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## Intellectual Property Resources in and for Space: The Practitioner's Experience

Gary Myers

*University of Missouri School of Law, [myers@missouri.edu](mailto:myers@missouri.edu)*

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**SYMPOSIUM TRANSCRIPT:  
OPENING AND CLOSING STATEMENTS;  
PRACTITIONER'S PANEL**

**INTELLECTUAL PROPERTY RESOURCES  
IN AND FOR SPACE: THE PRACTITIONER'S  
EXPERIENCE**

OPENING STATEMENTS

PROF. JOANNE IRENE GABRYNOWICZ: Welcome and thank you for coming today. Welcome to our speakers, students, and participants here in Oxford and out in the world via the real-time webcast. Today we have a first of its kind event: a symposium that will consider the interface of two important bodies of law: space law and intellectual property law. Space law, as a body of law, began during a time when the strategic, military and peaceful uses of space were the focus of the law. Although intellectual property has been a part of space law from the beginning it has not been as a major component. Initially, little thought was given to space as a commercial or creative environment. Today, our inquiry is timely because, increasingly, intellectual property law is becoming more important in space activities. The increasing sophistication of international cooperation and the growth of commercial and private space activities have brought intellectual property issues to greater prominence. For example, the intellectual property provisions of the International Space Station Agreement were among the most challenging provisions to be negotiated and a major feature of NASA's Commercial Orbital Transportation Services competi-

tion is the right of the winners to own the intellectual property generated by them as they provide NASA with goods and services. More mature Cold War technologies like satellites and launch vehicles have long been rich sources of intellectual property issues. Now, in the era of globalization these issues are being augmented with new issues catalyzed by commercial satellite imagery and even orbits. The fact that space itself is a global commons not subject to sovereignty but the human creativity and efforts occur on Earth in sovereign nations and often by global entities presents a challenging context in which to address intellectual property issues generated by space activities. Today, we will begin to do that. I will now turn the podium over to my friend and colleague, Prof. Gary Myers.

PROF. GARY MYERS: The main intellectual property protection in the satellite technology area deals with how to protect the data that is produced in remote sensing and the added value that a variety of people bring to this raw data. That presents some serious intellectual property challenges.

I would begin with a phonebook case. I brought my local telephone directory. This is the Oxford phone directory and, as you can see, Oxford is a small town. The reason I brought the phone directory is to give you that visual of a case called *Feist*<sup>1</sup> versus Rural Telephone. I think of *Feist* as presenting some of the main challenges for intellectual property in remote sensing.

*Feist* was a case that involved phonebooks. Rural Telephone was a local Kansas telephone company. Like all phone companies, it laboriously and assiduously gathered telephone data; everybody by name, address and telephone number is in that directory. A lot of labor went into it. In the view of Rural, it had a copyrightable work. *Feist* is one of those regional phone companies that tries to put together data from a variety of different phonebooks. They basically copied the Rural Telephone database wholesale—all the names, all the numbers, all the addresses. They did that in part because Rural refused to license it.

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<sup>1</sup> *Feist Publications Inc. v. Rural Telephone Servs. Corp.*, 499 U.S. 340 (1991).

But that is neither here nor there. The real issue in the case was whether this raw data, assembled at great expense by Rural, was copyrightable. The Supreme Court, addressing that issue in 1991, held that the information which was factual in nature, and therefore not copyrightable in and of itself, was assembled in such an ordinary way that it lacked sufficient creativity to be protectable under the Copyright Act of 1976<sup>2</sup> under U.S. law. Therefore, that it was essentially free to be copied and in the public domain.

So this ruling, which on its face perhaps we might think, "Well, what are the implications for space law?" My first thought on that is much of the raw data that might be assembled faces the same kind of difficulty, namely that it is factual information. Though it involves labor and effort, the Supreme Court found that that kind of sweat of the brow effort was not sufficient to entitle someone to copyright protection under U.S. law.

So what more do we have to do? How much value must we add to have copyright protection? That is a question others will address in much more detail than I will. In basic terms, we know that it has to involve some creativity in the selection and arrangement of that data. How we define that is something that is still unsettled under U.S. law.

Two cases, to me, illustrate this. The first one is a case called *Mason v. Montgomery Data*<sup>3</sup>, which involved protectability of maps. If you think about a map, this presents the very kind of problem that I think is highly relevant. The second case that I would use to illustrate that point is a case that involves photographs and photographic reproduction. It is a case called *Corel versus Bridgeman*. In this case Bridgeman was the producer of exact photographic reproductions of works of art, including public domain works. I got my Monet painting from their website. Their task and their role were to try to capture the Monet as completely and perfectly as possible, and therein was the problem. The court in this case found that an exact photographic reproduction, though it might involve great labor, was

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<sup>2</sup> Copyright Act, 17 U.S.C. §§ 101-1332 (2006).

<sup>3</sup> *Mason v. Montgomery Data, Inc.*, 967 F. 2d 135 (5<sup>th</sup> Cir. 1992).

not the type of creativity that would entitle Bridgeman to copyright protection for its reproduction.

So, to the extent that we have raw data that is translated in such an exact way, we have a problem of unprotectability that can arise, I think, in the remote sensing area. My point is that copyright offers uncertain protection. We certainly will have to look at that issue in more detail as some of the speakers today will do.

Can we have other alternative avenues of protection for remote sensing information? Yes. There are a number of other avenues. They all present both advantages and pitfalls. An example would be protection through trade secret law. Trade secret law, which is primarily a vehicle of state law, offers some very valuable protection. But, in my mind, trade secret law is a bit of a misnomer because it is not really law, it is self-help. Trade secret law is really about taking steps, secrecy measures, reasonable in the circumstances, to protect your information and to keep it from becoming public, or to keep others from gaining access to it.

In some areas, this will be a serious problem. How do you maintain the secrecy of the information? How do you allow others to use it while maintaining confidentiality? Of course, there is also the problem that reverse engineering is a complete defense to a trade secret case. Somebody who comes along and independently develops similar information will be free to use that information without any liability. So trade secret is one avenue, but an imperfect one.

What else is there? Contract, certainly contract law and licensing, confidentiality agreements. Like trade secret, they offer a kind of self-help avenue for preventing the disclosure of confidential data. In some circumstances this can be a valuable protective measure, and it can be enforceable in court. Lastly, there are technological measures: various means by which data can be secured online and otherwise, encryption and other methods of preventing people from gaining access to information. This, too, is a form of protection.

Is this enough? I think one of the questions we face in U.S. law is the issue of whether there should be some particular protection for laboriously maintained databases. The European Un-

ion database directive is an example of the type of protection that might be brought into play. There is no counterpart in U.S. law. Certainly, that is one of the issues that is debated in political circles today. I am sure we'll hear more on that subject as well. But there is the question of whether a database type protection would offer an alternative avenue that would protect the creative efforts of people in the remote sensing industry. I think that is an issue that we should talk about further.

PROF. JOANNE IRENE GABRYNOWICZ: Thank you. So that is a broad overview of these two bodies of law that are coming together and we are going to be discussing for the rest of the day. With that, I am going to ask our first presenter and commentator to come up and have a seat. Before I do, are there any questions or comments anybody would like to ask either of us? I do not know if they are coming in from outside, but they will let us know from the control booth. If not, we will just proceed.

#### PANEL THREE: A PRACTITIONERS' PANEL

PROF. GABRYNOWICZ: Welcome back to the second half of the Symposium for Intellectual Property and Space Law.

This afternoon is about practice, being in the trenches, and realistically dealing with a lot of the questions, issues and concepts we raised this morning. I am going to introduce everybody from my left to right, and then each speaker will come up individually.

The first person to my immediate left is Gary G. Borda. Gary is the Agency Counsel for Intellectual Property in the Office of General Counsel at NASA Headquarters in Washington, D.C. He joined NASA in 1997 and began his legal career as a patent attorney with the Navy in the Office of General Counsel. Obviously, he has strong experience in government and intellectual property issues. Gary received his J.D. degree *cum laude* from the University of Baltimore in 1990 and his Bachelor's Degree from Virginia Tech.

To his left is Pamela L. Meredith.

Pam is a rare breed in space law. She is one of the very few people who have set out a shingle in space law practice and actually has been succeeding at it. Pam has a very diverse career.

She advises clients in commercial space project planning and implementation, risk management and other aspects of commercial space activities. Pam is a frequent speaker in the space law community. She is also an Adjunct Professor of Satellite Communications and Space Law at American University in Washington.

The next person who will speak is Brad Smith. He is a European patent attorney and Senior Consultant in International Intellectual Property Law. He's currently working for the largest satellite manufacturer in Europe and the third largest in the world. He's a fascinating person to talk to. He has degrees in nuclear physics, particle physics, biophysics and neurophysics. He has been a lawyer in Europe for over 25 years or so.

The last person to my left, last but certainly not least, is Will Wilkins. Will is the intellectual property lawyer for the University of Mississippi and he is the director of the Mississippi Law Research Institute.

Without further ado, I will hand this over to Gary.

MR. GARY G. BORDA: Thank you professor. I just want to say it is an exciting time at NASA right now. We are in a new era of technology development under the *Vision for Space Exploration*. We are also getting involved in a lot of new commercial initiatives. I am going to go off-subject from what has been discussed today. I am not going to talk about space law *per se*, or remote sensing, or databases. I am not a space law person. I am an intellectual property law person and Professor Gabrynowicz asked me to talk about any unique aspects we have in intellectual property at NASA and any new NASA initiatives.

In most respects, intellectual property issues and intellectual property law at NASA are really no different than at other government agencies and the private world. We face many of the same issues: patents, copyrights, trademarks, protection of sensitive, proprietary information, working with contractors and their Bayh-Dole<sup>4</sup> rights to inventions, things like that. However, we are different in some respects. Under our organic stat-

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<sup>4</sup> Bayh-Dole Act, 35 U.S.C. §§ 200-212 (1980).

ute, the National Aeronautics and Space Act of 1958,<sup>5</sup> we are what is called a title-taking agency and we do have authority to enter into what is called 'other transactions'. I will talk about those momentarily.

Also, as part of the U.S. Vision for Space Exploration, we are pursuing collaborations that will expand the commercial space sector while also simultaneously supporting our missions and the Vision for Space Exploration. By working with established commercial launch services providers and encouraging the development of an emerging launch sector we are, consistent with our mandate under the Space Act, seeking to accelerate the growth of the commercial space industry. This is going to ultimately reduce the cost to the public and to NASA in developing technology because ultimately the new space industry can develop space-related technologies that we can purchase commercially.

On January 14, 2004, the President set a new course for the U.S. Space Program and gave NASA a new *Vision for Space Exploration*. It was to build new ships to carry humans forward into the universe, to gain a new foothold on the moon, and to prepare for new journeys to worlds beyond our own. The primary goal of the *Vision* is, however, to advance U.S. scientific, security, and economic interest. It is not the destination but what we can accomplish along the journey.

An important element of the *Vision* is NASA's mandate to pursue commercial opportunities for providing transportation and other services in support of the *International Space Station* and our exploration mission beyond low earth orbit.

The President also chartered a national commission at the time he announced the *Vision* to recommend specific measures for implementing it. Some of those recommendations included that NASA aggressively use its contractual authority to reach out to the commercial and non-profit organizations to bring the best ideas, technology, and management resources to the mission.

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<sup>5</sup> National Aeronautics and Space Act of 1958, Pub. L. No. 85568, 72 Stat. 426-438 (July 29, 1988) [hereinafter Space Act].



Also, the Congress increased the potential for commercial opportunities related to the *Vision* by providing incentives for entrepreneurial investments in space, creating significant monetary prizes for the development of space-related technology and to assure appropriate property rights to those who seek to develop space-related technology and infrastructure.

Based on the *Vision*, we are embarking on a new technology development era. We also have the responsibility to protect intellectual property and technology developed at public expense. Further, we are moving aggressively on these recommendations to increase commercial initiatives. I will address some of those initiatives, but I first want to talk a little bit about some of the unique aspects of the Space Act.

Now as I said, the Space Act provides us with something called 'other transaction' authority. The authorizing statute, which is very broad, allows NASA to enter into and perform such contracts, leases, cooperative agreements and other transactions as may be necessary in the conduct of our work and on such terms as we deem appropriate. The arrangements that we conduct and conclude under our other transaction authority are commonly referred to as Space Act agreements. Our agreements are generally unfunded Space Act agreements. There are two types: non-reimbursable agreements which we use for mutually beneficial activities, cooperative type of work with other parties where each side funds its own activities. We also have reimbursable agreements, which is where we might have unique goods or services that are excess to our mission needs and other entities can use those on a reimbursable basis; for example, if somebody wants to use our wind tunnels. We also enter into funded Space Act agreements.

We use these Space Act agreements to enter into a wide range of partnerships. However, all these agreements also have to comply with other laws and the rest of the Space Act. We are limited somewhat by Section 305(a) of the Space Act, which I will talk about momentarily, and other laws such as the Grant and Cooperative Agreement Act of 1978,<sup>6</sup> which is commonly

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<sup>6</sup> Federal Grant and Cooperative Agreement Act, 31 U.S.C. § 6301 et seq. (2006).

referred to as the Chiles Act. The Chiles Act specifies when traditional funding agreements—that is contracts, grants and cooperative agreements—are to be used.

As I said, our 'other transaction' authority is quite flexible. However, it is not outside the Congressional intent of the Chiles Act on when we should use traditional funding agreements. Therefore, we must interpret the Space Act in a consistent and defensible manner on when to enter these Space Act agreements—especially with respect to funded Space Act agreements as opposed to contracts. Normally we use funded Space Act agreements only when the agency's objectives cannot be accomplished through the use of traditional funding agreements. So, we use funded Space Act agreements only sparingly.

Now, Section 305 of the Space Act limits our intellectual property flexibility. Under Section 305(a), we are what is called a title-taking agency. Inventions made under NASA contracts are, by operation of law, the property of the government. For the purposes of Section 305(a), a contract is defined in the Space Act as very broad. It is defined as any actual or proposed contract, agreement, understanding or other arrangement, and this includes Space Act agreements under our 'other transaction' authority. However, despite this broad definition, not all the contracts are subject to Section 305(a). We have a longstanding administrative interpretation that the types of contracts to which Section 305(a) applies are contracts for work of an inventive type for NASA. We can't waive the applicability of 305(a) for those types of contracts. However, under the Space Act, we can waive the intellectual property rights back to the inventive entity, subject to the retention of a government purpose license.

In 1980, the Bayh-Dole Act took precedence over the Space Act for traditional funding agreements with small business and non-profit organizations, which includes colleges and universities. Under Bayh-Dole, these funding recipients have the right to elect title to the technology that is developed under these funding agreements. However, Bayh-Dole does not apply to our 'other transactions' authority. So, the determination as to when 305(a) does apply is very fact specific. There is a risk if the facts do not support the determination. One of those risks is that the intellectual property of the private party could be at risk be-

cause they might not have received clear title to the property; they have imperfect title.

Now I want to talk about some of our new initiatives. There is a long history of prizes and recently there was the Ansari X PRIZE, which was for the first privately launched mission to take a human into space and back. They won \$10 million. We will not be giving that much money away under our prize authority.

NASA is using new authority from Congress to establish what is called the *Centennial Challenges Program*, which is for conducting prize competition to stimulate innovations having a potential application to future NASA missions. Currently, we have announced nine prizes for a total purse of \$3.9 million. We had to determine whether 305(a) applied to these prizes. NASA is using the prize money to incentivize and reward participants for reaching or achieving particular results. We are not directing how they achieve those results. We are not using the prize money to purchase work for NASA, because we might use what comes out of this prize or we might not. In fact, we did not know upfront who would be participating in the prize competitions or if anybody would be successful in getting the prize money. Therefore, our determination was that 305(a) does not apply to the *Centennial Challenges* and we do not take title to contestants' inventions.

In contrast, under most funded Space Act agreements, where NASA funds inventive R&D activities for the agency to achieve specific results for our benefit or to satisfy some specific need, 305(a) would require that we take title.

Another new initiative is NASA's *Red Planet Capital Project*. This is intended to provide NASA with early exposure to emerging technologies and private venture capital funding to help in the development of products that could potentially support our missions. We recently entered into a funded Space Act agreement with Red Planet Capital, Inc (RPC). RPC is a non-profit corporation established for this purpose, and Red Planet will become a limited partner in an investment fund. The fund will invest in emerging, privately-held companies that are developing innovative technologies with both government and

commercial applications and with potential to support future NASA missions.

We are providing RPC with strategic direction and technical input on the types of investments that we want them to make based on areas of technical interest to NASA. With respect to applicability of 305(a), in this case the money is provided to RPC and they are investing it in the fund that is acquiring equity stakes in companies to help them stimulate technological development. We are not directing the work and we have no current mission requirements for any specific results of the work. Rather, the technical achievement might benefit us if, at some point, we decide to apply them to our missions and buy them commercially. So, while these portfolio companies are selected based on areas of technological interest to NASA, the work of the companies is not being done for NASA and Section 305(a) does not apply in this case. Thus, we do not take title to inventions made by these portfolio companies.

The last initiative I will talk about is really the most ambitious of NASA's commercial initiatives. It is called the *Commercial Orbital Transportation Services, or COTS, Demonstration Program*. It is intended to create a market environment in which commercial space transportation services are available to both government and private industry. Specifically, this demonstration project is to facilitate the demonstration by U.S. commercial providers of a capability to safely deliver cargo and crew to and from low-Earth orbit.

In January 2006, NASA released an announcement seeking proposals from U.S. companies to develop and demonstrate the technologies necessary to deliver cargo and later crews to low-Earth orbit. COTS is a major program. NASA is making \$500 million available over the next five years and payments are based on negotiated milestones. We had more than 20 companies respond to this COTS announcement, and just last month we selected two start-up companies to receive COTS funding.

Now, at the Administrator's direction and aligned with the Commission's recommendations—to spur development of the emerging space industry and provide incentives for COTS participation—it was the Administrator's direction that intellec-

tual property rights to technology developed under the COTS effort would stay with the developing parties. However, we have Section 305(a), which limits our flexibility with respect to invention rights. The COTS program is organized in a two-phase structure. The first phase is under a funded Space Act agreement for the demonstration of a crew cargo transportation capability to the *International Space Station* or another test bed identified by the COTS participant.

Phase two, if phase one is successful, is the procurement of space transportation services to the *International Space Station*. Basically, upon retirement of the shuttle we would like to purchase commercial launch services to the *ISS*, but first we need to gain confidence that these commercial providers can provide safe, reliable and cost-effective services. This phase one demo is intended to do just that, because only upon a successful demonstration would we then purchase any commercial launch services. Therefore, we saw the phase one demo, in this case, as work for NASA. Thus, Section 305(a) applies and we have to take title, under law, to the technology that is developed under these COTS efforts.

As I said earlier, based on the administrative interpretation that we have followed for forty-odd years, we cannot waive Section 305(a) requirements. However, under the Space Act, we can waive title to the technology back to the developing entities subject to, again, the government purpose license.

So, the COTS-funded Space Act agreement provides that, upon petition by the participant, we will grant an advance waiver to all technology developed under the COTS agreement. We have two types of waivers. There is the advanced waiver whereby if the COTS participant requests a waiver prior to or soon after initiation of the agreement, we can waive everything developed under the agreement. Otherwise we can issue individual waivers of title on a case-by-case basis. There are requirements: they have to, of course, report the technology to us so that we know we have our government purpose license in it. They also have to file patent applications, normally within a certain amount of time.

Now, as I said, we will grant the advance waiver subject to the government purpose license. However, we have agreed to

refrain from any NASA use or exercise of the government purpose license for a specific period of time.

On the other hand, we are spending a lot of money on this effort and we need to protect the government's interest and the public's interest in their taxpayer money. Therefore, in the event of termination of a COTS effort because of lack of performance—that is, a participant's failure to reach a defined milestone—we can then exercise the government purpose license immediately.

It has been our experience and the experience of the Department of Defense, which is the other agency that has other transaction authority, that the retention of the government purpose license by the government is not the big issue to most of our contractors. There are other flexibilities under our other transaction authority; things like relaxed financial reporting requirements and relaxed patent filing requirements that are more relevant to contractors. For example, we can allow them a longer period to file patent applications on waived inventions than they would have under the Federal Acquisition Regulations, which allows them to keep their technologies as a trade secret for a longer period of time. Also, we may allow relaxed data delivery requirements to protect data. We've used these flexibilities to try to meet the Administrator's goal of providing the maximum intellectual property rights to the participants.

So, Section 305(a) applies to invention, not to technical data. This is key, because it is very important to most of these new small entrepreneurial technology companies to protect their technological data—basically, their know-how to make and use the technology. It's one of the reasons why if you look at NASA's history, it has worked with traditional contractors such as Boeing and Lockheed, the big guys. We do not get the innovative ideas from the smaller companies because they do not want to enter contracts with the Government. Thus, one of the goals that we are trying to accomplish with the COTS Space Act agreements is to get these companies working with NASA. Congress and the President in the *Vision for Space Exploration* have decided we should step out and try to help foster a new commercial space industry. So that is one of the reasons we de-

terminated that funded Space Act agreements in this case are proper and give us that flexibility.

So, under the COTS agreement there is no affirmative requirement to deliver technology and data developed under the COTS efforts. We can request delivery of that tech data, but we can only use it to evaluate performance of the participants. In the event, however, of a termination for failure to reach a milestone, we then can use the data right away. We could use it and transfer it for government purposes.

MS. MEREDITH: I am going to talk about commercial space contracts and IP. When Joanne asked me to talk at an IP forum I thought, "Well, IP is not what I do." But then I sat down and thought about what I actually do when I do contracts, which I do a lot of in the space area, and there are a lot of IP clauses in those contracts. They just come in everywhere, whether it is a launch contract, or a spacecraft component supply contract, or a satellite manufacturing contract, or a satellite operator's note purchase agreement, you name it. So I thought, "Well, that at least I can talk about."

Intellectual property – this is a forum where I do not need to introduce that concept. I suppose there are many ways to skin this cat, but rather than getting into the meaning of intellectual property, proprietary information, trade secrets, and patentable inventions; or where the divisions between these concepts actually go, I will leave it to you to sort out the details, and I will move on to something I am more comfortable speaking about: commercial space contracts.

We do a lot of satellite purchase contracts. We review them as part of advising insurance underwriters, satellite purchasers, satellite manufacturers, and financial institutions. We also draft and review satellite launch contracts as well as contracts for the supply of various space products, whether it be a satellite component or a launch vehicle component. The approach of course depends on who you represent. If you represent the one with the intellectual property the key for us is, as lawyers, to make sure that that intellectual property is protected. At the same time, the other party's legitimate rights to that IP needs to be satisfied so the transaction makes sense. If you are representing the buyer, you need to make sure that the buyer has

what he or she needs in terms of intellectual property, to make or use the product. If you are representing the seller, you need to make sure he or she has access to buyer's IP to the extent necessary to make the product. If it is a joint venture, the joint venture company needs freedom to operate without having to seek all sorts of other licenses and permissions after it has been set up. So, again, as legal practitioners, depending on which side we are on, we have different responsibilities.

Let's look at proprietary information. In the contracts that I come across, there is always a confidentiality clause – or a reference to a separate confidentiality agreement. Basically, the rule, as you know, is no disclosure of proprietary information to third parties. Within the receiving party's organization there is usually a disclosure right on the basis of need-to-know. The term, or duration, of the confidentiality obligation varies; could be from five to ten years and it tends to be longer in the aerospace industry than in other industries that I have come across. With respect to the care of the proprietary information, it's usually so that the receiving party has to take the same degree of care of the disclosing party's proprietary information as he does his own, assuming those procedures are reasonable.

While the rule is that you cannot disclose proprietary information, there are certain exceptions. Again, these are very standard. They are when something is in the public domain or the receiving party has independently developed the information or has gotten it from another source with no confidentiality obligation attached. Then, there is usually a right to release the propriety information if required by law or in the context of a legal proceeding. This phrase 'legal proceeding' is key. Sometimes it says 'judicial proceeding'.

Let's say your client is in arbitration and you have one of these agreements and you would like to, for purposes of document production, have some of the documents that you have gotten under one of those agreements into the arbitration. You find yourself in a situation where you have to interpret what 'judicial proceeding' means for purposes of releasing the documents. Can you, then, release documents into the arbitration proceeding if you have a right only to do it under judicial proceedings? The best answer to that is no.



What you end up doing, in this case, is you have to go back to the disclosing party while you are in arbitration for your client with a third party, to ask for permission to disclose. Then, the disclosing party, depending on its interests, may say, "Well, no. I am going to be difficult. So I am going to put new conditions on." And then you go down that road.

Let's look at the spacecraft purchase contract. Basically, the ones that I have come across — and I have come across a lot of them over the years — are written so that IP rights remain the property of the owner, whether it be the seller or the buyer. The two exchange rights, or licenses, to do what each needs to do. This is the key, as far as I am concerned, when you deal with intellectual property in these contracts. Each needs to get the rights that it needs to do what it legitimately needs to do, if you see what I mean. That is where I am coming from with these contracts. The manufacturer, of course, has legitimate rights to protect its intellectual property in the satellite it sells. The manufacturer typically will have a satellite bus, a platform, which is its standard platform that it sells to a number of customers; and it will guard those IP rights carefully. There will be a payload on the satellite platform, which may or may not be supplied by the same manufacturer — usually not. Somebody else, a subcontractor, then has IP rights in that payload, and that subcontractor will have protected its rights in a subcontract with the satellite manufacturer.

The buyer needs to have enough license rights to use, operate, repair and maintain that satellite. Sometimes the buyer also needs to test the satellite and it needs to have rights to do that. Sometimes the buyer does not test the satellite, the manufacturer does that and delivers the satellite "turn-key" in orbit fully tested and then those rights may not be included.

The buyer also needs to be able, sometimes, to sub-license. There may be someone operating the satellite for buyer. Satellite buyer sometimes also needs to have the right to transfer that license, for example, to a financial institution in connection with the financing for the satellite.

Also, with regard to the satellite manufacturer, it of course needs to have whatever the buyer has of IP that is critically

necessary to design, develop, and manufacture that satellite for the buyer's application.

There also is a distinction that is drawn in these types of contracts between what they call background and foreground IP: background IP being what each party had when they came to the table and foreground IP being what was developed within or during the contractual relationship. Obviously, there are greater rights to the foreground IP than the background IP, as a general matter.

Typically, not a lot of IP is exchanged in satellite launch contracts. As for patents, each party retains ownership and rights in its own inventions and patents. There is not really a lot of need to exchange rights to each others' inventions. There is of course exchange of proprietary information, especially satellite-launch vehicle interface data and information on satellite environmental tolerances.

Supply contracts get trickier. Here, again, we are talking about a launch vehicle component supplier or a satellite component or sub-system supplier. We have represented engine suppliers, upper-stage suppliers, fairing suppliers, satellite component suppliers, you name it. In each of these cases there were interests on the part of the supplier in protecting its IP. Again, the buyer needs enough IP rights or license rights to use or sometimes also make the product, depending on what the product is, but usually just to use it. The parties arrange the contracts depending on what needs each party has. But, of course, the parties typically differ as to what each believes is the other party's legitimate needs.

I put a "no infringement" clause at the end of these contracts. There are also usually these types of clauses in the satellite manufacturing contract. Here is where each party warrants that there will be no infringement of third party patent rights through the use of the license granted. In other words, if the other party – say buyer – uses the IP to which seller grants a license, then seller warrants that using that IP will not infringe any third party patents. There is also usually indemnification, by the seller, in this case, if infringement results. So, if you buy a component of a satellite, let's say, and in using that component you find out you were infringing and you were sued by

somebody because you were infringing their rights. Then the seller has undertaken to indemnify you for any liability or claims or suits.

Contracting with the government gets interesting. Sometimes you have contracts directly with the government. You represent, let's say, the private party in the contract with the government, the prime contractor. Where the contract mixes commercial concepts and FAR clauses, Federal Acquisition Regulations,<sup>7</sup> protecting your client's interests can be challenging.

The other situation is where you have supply contracts. Let's say you represent a foreign supplier of a subsystem for a launch vehicle. That supplier is contracting with a U.S. prime contractor, itself under contract to the U.S. government for supply of a launch service. So the contract with your client is a commercial contract with IP provisions included. But what typically happens is that the prime contractor, in addition, will flow down FAR clauses from the prime contract with the U.S. government, plus other so-called standard IP clauses that a company uses in all its subcontracts. Then you sit there and try to make sense of all of this. It usually does not make sense and then you have to negotiate. I guess it makes for a fun and interesting practice. That is all I have to say on IP and contracts.

MR. SMITH: I introduced myself as an Alcatel employee. That is true. But I am also a General Intellectual Property Counsel for the European Space Industry Association, which is a conglomeration of about 60 space manufacturers all across Europe. That is primarily for lobbying purposes.

Mostly, when I speak about divergences and convergences, I get stuck on divergences between intellectual property law and space law, in particular, when intellectual property law is applied in outer space.

So, legal considerations on space patents: when you make patents on things that can only be used in outer space, and then you come up with questions about what is the applicable law. I would like to take the example of patents on orbits. It is a kind of hot topic because then we run into these questions of appro-

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<sup>7</sup> Federal Acquisition Regulations, 48 C.F.R. § 1.000 – 53.303 (2006).

priation and Article Two of the Outer Space Treaty.<sup>8</sup> I have a case study where there have actually been some problems presented before the court in California. Then I will speak about the recent developments at the UNCOPUOS on this issue, and what, finally, the interface is between IP and space law.

Basically, the origins of today's IP law, as it is practiced around the world, are to be found in the United States Constitution, the first patent law being passed in 1790, and followed shortly by the French patent law in 1791. Now, as you know, they have gone in different directions because of the nature of the common law and the nature of U.S. law and the coded nature of French patent law. I think it is always useful to go back to the roots. The purpose of patent law is to promote the progress of science and useful arts. As we can see in some examples, maybe sometimes it is actually slowing down progress in the way that the owners of IP use it.

Intellectual property has to be intellectual; it is property, and it belongs to somebody. Quite often it does not belong to the person who created it because it has been assigned one way or another, or the rights have been diluted, or else they were bought before they produced. The right is the right to forbid. It is not the right the use; it is the right to forbid. For naïve people this is really hard to understand, but all of us in the room are experts so I just want to insist on that. The second right is to make all kinds of transactions. You can use it to license, lease, assignment, collateral, technology transfer, and so forth.

Satellites have been a major motor in world economic development over the years. The first Intelsat Treaty Organization gave universal telecoms to countries that had little or no access to telecoms. The Inmarsat Treaty made maritime telecoms possible and then branched out into land mobile telecoms. Regional telecoms and meteo-sats organizations include: Eutelsat, EUMETSAT. There are some Russian equivalents as well, in the former U.S.S.R., and all of these things are leading to multibillion dollar industries. Private spending in outer space has

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<sup>8</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, art. 2, T.I.A.S. 6347, 610 U.N.T.S. 205 [hereinafter *Outer Space Treaty*].

exceeded public spending for the first time in 1998 and has been accelerating.

Now let's have a look at the typical costs of some of the satellite systems that are being put up by private money. The Iridium Constellation cost \$5 billion, Globalstar cost \$5 billion, ICO would have cost \$5 billion but it never got up there, SkyBridge was budgeted \$5 billion (this was an Alcatel project). I would estimate that it would have cost \$8 billion if it actually got up there. Teledesic, the Bill Gates world satellite grid, was estimated at \$10 billion with 266 LEO satellites. Actually, they filed at the ITU for something like 888 but they scaled back. They all went broke. The only one that has not gone broke yet is *Galileo*. It has cost € 1.2 billion in taxpayer money. It is supposed to cost another € 3 billion, split two-thirds by industry and one-third by public financing. We'll see if that one goes broke too. It might then be able to work, because you can reclaim what went broke, and after canceling all of the unpaid debts, end up with a system which works. Globalstar went broke; now it works. ICO went broke, was bought up in a fire sale by Craig McCaw, and it probably will work as well. But the first thing you have got to do is invest \$5 billion, lose it all, and then you can make money.

Intellectual property in outer space activities has actually been used in the courts a few times. It is hard to know what has been going on in transactions because transactions are generally kept secret. However, sometimes you can find filings at the Security and Exchange Commission for publicly-traded companies.

This first example is the case *Space Systems/Loral v. Com Dev. Com Dev*, when it was a Canadian company, was importing high-power filters to the United States for Intelsat satellites, infringing the Space Systems/Loral patent. They got hit with an out-of-court settlement of only \$3 million, but with a guaranteed running rate of 100% royalties for future supplies. That is pretty stiff to try and be competitive with 100% royalty rate.

In the *Hughes Aircraft Company v. the United States Government*,<sup>9</sup> I was quite interested to hear in a preceding talk about this Section 35 U.S.C. 105. Now, maybe we can go into this a little bit more in the question and answer period, but Hughes Aircraft won nearly \$1 billion in damages after appeal. Basically, this was on the famous Williams' patent, which was funded by the Navy. Unfortunately, at the time in this particular instance, the Navy did not see the need for having a license for government use. So, Hughes requested a reasonable royalty rate of 3% on all of the geostationary satellites that were sent up with the spin stabilization. By the time the case was judged there were 84 of them up there. Three percent of 84 times an average price of about \$300 million and you get up, easily, to a billion dollars.

I also know that the European Space Agency was attacked and they settled out of court for an undisclosed amount. Another European company was attacked as well, DASA. The next example in my list is TRW versus ICO—we will speak about that later on because that is a patent on the orbits.

The Hughes patent was on the spin of the satellite. Obviously, this alleged patent infringement can only occur in outer space. This was the case law that led to the legislation 35 U.S.C. 105. In fact U.S.C. 105 says exactly what the judge said in the Hughes case: any space object under jurisdiction or control would then be considered as part of U.S. territory for patent purposes.

But, we also have a lot of other strange patents that can only be used in outer space: pseudo-geostationary orbits, frequency sharing between LEO and GEO satellites, unfolding of solar panels and antennas, and so on.

This next example is something that has to do with the radio regulation issues of the ITU. Another example: GSM in the Sky, from Motorola. The Comsat maneuver for end-of-life; and at the time, Comsat was an Intelsat signatory, one of the first of Intelsat signatories to go private. They started thinking about things like, "Well, what happens when the satellite is at the end

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<sup>9</sup> Hughes Aircraft Co. v. United States, 86 F.3d 1566 (1998).

of its life?" "That means the fuel is running out and it starts wobbling." "Well, let's patent that, you know, because that is a great way to save fuel. Just let it wobble." So the satellite makes a small figure eight in the sky and anytime you get to end-of-life on a geostationary satellite it is going to do that. So, it is going to automatically infringe that patent. Very clever!

Then there is Motorola's LEO smart satellite constellation called *Iridium*. If you do not want to infringe this patent, it is easy: you just send only dumb satellites. Recalling the relevant articles of the Outer Space Treaty, basically the benefit for all countries, Motorola's *Iridium* would argue that every country can benefit from the *Iridium* constellation, you just have to buy the telephone for \$1,000 and pay \$12/minute and everybody can benefit, except those who only earn \$12/year, of course.

What we see here is a constellation of basic contradictions. Space law is extra-territorial. IP law is fundamentally territorial; it is only valid on the State in which it is granted. Space law is the same for all States, and IP law is different in every State in the world and at different stages of development as well. Space law is extraterrestrial and IP law is terrestrial. It is 200 years old and it has not changed that much. The United States is the only one that has made any specific provisions for space in IP law. Space law says share benefits, but IP law operates a monopoly. I see it is a head-on collision in all of these areas.

Now, just recalling that IPR, Intellectual Property Rights, are those rights granted to the owner by a state, enforcement and legislation in each state, and logically, for acts occurring within the State territory. The right is to forbid. However, the IPR owner does not necessarily have free rights to use. He may be dependent on third-party rights to do so. There is a particular problem if those third-party rights belong to a United States entity, whether is be a legal or physical person, the reason being that intellectual property rights having to do with satellites fall under ITAR.<sup>10</sup> As a dual-use technology, there are restrictions on the export of such rights, and even discussing such rights

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<sup>10</sup> International Traffic in Arms Regulations, 22 C.F.R. Parts 120-130 (2006).

with third parties and third countries. It may be difficult to get the necessary license on those third-party rights if you need to use them.

Only the United States has made specific provisions for intellectual property law by the U.S. Space Bill signed into law by George Bush, Sr.: the 1971 NASA Act, which foresees a temporary exclusion for launch purposes.

I would like to point out, in the U.S. Space Bill, that concerning the IPR, the jurisdiction is determined by the registry on the UN Register. The UN Register was never foreseen to determine jurisdiction. It was foreseen to determine liability, this sort of thing: ownership, jurisdiction and control. When it was translated into American, this turned into jurisdiction or control. The difference is substantial. Jurisdiction and control is this big. Jurisdiction or control is bigger.

This was codification of the Hughes case, because the Hughes lawyers argued that when the satellite went up into geostationary transfer orbit there was a control signal sent from the Virgin Islands, which is a U.S. protectorate. So, it was under the control of the United States. Secondly, the use of the satellite: what is the use of a telecommunication satellite? Lawyers cleverly argue that the use of a telecommunications satellite occurs in the receiver. The receiver is on the ground, on the territory of the U.S. Therefore, the spin of that satellite is not being used in outer space; it is being used on the ground in the receiver.

There are exceptions for foreign registry. This also brings up the issue of what happens when a satellite changes ownership and the owner is of a different nationality. This is an open question.

What about the patentability of orbits? Could this lead to new type of merchandizing? Claims laid on orbits, claims which are upheld or believed to be valid claims on orbits. Could they, first of all, be patentable? They could easily satisfy the novelty criteria if they had not been previously described. They could also have an inventive step if it, you know, solves some sort of practical, technical problem.

There is also the question of industrial application. If you can make money at all from it, generally it is considered to have



industrial application. But there is another aspect of industrial application; it has to also be feasible. In general, orbits may have patentable characteristics. We will see that, in fact, many patents have been taken out on orbits. In that case the objects of transaction are just like any other technology. There is the example of the Luxemburg company SES making deals with an American company over a Mexican satellite orbital slot.

The most important patent that was never patented is the geostationary orbit. In 1945, Arthur C. Clarke described the advantages of a geostationary orbit. A satellite placed 36,000 miles above the Earth and turning, therefore, with a period of 24 hours at the same rotation rate as the Earth appears to be stationary in the sky. This is an enormous advantage because you do not need a tracking antenna. The first satellites were using C-band, which needs an antenna just about as big as this room. If you have to turn that thing to track the satellite you need some pretty hefty motors.

This was a really great idea. But was it a patentable idea? In fact, it wasn't, because at the time, we had no means of getting satellites into that orbit. It was pure science fiction. So it could not be patentable because it could not be implemented. One of the requirements for a patent is you have to describe the way that you could best implement it, and it was not described. I recall that Arthur C. Clarke also was the author of 2001: A Space Odyssey. Great author, and he had some great ideas, but they were not all patentable.

If you go to the U.S. PTO and type in 'satellite orbits', you get a list of patents like this. It goes on and in the long version you get abstracts from all of these patents.

There is the TRW patent on a MEO, for medium earth orbit, satellite based cellular telecommunications system. TRW is a well-known California military contractor. They took out a patent in 1995 saying that if you launch a constellation of satellites between 5,600 and 10,000 nautical miles and you put them into radio communications contact with handheld telephones, it belongs to us. So you can imagine this shell around the Earth between 5,600 and 10,000 nautical miles, which belongs to TRW for telecommunications applications to handheld sets. Great patent.

They decided to litigate on that because there was a UK company called ICO Global Communications who had the intention to build such a system. They made the bad mistake of asking Hughes to build the satellites. Hughes in El Segundo, California and TRW is right next-door, practically. They are both at Los Angeles International Airport. So, they sued and requested an injunction on the construction of those satellites before the California Federal Circuit Court on the basis that if those satellites were built and they were launched they would become infringing. "We need an injunction right now!" Of course, the court threw that out because the satellites were not on that orbit, so they obviously were not infringing.

The problem is TRW appealed. During that time, ICO could not find the necessary funding to do their project, so they had to try and settle out of court in order to stop, first of all, the investor scare and also to stop the legal expenses, which were a couple million dollars per month. What turned out is they settled for \$150 million and a few months later they went broke for \$450 million worth of debt. They were subsequently bought up by Craig McCaw for only \$50 million. When Craig McCaw bought this system it was really great; it was nothing but some satellites sitting on the ground. Then he went to the FCC and said, "Look, I am going to make a telecom system to handheld mobiles. But I am going to have a hard time penetrating into buildings so I am going to need some Earth-based and terrestrial repeaters." In fact, the gambit is that he would be able to deploy a terrestrial system on the excuse that he has a couple of satellites in the air that cannot communicate directly with handheld sets.

Here we can see how a U.S. patent on an orbit can keep a foreign country from making progress into outer space in deploying its own space-based system. Does this seem consistent with Article Two of the Outer Space Treaty? "... Not subject to national appropriation by claims of sovereignty, use occupation, or by any other means."<sup>11</sup> It seems to me that here we are in the characteristic of "any other means".

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<sup>11</sup> Outer Space Treaty, *supra* note 8, at art. 2.

I should like to also mention that there has been recently—I say recently because on the scale of time that these legal subcommittees of the United Nations COPUOS works, only ten years ago -- we have a resolution taking into account the needs of developing countries for technology transfer agreements. This is the first time where the United Nations has actually used the three words 'intellectual property rights'. In that declaration they say, "Contractual terms in such cooperative ventures should be fair and reasonable and they should be in full compliance with legitimate rights and interests of the parties concerned, as, for example, with intellectual property rights."<sup>12</sup>

Now, as typical of United Nations' resolutions, this is a lofty principle. But the thing is that the owners of the intellectual property rights still want to be paid for the use of those intellectual property rights. Cooperation with developing countries still has this impediment of intellectual property rights belonging to developed countries.

Finally, what is the interface between outer space law and intellectual property law? As it stands, intellectual property law has a few steps. First of all, you have to make a patent application and it goes to the Patent Office. The Patent Office has a huge, thick book just full of rules. The legislation is only this thick, but the book of rules, how to apply that legislation, is about four times as thick. In the MPEP, the Manual of Patent Examiners Procedures, there is nothing said about the Outer Space Treaty, there is nothing said about international public law. The examiner just does his or her job. They look for novelty, inventive steps, and industrial application—and that is it. You can thus end up with patents that seem to be contrary to Article Two of the Outer Space Treaty. Nobody expects that this will be brought up in court before a judge. First of all, the judge probably did not learn that in school. Secondly, the lawyer would probably get fired for bringing up such an argument.

I have presented this to the UNCOPUOS Legal Subcommittee as well. They thought it was a very interesting problem.

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<sup>12</sup> Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, A/RES/51/122 (Dec. 13, 1996).

They said, "Well, you know, IP contains the word property"; therefore, it is not in their territory and it is not up to them to resolve. There is no interface between outer space law and intellectual property. They can be in contradiction and for the moment, there's just nothing we can do about it."

It is going to get worse because we have new emerging space powers. The Brazilians are working with the Chinese and they have launched satellites. The Nigerian satellite is a Chinese satellite. The payload was supplied by a French manufacturer. We have evolution of applicable law, but applicable law is still piecemeal in the intergovernmental agreement (IGA) on the *International Space Station*.

On the ISS, which took about ten years to negotiate because of IP issues, we ended up with a total patchwork. On each segment, and each module supplied by a different country, the intellectual property law of that country applies. If we do get similar provisions from the European Commission and the new European Community Patent, which is in the recommendation stage but has not yet passed, mostly because of language and translation requirements. There are some United Nations efforts which have been endorsed by Unispace III, but this has not gone forward. The World Intellectual Property Organization has also studied the problem. They said it is not for us because, you know, we are just here to grant patents. We have an arbitration committee but, for us, a space patent is like any other patent.

The World Trade Organization and the TRIPS Convention have totally ignored this problem. There was a revision in the millennium round. Intellectual property was not opened for question. The United States does not want to hear that question opened at the moment.

A revision of the Munich Convention, this is the European Patent Convention, overlooked this problem as well. There was lobbying from the European space industry for that. So in the meanwhile, we are on the point of passing appropriate legislation into French law which is basically the same as the U.S. law, except that it does not have the 'or' under 'jurisdiction and control'. We prefer to stick to the international law terms. Other national laws are in the works in India, Kazakhstan, and a few other countries.

So, is there divergence or convergence? IP can aid if it contributes to promote the progress. That is what it is made for. But we have seen in practical examples that quite often it is preventing people from going forward. I would be tempted to say there is a misuse of intellectual property law. Appropriate legislation should be put into place to ensure that it actually does promote progress, that the goals that we set ourselves in making these laws can actually be met.

I didn't give you lists of all the different people that have made these patents I showed you, but you find individual inventors who have absolutely no means whatsoever to make a satellite or launch it. You have consulting companies who will go knocking on doors saying, "Hey, don't you want to use this idea?" You have national space agencies who own patents on orbits. Remember, owning a patent on an orbit is in order to forbid somebody else from using it. What is the logic in national space agencies taking out patents on orbits? In order to keep somebody else from using it, obviously.

Somebody else's IP is always a barrier to overcome. So, if the United Nations' public international law is to have any useful effect, it has to be translated, in adequate terms, into national legislation.

MR. WILLIAM WILKINS: My name is Will Wilkins. I work for a department of the law school called the Mississippi Law Research Institute. What I thought I would do is just give you a little rundown of some things I do and be very brief, and then sit down—a little rundown of an issue or two that I have run into in working with Joanne and some other groups in space law. Again, I work for all the universities in the state of Mississippi for intellectual property issues. It is very broad. It is almost like a practice, it is very broad. I am a generalist inside the intellectual property field and so what I do is extremely terrestrial. I work on a really base level on a lot of these issues: from copyright issues to dealing with bands playing across campus, to T-shirts being sold at football games, to people that are developing technologies dealing with space issues and geospatial issues.

In my experience working with the space and remote sensing programs, I have worked with Joanne's Center, the Center that is sponsoring this program, and also another center here

called the Center for Geospatial Workforce Development. The issues that we have had have ranged from fairly usual publishing issues: copyright issues, speakers' issues, release issues—things that would generally come up—to more technical patent issues: issues of data, what we can do with data that was generated in space. I have not really dealt much with data while it is still in space, but once it gets down here it comes into my field. Like the previous speaker said, there is a divergence of what has been developed in space, which is covered by space law, and once it gets down here it is covered by what I know, which is intellectual property law.

The problem with intellectual property law is it is jurisdictional. From country to country there is a wide divergence on coverage. Even within individual U.S. states, there is a wide divergence.

A lot of the issues that I have dealt with have involved software that is used to translate the data once it has come to Earth. It was fortuitous that I was going to talk about this today, because in the window of the library at the law school was a book exactly on what my experience has been, which is Math You Can't Use. I haven't read the book yet, but its cover says, "Patents, copyright, and software." The gist of the book, from what I got in my five minutes of reading the cover, is that patent and copyright law are being used to take principles of math and make them unusable, as in the orbits that are now unusable. Basic mathematical principles are becoming unusable.

We have had some experience in dealing with algorithms. Algorithms are patentable in certain circumstances. The exact language is that they are protectable, if they produce a definite tangible concrete result. In other words, if the data comes from space, from a satellite, you can patent, in certain circumstances, the algorithms that you use to crunch those numbers, to do something with those numbers, if there is output on the other end—if something comes out of there. That is the holding of the *State Street Bank*<sup>13</sup> case and it has become kind of established law. The problem is, as this book points out, we have a lot of

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<sup>13</sup> *State Street Bank & Trust Company v. Signature Financial Group, Inc.*, 149 F. 3d 1368 (Fed. Cir. 1998).

math that is becoming unusable. It is a struggle that the courts are taking up on a real base level right now, which is probably going to have to be settled statutorily, eventually. The problem is that the argument on the unpatentability of algorithms and things is that these are math principles; they have always been there, there is no originality, they are there. We may not know them today, but they are there. All we are doing is figuring out something that is there.

It has been a real struggle when I am working with people on algorithms patenting or working on software that they have produced to deal with this information, the breadth of the information that has come from space. That is the majority of my experience working with intellectual property issues and space law: working with what we do with the information once it comes back to Earth, whose information it is. Was the information in the public domain, and then what we do with the information? Does that transfer it into something that is proprietary? When does it become a trade secret? What steps do we have to take to make it become a trade secret? Things like that.

My issues, again, have been much more basic. But it does tie into the previous talk, which is that what we have done with algorithms has been that we have tied up a bunch of things that may not be very usable, and may not in the end satisfy the Constitution's requirement of progressing the natural progress of science and arts.

PROF. GABRYNOWICZ: Any comments, questions, reactions to anything you heard? Anything you want to direct to anybody? Yes.

FEMALE VOICE: I have a question about inventions for the Other Transactions Authority. Is that a literal translation of invention or is that going on to include other branches of intellectual property law?

MALE VOICE: Inventions under Section 305A is inventions in the normal sense of the word; patentable inventions. Basically, the transfer may be patentable. An invention that is or may be patentable. Inventions 305A applies to contracts for large businesses that have not been craved out by Bayh-Dole and other transaction authorities. When we talk about title taken to inventions, it is the rights in the inventions and the

patent. That something is in the patent that was made, which is conceived or first actually reduced to practice under the agreement.

FEMALE VOICE: So that extension does not extend to copyrighted works? So those could be other transactions?

MALE VOICE: 305A does not apply to copyrights.

FEMALE VOICE: Right.

MALE VOICE: This would be more of a data rights type of issue.

FEMALE VOICE: Okay.

MALE VOICE: And we have much more flexibility in data. We talk about data; it is broader than databases, it is information.

FEMALE VOICE: Okay.

MALE VOICE: You do not take title to copyrights, per se. Now...

FEMALE VOICE: But you could?

MALE VOICE: We can get assignment. In fact, when it comes to software, we have some NASA FAR supplement clauses or we can require contractors to assign the copyrights to software to us.

FEMALE VOICE: Okay.

MALE VOICE: Software is a unique kind of technology that is not covered by patents now.

FEMALE VOICE: All right. Thank you.

PROF. GABRYNOWICZ: Anyone else? Any of the students? Comments? Questions? Okay. Well thank you very much. I learned a lot. It was great. Thank you.

#### CLOSING STATEMENTS

PROF. MYERS: Thank you, first of all, to all those of you who have borne with us today. We have covered a lot of ground and I think I have learned a lot about space law that I was unaware of. I want to conclude with three points.

The first point I would make is about space law. As I may have not even brought up earlier, I was pretty much an empty vessel when it came to space law up until I started reading the



papers and listening to the presentations today. I have learned a lot from all of you and I appreciate that.

One of the things I learned about space laws is just how far-reaching the field can be. We have talked about international law, treaties, comparative law, jurisdiction, choice of law, contracts, and, of course, intellectual property. It is striking to me that you can probably find a connection to almost any area of law here. I was impressed with that.

My second point is about the convergence and divergence of intellectual property and space law. It struck me that space law, here too, is quite—and I use this word in a favorable way—imperialistic, in the sense that it has really carried through every area of intellectual property.

We have talked about patents and patent litigation and the issue of enforcing patents in extra-territorial and space locations. We have talked about copyright ability issues, database protection. Quite a bit of talk of the trade secret area, which does strike me as very important for space law, as well as technological means of protecting data. Pretty much everything that I talk about when I teach intellectual property and think about intellectual property seems to be covered here.

I guess that brings me to my third point: is there divergence or convergence or both? I think we have had healthy dialogue here among practicing lawyers/professors and there has been disagreement amongst those groups as well as between them. It strikes me there is some of both divergence and convergence.

In my view, listening to everything, I think space law and remote sensing generates a wealth of information in much the same way, for example, that pure scientific research might generate a lot of information that probably ought to be free to all. And available in part because it does frequently seem to be the product of governmental taxpayer funds, and therefore ought to be available to be used.

Once we take that raw material and alter it, make it useful, it is much like applied science, intellectual property, because at that point we are transforming something that is public in nature, something that is theoretical, something that is raw, factual, and turning it into something that would be useful to peo-

ple; maybe useful in a patent sense, maybe creative in a copyright sense.

In either case, at that point there is a role for intellectual property and for property rights in that information. To me, that is where there is both a convergence, a sense of an interplay, and a close relationship in the two fields, even though they may start off with very different premises.

PROF. GABRYNOWICZ: I am just going to try to synthesize a little bit of what I heard. I also learned an enormous amount today. I think the conversations we heard this morning is what is so desperately needed in the space law community.

I heard things that have expanded my own thinking of space law and that have opened up new opportunities in ways of thinking about both national and international space law. We had a lot of lively discussion and I did hear that there was some kind of consensus. That we do need to consider a range of property rights when we are talking about intellectual property and the territorial is only one component.

Chattel, intangible rates—all of that is appropriately discussed in the context of space law. The question is how best to do that via national legal vehicles or international law. Can intangible rights be registered the way a spacecraft is registered? Is that an appropriate mechanism for a commons?

A lot was said about the focus of space law on a commons and equity and that this is a context, which, when it meets the idea of individual rights as promulgated in intellectual property, really needs to be addressed. The assumption is there will be leakage—I think that was the word I heard—of intellectual property and the stress on individual interests. If space law is to maintain its focus on equity and a commons approach, there will need to be some kind of affirmative action for that to happen. It would be interesting to see how my colleagues from other countries would respond to that remark, but, very interesting.

The second thing we addressed was databases. We spent a lot of time dissecting and discussing the difference between the U.S. approach and the European approach, the database directive and the different values that each one of those approaches have. That dovetailed with something we kept hearing over and

over, which is the need for empirical evidence regarding the effectiveness of one approach or another.

In fact, what we did hear is perhaps in Europe they are beginning to rethink some of these things based on the fact that they have looked at the empirical side of it and it would be interesting to see if there were parallel efforts that have happened in the United States.

The practitioners' panel was fantastic. We saw a wide view of things and it came from the point of view of the client, that the practitioner has worked with in the past. We saw different angles, in one case, a speaker has NASA and the government as a client and so the discussion was about its organic statute and the use of the law and the legal tools that they have to implement national policy.

We also heard that intellectual property is an integral part of commerce, and specifically, commercial spacecraft sales and the contracts that are drafted to affect those sales. That not all space hardware is the same. Launch agreements are different. The intellectual property issues and the launch agreements were different than the intellectual property in the spacecraft agreements. To have a successful mission, you need both the launch vehicle and the thing on top of it. To see that coming from two different angles was interesting. That the law can change with institutions, whether you are NASA, the Air Force or the European Space Agency, depending on which one of those institutions you're dealing with—going to have different implementing regulations, which is also going to add a layer of complexity.

One view, based on clients that are outside of the United States, is that there is no interface between intellectual property and space law and that there definitely is a divergence, not a convergence in that point of view.

We heard from an attorney whose client was academia that there is concern for the growing use of intellectual property to prohibit the use of mathematical formulas or, in the case of Brad's presentation, physical facts, like orbits. That brings us back to the original paper, of what is the best and appropriate approach to this role of space law and international intellectual property law.

Finally, our last and most recent paper I found compelling in so many ways. The idea of discussing a developing nation's approach to laws that have historically been considered sophisticated technological requirements and which have been traditionally, within the realm of the developed world. I think it is an amazing insight into one country's approach to its beginnings and how to make it grow.

The aim to protect the intellectual property of a creator or a producer is very similar to what we hear in the developed world. But what we do not hear in the developed world, although there is increasing demand for, is to prove the social and economic value of these activities.

From Nigeria's point of view, that is their starting point. Whereas the developed world, which has been involved with space activities now for over 40 years, are still often required to prove that to funding agencies and policy-makers and decision-makers. Nigeria seems to have that from the beginning.

I love the term that Tare Brisibe used, the 'reciprocal penetration of national and international law', when we were talking this morning about what is the appropriate way to go in terms of further defining it. That sounds like a standard to me. It is a very eloquent term and I think it has value.

That is my wrap-up on the law. But, I am not finished wrapping up my wrap-up. Before I wrap up my wrap-up, I must thank a number of people who helped make this possible.

First, I have to thank Kali Murray. We just were talking one day and she was talking about the idea of commons and intellectual property. I said, "You know, space is a commons," and one conversation led to the next, and that is really what gave birth to this idea of having this conference, and Kali's resource to the IP bar has been a very valuable thing. I want to thank her for that.

I also want to thank Michelle Aten, who has been in the control booth. She has been working back there, making sure that the webcast and everything has been going smoothly and dealing with the technology here. We had an intervention by Jake Jenkins, who came from across campus to help us out. We found out that evidently there was some kind of campus-wide difficulty with audio earlier today and there was nothing we

could do about it from here and he dropped everything he was doing to come over here to get us back on track. I want to thank him for that.

With that, I will just give our participants a last chance to make a comment, a question, sign off, whatever. If not, I declare this symposium closed and thank you all for your participation. For those of you out in Webland, thank you for your patience and join us for a virtual cookie while the rest of us have a real one. Thank you, very much.