturer, model, launch site and date, orbital parameters, etc.). For other categories of space asset, similar criteria might be promulgated by the Supervisory Authority.<sup>197</sup> Additionally, there was recognition of the fact that “the situation might well change in the future, notably as regards re-usable launch vehicles, in light of the developments in the commercial space field, so that, even if it might be difficult to conceive, in practice, of the creation of an international interests in a launch vehicle at the present time, this could become possible in the future, with the result that it might be advisable for the future Protocol to envisage such a possibility.”<sup>198</sup>

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<sup>193</sup> C.G.E./Space Pr/3/Report §2

<sup>194</sup> C.G.E./Space Pr/3/Report §2; *See Unidroit, Annual Report – 2009*, 7.

<sup>195</sup> Unidroit, *Annual Report – 2009* (Rome, 2009) pg. 9, II. Legislative Activities, A. Work in Progress. 1. *International Interests in Mobile Equipment* a. Preliminary draft Space Protocol; *See C.G.E./Space Pr./3/W.P. 7 rev. 3*; *See Study LXXIIJ – Doc. 14, 3.*

<sup>196</sup> C.G.E./Space Pr./3/W.P. 7 rev. 3.

<sup>197</sup> *See id.*

<sup>198</sup> *Id.* at 5 – 6, n.20.



## 2. *Recent Development of the Protocol*

The most recent version of the draft Protocol on Space Assets is contained in the latest interim report of the Drafting Committee. It is contained in Appendix VII (at page 78) of the May 2010 report from the Unidroit Secretariat. It reflects changes in light of the decisions of the Committee of Governmental Experts which met in Rome from May 3<sup>rd</sup> until May 7<sup>th</sup> of 2010. The document code is C.G.E./Space Pr./4/Report and will download directly from:

<http://www.unidroit.org/english/documents/2010/study72j/cge-session4/cge-4-report-e.pdf>

While it may be a spurious endeavor to discuss specific provisions of the most recent revised draft Protocol on Space Assets, which will no doubt undergo further consideration by the fifth meeting of the Committee of Governmental Experts (scheduled to meet from February 21<sup>st</sup> through the 25<sup>th</sup> of 2011),<sup>199</sup> it will nevertheless be meaningful to discuss some of the provisions which have undergone significant revision. Not all of the objections and resistance which the draft Protocol is available in documented form, however.<sup>200</sup> Nor will it be particularly fruitful or elucidatory to engage in speculation as to the motives of various industries, countries, groups of countries, delegations, institutions, or other parties.

## 3. *Public Service Issues*

A number of complex issues have been brought before the member states considering the protocol, including the definition of “space” and the definition of “space assets”,<sup>201</sup> the lack of provisions dealing with “salvage rights” over a satellite,<sup>202</sup> and

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<sup>199</sup> Unidroit, NEWS AND EVENTS, <http://www.unidroit.org/dynasite.cfm> (last visited Aug. 8, 2010).

<sup>200</sup> *IISC Workshop 2009*, 120 [Space commerce workshop participants in the Isle of Man in Nov. 2009 agreed that more banks need to be brought into space financing but that “proposals emanating from the Unidroit forum were not the way to go”].

<sup>201</sup> C.G.E./Space Pr./3/Report § 14 – 20.

<sup>202</sup> C.G.E./Space Pr./3/Report § 38 – 39; *See* C.G.E./Space Pr./3/W.P. 9

related rights such as debtors rights,<sup>203</sup> and much debate on the nature of public service which might be adversely affected by a satellite and / or interests in a satellite changing hands.

This last issue is especially complicated, and the Steering Committee has established a sub-committee on public service after its May 2008 meeting in Berlin.<sup>204</sup> Just as many space systems have a dual use (civilian and military) many space systems may be owned and / or controlled by sovereign states and private entities, or jointly owned and controlled. When default provisions over a space asset such as a satellite require that ownership and / or control of the satellite change hands, their operations may change. Previously, the satellite may have been taking part in important functions for the state, such as meteorology, or sensitive and important telecommunications. Should those important functions (“public services”), upon which a state and its people rely, be discontinued because a private entity working in conjunction with the state has defaulted? Unnecessary hardships for many people may result because of the uniform default provisions contained in the draft Protocol on Space Assets, and developing and emerging economies were wary of provisions which would allow for this, and they have expressed their concern, which then lead to the inclusion of certain limitation on remedies provisions to successive drafts of the protocol.

The problem was expressed as being “how best to balance the need of Governments to guarantee the continuation of a public service performed by a space asset where the debtor was in default, on the one hand, with the rights of the creditor upon such default...”<sup>205</sup> Essentially, the activation of the default provisions is a rare event, and adverse effects to public service by such default provisions would be an even rarer event. Therefore, it may be left to member states to make declarations, in their ratifications of the Protocol, under what circumstances a service is a public service and resulting measures. Eventually, the issue of public services was dealt with through the addition of a new article to the draft Protocol to satisfy these concerns

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<sup>203</sup> C.G.E./Space Pr./3/Report § 21.

<sup>204</sup> Unidroit, *Annual Report – 2009* (Rome, 2009) 9, II. *Legislative Activities, A. Work in Progress. 1. International Interests in Mobile Equipment a. Preliminary draft Space Protocol.*

<sup>205</sup> *See id.*

discussed at the 3<sup>rd</sup> meeting of Governmental Experts, but the concerns were adequately addressed and the article was subsequently deleted from the latest version.

#### 4. *UK Comments to the Draft*

At the December 2009 meeting of Governmental Experts, the Unidroit Secretariat published to the Committee two separate working papers containing comments submitted by the United Kingdom,<sup>206</sup> and comments on the alternative text submitted by the Government of Canada.<sup>207</sup> These working papers reflect some of the hesitancy and resistance felt by stakeholders and possible stakeholders to the draft Protocol on Space Assets.

The comments submitted by the Government of the United Kingdom were the cause of considerable consternation, and their diplomatic nature belie the gravity of what they suggested. They state that, considering the potential impact of the draft Protocol on Space Assets which might be felt by stakeholders, such as those in the satellite industry, certain concerns have been raised and must be addressed. In their view, the impact of the protocol, if implemented, would primarily be felt by the commercial world. Consequently, the United Kingdom proposed “that Unidroit commission a report on the economic impact the Protocol would have in its current format. The report should seek to clarify what problems would the Protocol solve? Who would benefit from the Protocol and how? Would it add to current national regime's capabilities to raise finance? Would it improve the ability of organizations to do business in space? What detrimental effect could the Protocol have?”<sup>208</sup>

They additionally added that further work on the draft Protocol on Space Assets be postponed pending the publication of such a report. Such a report, of the expected impact of a draft international convention, created *during* the actual drafting, revision and re-drafting of such a convention seems unique, to this author, in this field of international treaty creation. While a professional, diplomatic environment prevailed at the December 2009 meeting of Governmental Experts where the contents of this letter were addressed, certain governmental delegates expressed incredulity and

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<sup>206</sup> C.G.E./Space Pr./3/W.P. 12.

<sup>207</sup> C.G.E./Space Pr./3/W.R. 13.

<sup>208</sup> C.G.E./Space Pr./3/W.P. 12.

exasperation towards the suggestions these comments reflect, especially considering the long time which had already been put towards the drafting and eventual completion of the draft Protocol on Space Assets.<sup>209</sup>

These comments were especially surprising as they were coming from the UK government, while the head of the UK delegation to the Unidroit Committee of Governmental Experts was also the Chairman of the Drafting Committee on the draft Protocol on Space Assets, as well as being heavily involved with the drafting of the Cape Town Convention itself, and the author of the Official Commentary to the Cape Town Convention and the Aircraft Equipment Protocol, the authoritative guide published by Unidroit in 2002 and also subsequently updated. It was evident that Unidroit and the entire Committee of Governmental Experts and delegates had the profoundest respect and admiration for the UK delegate, and that he had to relay these comments from his own government demonstrates the complex and divided sentiment from member states regarding the present work of Unidroit — member states which both wish to further the work of Unidroit and wish, simultaneously, to protect the best interests of stakeholders they represent and whose interests may be affected by the implementation of the draft Protocol.

Some few other delegations supported this proposal, noting that “industry support was critical for the development of the preliminary draft Protocol and that, in their consultations with stakeholders in the satellite industry, the obstacles intended to be overcome by the preliminary draft Protocol were rare.”<sup>210</sup>

However, many other delegations were of the opinion that Unidroit should continue its work, considering that the Unidroit governing council stressed the timely completion of the Protocol and that the needs of all possible stakeholders, such as those in developing countries and emerging economies stood to benefit from the completion of the protocol.<sup>211</sup> Additionally, the application of the Protocol would extend to various sectors of the commercial space sector and not merely towards

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<sup>209</sup> C.G.E./Space Pr./3/Report § 13.

<sup>210</sup> C.G.E./Space Pr./3/Report § 11.

<sup>211</sup> C.G.E./Space Pr./3/Report § 12.

communications satellites.<sup>212</sup> Additionally, it was mentioned that it was up to individual member states to decide whether they ratify the Protocol.<sup>213</sup>

#### 5. *Canadian Comments to the Draft.*

Subsequently, the comments on the alternative text submitted by the Government of Canada were similarly considered. The comments from Canada addressed a host of points of resistance to the draft Protocol, and were grouped into four broad categories.

Firstly, Canada stated that “there is a disconnect between the provisions of the draft Space Protocol and the provisions of other international instruments”<sup>214</sup>, namely that the draft Protocol on Space Assets, as the first private international space law, which deals with so many disparate areas (public international law, private international law, national space law and regulation, international finance, and the aerospace, satellite and telecommunications industries) requires very careful crafting to address all possible concerns. However, this author feels that the skillful work by the Drafting Committee, in light of the comments and suggestions by all interested parties, will eventually address the issues implicated by the various bodies of law informing the draft Protocol.

Secondly, Canada stated that “there is a disconnect between the draft Space Protocol and Canadian policy regarding satellites. It is our understanding that other States may have similar issues.”<sup>215</sup> This concern is related to default provisions whereby debtors must give possession and / or control of a space asset to creditors. Because “most satellites operated by Canadian entities are subject to Canadian ownership and control requirements”,<sup>216</sup> Canada felt that, where such possession and / or control be given to a creditor, in many cases a non-Canadian creditor would not meet such requirements. An additional complication to this scenario is that Canadian law regarding this only applies to Canadian space objects which it has jurisdiction and

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<sup>212</sup> C.G/E./Space Pr./3/Report § 12.

<sup>213</sup> *See id.*

<sup>214</sup> C.G.E./Space Pr./3/W.P/ 13, 2.

<sup>215</sup> *See id.*

<sup>216</sup> *See id.*

control over, and were a non-Canadian creditor to take possession and / or control, Canada fears that it would lose its authority over such an object.

Thirdly, Canada stated that it was “unclear whether the draft Space Protocol would allow the restriction of creditor's remedies based on strategic governmental interests.”<sup>217</sup> Namely, Canada has certain space assets which it considers to play an important part of its national security, or which have important roles in serving national interests or are important in international relations, even though these space assets may be owned or operated by commercial, private entities. Canada would therefore be loath to see these assets, through default of the private entity, leave their control or possession.

Lastly, Canada stated that Canadian “satellite operators do not support the supra-national legal regime proposed by the draft Space Protocol.”<sup>218</sup> Canada's comments then go on to state that the commercial sectors interested in satellite financing — satellite operators and financial institutions — see no need or demand for a new legal regime over these interests in movable property. They state that, in “their experience, there is very little asset-based financing in the satellite sector, and consequently very few instances where it is necessary to execute on assets and even fewer situations where conflicting national legal regimes have caused serious concern. Moreover, Canadian operators are not aware of any instance where creditors declined to provide financing for a satellite project for lack of sufficient international protection of their security interests. Once a satellite is launched, the essential element for a lender is the value of the cash flow from the asset and less so the value of the satellite hardware itself.”

The concerns raise in this last point were addressed in the November 2009 report prepared by the Unidroit Secretariat, a summary of the Committee of Governmental Experts' Sub-committee to examine certain aspects of the future international registration system for space assets.<sup>219</sup> It points to a real-world example where these issues arose, and would have been more than adequately dealt with under a Space Protocol if it were in force.

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<sup>217</sup> C.G.E./Space Pr./3/W.P/ 13, 3.

<sup>218</sup> *See id.*

<sup>219</sup> C.G.E./Space Pr./3/W.P. 7 rev., 2, n.9.

A complaint had been filed in the US to “stop the auctioning of the satellite Protostar 1, one of two satellites belong to Protostar Ltd., a company which had recently filed for bankruptcy in that country. The complaint had alleged uncertainty as to the law or laws applicable to the enforceability of security interests in assets located in outer space, uncertainty that arose in particular as regards the priority ranking of interests secured in such assets. The complaint alleged that, priority not having been properly established under any jurisdiction, all claims by creditors should be treated equally, including claims by unsecured creditors.”<sup>220</sup>

The largest claim by an unsecured creditor of Protostar was held Phillipian Long Distance Telephone Co, with a \$27.5 Million USD against Protostar.<sup>221</sup> In the view of this author, the situation regarding the uncertainty over creditor’s interests in Protostar would indeed have been dealt with adequately by the provisions of the Space Assets Protocol, were it in force and applied to the Protostar situation.

#### 6. *Satellite Industry Association Comments*

The last issue raised by Canada overlaps with the concerns expressed in comments submitted to the Unidroit secretariat in February 2010 from the Satellite Industry Association (SIA). After the December meeting of Governmental Experts, the new revised preliminary draft Protocol on Space Assets, was transmitted to Governments, organizations and representative of the international commercial space, financial and insurance communities and comments to it were requested. These comments were published and made available at the May 2010 meeting of the Committee of Governmental Experts.<sup>222</sup>

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<sup>220</sup> C.G.E./Space Pr./3/W.P. 7 rev., 2, n.9 [mentioning the Motion of Official Committee of Unsecured Creditors for order precluding the Bank of New York Mellon (as successor in interests to the Bank of New York) and Wells Fargo Bank, National Association, from credit bidding at auction sale of Protostar I Ltd. Assets, Protostar Ltd, *et al.*, United States Bankruptcy Court for the District of Delaware].

<sup>221</sup> Bob Van Voris, *ProtoStar Ltd., Satellite Operator, Files Bankruptcy (Update2)*, BLOOMBERG NEWS, Jul. 29, 2009, <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=azTK2TQ5dmzA>

<sup>222</sup> C.G.E./Space Pr./4/W.P. 4 rev.

The Peoples Republic of China, the Czech Republic, Greece, and Japan submitted comments; from the international commercial space, financial and insurance communities, comments were received from the law firms Baker & McKenzie and Milbank, Tweed, Hadley & McCloy; further comments were received from SES S.A., Intelsat, Crédit Agricole S.A., ManSat, SKY Perfect JSAT Corporation, Ciel Satellite, O3b Networks, QuetzSat, Avanti Communications, ING, Aviareto, and also from various experts in international space law and commercial law, along with comments from the Satellite Industry Association of the United State of America.<sup>223</sup>

The Satellite Industry Association (SIA) is a US-based trade association representing satellite operators, service providers, manufacturers, launch service providers, and ground equipment supplies.<sup>224</sup> It aims to be the unified voice of the US satellite industry on policy, regulatory, and legislative issues.<sup>225</sup>

The SIA expressed serious concerns about the draft Protocol at the 3<sup>rd</sup> session, and reiterated that industry support is “critical for the development of any such Protocol.”<sup>226</sup> Unidroit and the Drafting Committee then prepared a revised version of the preliminary draft Protocol, hoping to create a “commercially viable Protocol”. The SIA response to this revised Protocol was that after “reviewing the revised preliminary draft Protocol, S.I.A. and its members are of the view that virtually all of the concerns it had previously raised in its correspondences with Unidroit remain unresolved.”<sup>227</sup>

The SIA believes that the Protocol will not achieve the goals it was designed to meet, and will actually hinder asset-based satellite financing. It believes that the Protocol is an “additional, unnecessary, burdensome, and vague layer of law through broad, unclearly defined rules of ownership, security interests and salvage rights in space assets.”<sup>228</sup>

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<sup>223</sup> C.G.E./Space Pr./4/W.P. 4 rev., 7 – 20.

<sup>224</sup> *Id* at n.2; *See* Satellite Industry Association, <http://www.sia.org> (last visited July 22, 2010).

<sup>225</sup> C.G.E./Space Pr./4/W.P. 4 rev., 7.

<sup>226</sup> *Id.* at 8.

<sup>227</sup> *Id.* at apps. II & III.

<sup>228</sup> *Id.* at rev., 8.



These serious concerns were put into the following categories which the SIA found most troubling: “1) the sphere of application of the revised preliminary draft Protocol with particular reference to the definition of ‘space assets’; 2) the priority of competing rights regarding components in the context of the exercise of default remedies; 3) the public service exemption from default remedies; 4) the issue of salvage interests in space assets; 5) Criteria for the identification of space assets for the purposes of registration; and 6) Debtor’s rights and the assignment of debtor’s rights.”<sup>229</sup>

The SIA believe that the revisions indicate a “drafting trend that is more responsive to the requirements and concerns of Governments, rather than those of the satellite and the financial community most affected by the proposed Protocol.”<sup>230</sup> It then goes on to state that the SIA and its members “respectfully request that you cease work toward the draft Protocol, considering the satellite industry’s vigorous objections and the potential deleterious effect such a Protocol would wreak on [the] sector worldwide.”<sup>231</sup>

These comments reflect resistance to the draft Protocol of a very grave nature. They were also supplemented by comments directly from SES S.A., Ciel Satellite, Intelsat, QuetzSat, Avanti Communications, ING and ManSat, which mirrored the above concerns and added additional concerns about various articles in the draft Protocol.<sup>232</sup> It remains unclear if these comments actually spell doom for the space assets Protocol, or if this is merely the “give and take” necessary in the drafting of a complex international private law treaty incorporating such a wide range of actors, disciplines and commercial sectors.

In a letter to the Unidroit secretariat from the SIA in November 2009, the SIA stated that they believe that the proposed draft Protocol would “create potential additional conflicts, potentially chilling the very space asset financing Unidroit seeks to encourage.”<sup>233</sup> They go on to state that they believe “[a]sset-based satellite financing is infrequent relative to other classes of high-value mobile assets, such as

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<sup>229</sup> C.G.E./Space Pr./4/W.P. 4 rev., 8.

<sup>230</sup> *See id.*

<sup>231</sup> *Id.* at 9.

<sup>232</sup> *Id.* at 14 – 29.

<sup>233</sup> C.G.E./Space Pr./4/W.P. 4 rev., app. II.

aircraft, vessels and rolling stock. Parties seeking such financing typically are already able to obtain necessary financing.”<sup>234</sup>

These comments require critical analysis. It may be true that asset-based satellite financing is infrequent relative to other classes of high-value mobile equipment — including aircraft equipment, and even other high-value equipment not addressed by the Cape Town Convention. However, the dearth or infrequent use of high-value mobile equipment used to secure financing is the very reason for the Cape Town Convention, indeed the very situation the Convention seeks to address. It is this infrequency, due its difficulty or impossibility, which the Unidroit study analyzed and which the recitations in the preamble to the Cape Town Convention stress.

The second comment above, “Parties seeking such financing typically are already able to obtain necessary financing” is tautologous. It states a belief that all those who secure financing are those who are able to secure financing, and those who cannot secure financing do not seek it. It denies that there are parties which do not secure financing because they cannot use assets as collateral to secure such financing.

Within the US satellite industry and amongst SIA members,<sup>235</sup> this contention may be true. The satellite industry has a working model where financing is secured based on the creditworthiness of the client, and consequently, the satellite industry is a small field with a limited number of players. It may very well be true that the draft Protocol would add an additional layer of regulation, and the protections in the Protocol under the Cape Town system are perhaps not protections which the already functioning and wealthy satellite industry would avail themselves of. However, the Protocol is meant to expand the opportunities for financing to those who could not previously secure financing. While it is, obviously, new legislation on the international plain, it may have an effect similar to deregulation, in that it levels the playing field by allowing actors a greater range of methods to secure financing.

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<sup>234</sup> C.G.E./Space Pr./4/W.P. 4 rev., app. II.

<sup>235</sup> SIA executive group members include an impressive list of operators, providers, and suppliers; *See* SIA Members, <http://www.sia.org/siamembers.pdf> (last visited July 22, 2010).

A subsequent letter stressed that the SIA felt that there “simply no need for such a Protocol”, and that adoption of the Protocol will have negative and costly consequences for SIA members and the satellite industry in general.<sup>236</sup>

Additionally worrisome were the comments submitted by a former member of the Space Working Group who had stepped down from the Unidroit effort in August 2007 due to lack of industry support for the draft Protocol.<sup>237</sup> The issues which, in his view, prevent industry support for the Protocol are those stated also above: The definition of space assets, the public service exemptions, unresolved salvage issues, debtor’s rights, the assignment of debtor’s rights, and the priority of competing rights. That these comments were from a former member of the Drafting Committee make them all the more troubling.

The draft Protocol, if it is to be successful, must solve these issues in a way that makes the Protocol commercially-viable. However, the draft Protocol to an international treaty is negotiated by states and ratified by states, and as stated previously, many states are either not cognizant of the potential benefits and long-term significance of commercial space, and are rather more focused on the needs of developing countries and emerging economies. Therefore, the political interests which shape international treaty-making have allowed states to introduce provisions which, while respecting the principles of public international space law, also protect sovereign state interests — such as the protections of public service, which have the unwelcome effect of threatening to undermine commercial interest, and therefore commercial support to the Protocol.

#### 8. *Future Prospects for the Protocol*

At the 89<sup>th</sup> meeting of the Unidroit Governing Council in May 2010, the Council authorized the convening of a 5<sup>th</sup> session of the Committee of Governmental Experts for the preparation of the draft Space Assets Protocol in February, 2011. The Council further concluded that, subject to a successful outcome of that session, “the Council would expect to be able to authorize the holding of a diplomatic Conference for

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<sup>236</sup> C.G.E./Space Pr./4/W.P. 4 rev., app. III.

<sup>237</sup> C.G.E./Space Pr./4/W.P. 4 rev., 29.

adoption of the resultant draft Protocol, at its 90<sup>th</sup> session, in 2011.”<sup>238</sup> The Council also agreed to afford the highest priority to the finalization of that project. Also important is the scheduled meeting of both “the Informal Working Group of the Committee of governmental experts on limitations on remedies and the Informal Working Group of the Committee of governmental experts on default remedies in relation to components, as well as consultations with representatives of the international commercial space, financial and insurance communities” which Unidroit will be hosting in Rome in mid October, 2010.<sup>239</sup> These meetings may perhaps be crucial in settling the still existing issues of the draft Protocol, and it is my hope that members of the commercial space, financial and insurance communities do indeed attend and have their concerns heard, and responded to adequately by the Drafting Committee.

The February 2011 meeting will perhaps be the most important session for the Protocol, and whether it is a successful session of the meeting of experts hinges on whether all stakeholders participate to make it a commercially viable instrument. While it is true that a private international space Protocol must be subordinate to the existing public international law treaties, as “[p]rivate contracts are always concluded subject to existing public laws”,<sup>240</sup> it is equally true that a commercially-viable instrument must meet the needs of the industry it seeks to assist. To achieve those ends, it must solve the thorny issues discussed above.

This author has enjoyed the privilege of attending the 3rd and 4th meeting of the Committee of Governmental Experts as an observer, or “auditer libre”, which took place in Rome in December 2009 and in May 2010. One of my observations is that, while the commercial sector was present at these meetings, they were not as vocal or engaged as the various delegations from states. Their concerns were made known to the Committee through the various communications to the Secretariat, as discussed above. Additionally, their concerns were raised by delegations from States in which the various actors from the commercial sector conducted a majority of their business

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<sup>238</sup> Unidroit Governing Council, 89<sup>th</sup> Session, C.D. (89) Misc 4., *Summary of the Conclusions*, 2.

<sup>239</sup> Unidroit, UNIDROIT NEWS AND EVENTS, <http://www.unidroit.org/dynasite.cfm>

<sup>240</sup> C.G.E./Space Pr./4/W.P. rev., “*Comments Submitted in a Personal Capacity — Mr. P.B. Larsen*”, at 35.

from, including the US delegation. However, their concerns must be sought out and addressed, which requires their participation in the ongoing work of Unidroit.

The December 2009 meeting was attended by 91 representatives from a total of 32 governments, along with 7 intergovernmental and 6 international non-governmental organizations.<sup>241</sup> However, only 14 representatives of the international commercial space, financing and insurance community were present.<sup>242</sup>

Subsequently, at the May 2010 meeting, 94 representatives from a total of 37 governments were in attendance, along with representatives from 5 intergovernmental and 5 international non-governmental organizations.<sup>243</sup> However, only 12 representatives of the international commercial space, financial and insurance communities were present.<sup>244</sup>

It is difficult to surmise from this level of attendance and participation by the commercial community that the work of Unidroit in the development of an instrument to allow asset-backed financing in their commercial community is being assisted by that community. The Protocol is a very novel innovation, it creates an interest in property which is international, which a novel legal invention. The terms and context of it must be finely crafted so as to solve the problems existing in this area of finance.

In conclusion, the most up to date version of the draft Protocol on Space Assets (taking into account the changes made by the Drafting Committee in response to the issues raised at the May 2010 meeting) is contained in Annex VIII of the Report prepared by the Chairman of Unidroit, following the May 2010 meeting.<sup>245</sup> This, then, is the current state of the draft Protocol.

By the end of 2010, this version will be changed, and the issues outlines above may hopefully be solved in the final draft Protocol and sent to a diplomatic conference, which may then receive the welcome support of the commercial sector in a manner akin to the Aircraft Protocol.

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<sup>241</sup> C.G.E./Space Pr./3/Report, § 4.

<sup>242</sup> *See id.*

<sup>243</sup> C.G.E./Space Pr./4/Report, § 4.

<sup>244</sup> *See id.*

<sup>245</sup> C.G.E./Space Pr./4/Report, *available at*  
<http://www.unidroit.org/english/documents/2010/study72j/cge-session4/cge-4-report-e.pdf>.

However, if the issues above are not solved, it is unlikely that the Protocol will receive the support and ratification by the states where the commercial sector and members of the SIA do much of their businesses. The future success of the Protocol on Space Assets would then depend on its adoption and implementation by other states, perhaps the developing and emerging countries where asset-based financing, or the lack thereof, could be developed to a wider extent.

## VII. THE FUTURE OF BUSINESS IN SPACE

### A. OUTLINE OF LAWS ON COMMERCIAL SPACE FINANCING

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*“Space is — basically — a test of survival; of our ability to invent things that will allow us to use very limited resources; and you have to use everything, and you have to use it as efficiently and effectively as possible”*

– George Kranz, Flight Director, NASA<sup>246</sup>

In the future, regardless of the fate of the draft Protocol on Space Assets, counsel advising a commercial firm engaged in space activities must be aware of a host of legal issues which will require continuing attention.

Starting from the most universal, of foundational importance, and at the back of their mind should be Article VI of the Outer Space Treaty, wherein the activities of non-governmental entities are the responsibility of their respective state. Through this, the actions of their firm are inextricable linked to the state in a way which is unique in commercial endeavors. This link of direct state attribution imputes the duties of state authorization and continuing supervision, and it means that the government will always be “looking over their shoulder”. Consequently, the commercial activities the firm conducts related to space will always carry an implicit imprimatur of that state.

Next, there exists the various aspects of international space law which may impinge on the activities of the non-governmental entity (as discussed in Part IV. A. *supra*), and these implicit conflicts require preventative planning so as to not run afoul of them, or otherwise engender actual conflicts with the responsible state’s international duties under the treaties.

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<sup>246</sup> *When We Left Earth: The NASA Missions* (Discovery Channel Documentary, 2008).

Secondly, there is the various national legislation (both domestic and foreign) that states may have enacted which impinge directly upon the firm's activities (as discussed in Part IV. B *supra*). These sources of law fall into two categories 1) sources of law specific to space (national space legislation); and 2) other areas of law, which the commercial enterprise will have to comply with, just like any other commercial undertaking, *i.e.* law not specific to space.

Regarding national space legislation, as more and more nations become active in space activities, this body of law becomes ever more prevalent. In the US, a commercial firm must be aware of the 2004 Amendment to the 1984 Commercial Space Launch Act (previously mentioned) — which requires the firm to comply with the various authorizing, licensing and supervising requirements promulgated by offices such as the FAA's Office of Commercial Space Transportation, along with the stringent insurance and liability burdens this legislation mandates. Relevant here are the various financial implications of their regulations, and the high monetary burdens which they require commercial firms to observe. The firm must secure money to cover the liability limits, or it cannot proceed.

Many countries, with diverse economies and legal traditions, have domestic space legislation. Due to the inherently international nature of space activities, multiple national space laws may impact a firm's actions or planned actions and they indeed have their own financial implications, which further raise the financial burdens of an emerging commercial space firm. Are there foreign liability regimes and insurance requirements that also must be met?

Of at least equal and possibly greater importance is the host of national regulations, laws, and ordinances which may affect the company which are not specific to space: these range from antitrust regulations — both domestic and foreign regimes; transfer of technology laws and export and import laws, such as the US ITAR regime; domestic corporate and securities laws impacting on what the leadership of the firm may do, depending on whether it is publically or privately owned; contract laws which the company has entered into; applicable tax laws and taxation regimes of that state; international trade regulations; insurance laws (both general insurance and the space insurance possibly required by the national space legislation); health care laws; employment laws; environmental regulations; domestic, foreign and international communications laws; intellectual property concerns, both domestic (*e.g.* NASA intellectual property licensing agreements) and their foreign



equivalents. Additional to all of the above are the conflict of laws provisions, both domestic and international, which may impact the contract, property rights, liability and other aspects of the commercial firm's future planned action. As the above thesis has hopefully demonstrated, the problems presented from the conflict of laws issues implicated (even by the financing of commercial space projects) is a labyrinthine topic.

It is unlikely that the commercial space company is even aware of all the laws and regulations it will be required to comply with. Additionally, it may have to comply with these various sources of laws and be able to demonstrate such compliance, and ability of continuing compliance, before it receives further financial backing and investment.<sup>247</sup> Where money is scarce in an emerging space company, it may be hard to divert any funds from research and development into, say, protective measures such as insurance, protection of intellectual property, or preventative measures in complying with ITAR and similar regulations. However, while the risks from these areas might be low probability, the high-impact nature of them being done incorrectly or of unpreventable accidents requires utmost caution and respect towards them in proceeding with a business plan.<sup>248</sup>

Money to a small commercial space company may come from governmental agencies under commercial contracts, or it may come from private venture capitalist groups, cooperative undertaking with larger companies, subcontracting with larger companies, and even seed money from the organizers themselves. It may come from asset-backed transactions which are currently difficult. What is universally true is that all of the parties will require that the above myriad concerns are safely addressed before funds are released.<sup>249</sup> Legal counsel with the patience for such complex regulatory compliance will have a full calendar, but it is this author's personal hope and professional intention that such patience will pay off with the emergence of a robust and dynamic global commercial space industry, and so make outer space not a place of merely flags and footprints but of growing and permanent human presence.

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<sup>247</sup> George S. Robinson, *Future Private Commercialization of Space Resources: Foibles of Applicable Law*, XXVII ANNALS AIR & SPACE L. 504 - 507 (2002).

<sup>248</sup> MEREDITH & ROBINSON – A CASE STUDY 249 -253.

<sup>249</sup> *Id.* at 506.



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