



Episode 123 – Intellectual Property Law, the Increasing Importance of Protecting Space Assets and the 4 Types of IPs

Speakers: Kevin Myhre, Patent Attorney, Barley Snyder– 25 minutes

John Gilroy: Welcome to Constellations, the podcast from Kratos. My name is John Gilroy, and I'll be your moderator. Today, we welcome Kevin Myhre, patent attorney. The concept of Intellectual Property or IP is complex but critical to foster innovation in all industries. But how does it work in space, in such a booming industry? How is this new technology protected? While the number of countries and commercial players involved keeps increasing, it is important to understand how innovation is regulated and most importantly protected.

John Gilroy: In this case, we do not only cross borders, we go into space. Is a patent granted in the United States still valid in outer space? That's what we hope to find out today with our guest, Kevin Myhre, patent attorney with a background in aerospace engineering, who has worked on numerous patent applications for space related innovations both for the government and commercial sides. Kevin, can you walk us through the history of Intellectual Property in the space industry?

Kevin Myhre: Yes, absolutely. Thank you for having me on the podcast today John, I'm happy to participate and lend some insight on IP protection. So first, I think if we're going to talk about IP and its intersection with space or space law, I think it makes them most sense to just take a step back and I think say, well, "how does Intellectual Property protection apply generally?" And so, I think that leads the framework for then how we can discuss its intersections later on. So, we're used to very territorial rights in intellectual property. So maybe we can use patents as an example. Patents as you may know, are granted in a particular jurisdiction like the U.S., for example, and the holder of the patent can prevent others from making, using, or selling whatever invention is claimed in that patent in the jurisdiction.

Kevin Myhre: So for example, if a competitor's making an infringing product in some other state in the U.S., we could potentially stop them from making, using, or selling it, according to the claims of our patent. But if we only have that U.S. patent and someone is making that product in France, for example, and only using it and selling it in Europe, our U.S. patent isn't going to let us stop them. And trademarks and copyrights are somewhat similar in that they're both registrable with the government and are similarly territorial. Importantly, and this is a side point, but you can file related patent applications on your invention or trademark applications in other jurisdictions to extend that protection obtaining

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very similar, even potentially the same protection in these other areas in other territorial jurisdictions. But the real point is that you'd have to apply to each individually.

Kevin Myhre: They're separate forms of protection we obtain them separately and they're tied geographically. So I think this is an important groundwork for how space related inventions can be protected and enforced. As you might be able to see, the system of territory based rights works. It works well for innovators or holders who are based in single countries. It can work well for multinational corporations that have large organizational infrastructure and can coordinate protection across these different jurisdiction. But it does tend to get a little uncertain once we start to move off the ground, which is what I'd like to discuss next.

John Gilroy: Yeah. So that leads to question here. So how does Intellectual Property law, IP law, intersect with space law.

Kevin Myhre: So with the background of the territorial protection, there has been some discussions and some interesting intersection with IP and the question's been around for quite a while, but the intersection of IP with space law has been mostly tangential. So if we look back, nothing says riveting like an old treaty, but the outer space treaty of 1967 is probably the first thing to at least address how we might apply IP rights in space. So in that one, it outlined that outer space itself is not appropriated by any particular country, but that objects launched into space are different. So a country of registration retains a jurisdiction and control over the space object while it's launched in outer space and registration is the country that launches it or procures launching or from whose territory it's launched.

Kevin Myhre: So there's a focus here in this outer space treaty on the entities that are entering spaces, governmental entities. An interesting aside here is that at that time, everything was very governmental. So there wasn't much contemplation about commercial actors entering this space in the future. So everything was very much based on, what country was it launched from? What country owns this vessel or object that's in space. And so from that treaty, we can say that for our IP purposes, we can say that this IP protection applies on that vehicle launched from that country of registration. So if we have, for example, a space shuttle launch in the U.S., in theory, we could extend these provisions of the outer space treaty to say that our IP protection would then also apply on this U.S. space vehicle, because it is under the jurisdiction of the U.S.

Kevin Myhre: So that was the background, or initial intersection with Intellectual Property. More on point, the U.S. has the U.S. Patents and Space Act, which is literally entitled, "Inventions in outer space." I won't bore you with the actual opaque legal language here, but it does say similarly to what we were gathering from the outer space treaty that inventions made, used, or sold on a space object

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under U.S. control or jurisdiction are considered, made, used, or sold within the U.S. So we're extending that jurisdiction, even if it's in space, as long as that object is registered to the U.S., then that counts as United States jurisdiction.

Kevin Myhre: There are some exceptions there in that law. So it doesn't apply to an object specifically identified by international agreement to which the U.S. is a part of. So if there's an object in space like the International Space Station, if that's subject to some international agreement, then this does not fall under this U.S. Space Act, the patents in Space Act.

Kevin Myhre: And it does not apply if it's registered in a foreign country, even if it's under U.S. control. So, if a vehicle launched from another country despite being under U.S. control, it's not considered U.S. jurisdiction, at least for patent purposes. The act does get into what happens if an invention is made in space. So this says that as long as it's on a U.S. controlled space object, it's also deemed created in the U.S., similarly to how it would be if that invention were created territorially on the ground. And the International Space Station, there's an agreement covering that separately. It also covers it similarly where it says that if there are multiple objects connected with each other that are separately under registrations of various countries, then those separate elements are each the jurisdiction of that individual country that has that component.

Kevin Myhre: So, and I think this is probably the most fascinating part of the intersection of IP with space is that's about it in terms of actual attempts to outline enforcement of IP in space. Trademark does not have anything similar and requires jurisdictional registrations like a patent. A trade secret is not registered, it's something that you protect by yourself. And there's protection by international agreement in many countries, but nothing about the applicability in space.

Kevin Myhre: So it's very much a developing area of law. How does IP apply, especially once these objects reach space? But I do think that it's still very applicable to a lot of space related businesses. And so, I think the question with this background and with these developments in space law, where does it leave us if we're a space related entity that's looking to innovate and looking to protect our innovation. While we have this very well-established territorial framework for protection, and we have a somewhat fuzzy implementation in space. But as I think, we'll get into here in a few minutes, that's not quite of as big of an issue as it seems at least right now. But I think we will discuss some on where that might head in the future and how that could be fixed as we spend more time in space.

John Gilroy: Well, Kevin you seem to know a lot about law and I know a lot about human beings and I'll tell you one thing. Where there are humans, there will be disputes, it's going to happen. It's part of being human. I don't know why, it's this way humans are. And so let's put this in perspective. So why is Intellectual Property increasingly important for space related businesses? Are these pesky humans getting involved here? What's going on?

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Kevin Myhre: To some extent, yeah. I think that's the answer. So as we've discussed some already, much of the industry has long been government driven. Like as we saw with the outer space treaty, the focus was really on these national entities, creating these space fairing objects and launching them into space. And there wasn't much of a focus on, well, maybe some commercial businesses could enter into this area? But, and I think as a lot of people who listen to this podcast have probably noticed, and as you've discussed with some other guests, R&D in space and even larger scale innovations, are increasingly trending away from the state-owned, large, governmental organizations to private, commercial organizations. So one aspect I think that drives the importance of IP is just the increase in the number of entities in this area that could be working on similar projects.

Kevin Myhre: So we're moving from, you might say fewer, very large, governmental entities, who weren't really facing competition from others within their jurisdiction. So, sort of tracing back to our initial conversation on territory, if we think about NASA creating rockets and launching them, they're not facing, or at least they weren't in the past, there weren't many other entities that were building rockets and launching them within the U.S. So, if at that point NASA had pursued a number of patents, and they had to some extent, but not in the sense that they were looking to cover every particular aspect of their innovation.

Kevin Myhre: And they didn't because there just wasn't the same level of competition that there was, or that there might be once a lot of these commercial actors move in. So we're moving from these fewer entities to more numerous private entities that are crowded within the same territorial area. And private businesses, sort of as you suggested, John, also tend to be somewhat more conscious of competition, and they're more proactive in having control over their own developments and usually, in chasing the profits for their corporation, are more willing to both protect their own innovations and use that to improve their competitive position in the market, especially when they've had significant investments in a lot of these R&D projects. But I think it's also important to note too, Intellectual Property in general. It's not just about excluding everyone else. So it's not as if a lot of these companies are coming in, and just saying to one another, I'm just going to grab up these Intellectual Property rights and try to push other people out of these segments of the market. They're often also used and we think in a lot of cases, often better used through various types of agreements. So as we've seen some of two, we might have governmental entities working with commercial entities.

Kevin Myhre: And if they're both bringing their own innovations to the table, maybe working together to produce something else, that might in itself be innovative. Usually that's best controlled through various types of agreements. And both of these entities are in a much stronger position if they have that IP protection to bring to the table. So it's a combination of increased action in the area. And then also using that IP protection to be able to get you, not just keep other people out,

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but be able to allow you to maybe forge some of these collaborations or agreements with other businesses that could really propel everybody forward.

John Gilroy: Kevin, thousands of people from all over the world have listened to this podcast. Go to Google and type in "Constellations Podcast" to get to our show notes page. Here, you can get transcripts for all 100 plus interviews. Also, you can sign up for free email notifications for future episodes. Kevin, I know you're in the Philadelphia area. If you were in downtown Philadelphia, you might hear an argument that would start with something like, "okay, give me an example." I don't want to talk like I'm on a bus in Philly or something, but give me an example, you know? Can you briefly describe how the forms of IP could be used to protect these different aspects of space related businesses?

Kevin Myhre: Sure, yeah, of course. So I think our conversation so far is a little abstract, but if we can focus on some examples I think that helps ground what we're talking about. So as many are probably aware, there are really four main types of IPS. We have patents, trade secrets, trademarks and copyrights. So in the space context, really each of these can apply. So patents are most likely a tangible device, but could also be a process or software. One example we might use would be a propulsion system. Maybe we can use that here to flesh out what a patent can get you in this area. What's particularly interesting about the patent side is that the scope of the protection can vary significantly. And it depends on how the application is drafted, what claims are allowed.

Kevin Myhre: So if we invent a propulsion system, we could try to cover just one small innovative portion of it. And if that patent is drafted correctly, it could cover other uses of that particular innovative element in other propulsion systems, or it might cover uses of that element in other applications. Or we could try to cover that propulsion system as a whole and leave out some of the other details that are more based on existing technology. So we're potentially catching some infringers who would make that propulsion system, but maybe change around some of the existing things.

Kevin Myhre: Ultimate lesson there being that on the patent side, it's not just the protection on the exact device that you've created, but it can extend beyond that. And it also doesn't even really need to be a device, it could be a different process that results in, maybe the product at the end of the process is the same. Maybe it could be a metal with some particular coating that helps it last better in a space environment. But maybe we have a process that applies that coating in a different manner that makes it adhere better or something like that. The end device is the same, but the process is an improvement on existing technology. So that's something that could also be the subject of the patent.

John Gilroy: I'm just thinking about the bus in Philly and someone says give me an example. Well, I don't say give me an example. What I say is in order to be terrific, you got to be specific. So I'm going to give you a real specific question here, and you can

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bounce around with it if you want. So let's say my daughter owns a company and she acquires Intellectual Property, IP for a certain technology. So, where is it enforceable? Does it change between the ground and then a certain level it's air, a certain level of space, or so how does this all alter?

Kevin Myhre:

Yeah, so I think starting with, and I think it's most useful to start with that patent example because it might be the clearest here, but if we have that propulsion system, suppose going back to the first part of our discussion, if we have a U.S. patent on the propulsion system, it would extend to anywhere in the U.S. So, we could prevent others from making, using, or selling that propulsion system in the U.S. So, if someone builds that system in the U.S., they could potentially be infringing it. Even if someone builds it elsewhere, moves it to the U.S., puts it together and then uses it in a way that reads on the claims of our patent, they could be infringing there too.

Kevin Myhre:

So that's the ground perspective, air is usually pretty similar. The jurisdiction of the territory extends some distance above the ground before you get too far above the ground and you start to approach space. And then space, we address some with the Space Protection Act we were talking about earlier, where as long as that object was registered in the U.S., if it is in space, then it could potentially be infringing the U.S. patent because it is a U.S. registered object that is using the technology we have covered by the patent.

Kevin Myhre:

Some of the other forms of IP too could potentially be interesting to talk about here. So, you could use like a trade secret, maybe as an alternative to a patent to protect various types of IP, a space related industry. So, a trade secret could be used to protect any kind of information that has value by not being generally known and is held and protected at secret by the owner. So, we don't have to file for anything here. This is more about a company using various obstacles and confidentiality agreements to make sure that some sort of their secret sauce, you could think about the Coca-Cola formula, is protected and is not just generally out there. The major benefit of trade secrets is that it can potentially last forever, as long as you keep it secret.

Kevin Myhre:

But it only protects from outright stealing if someone else independently discovers it, or it would happen to reverse engineer that trade secret, then they're free to use it, whereas with a patent, we talked about that broader level of protection, where even if someone starts to use it independently, it didn't really intend to copy your invention. They could still fall within the claims of your patent. And trademarks also could potentially apply to some of these space related businesses. For trademarks, you think about branding, so identification of a source of goods or services. This could be maybe a name or a logo. We could think about some particular examples like Blue Origin or SpaceX. And these are restricted to the types of goods and services that they're used for. So Blue Origin, for example, is then registered under a number of different things. Things we might expect, like travel services and launching commercial payloads,

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but they might also register under like toys or publications, so that other uses of that mark too are protected.

Kevin Myhre: And those trade secret and trademarks similarly apply between that sort of territorial type of protection. And then space is a lot less certain than the patent side, where we discussed that there's that patent act that extends to U.S. registered space objects. But I think really the key and going back to talking about that difference between protection ground, air, and space, I think the key thing is that the lack of concrete IP development is maybe not as restrictive as it seems. In our propulsion system example, the key at least right now is that the vast majority of things are not being practiced or created solely in space.

Kevin Myhre: So any potentially infringing action is probably going to happen somewhere terrestrially before it can reach space. We need to build that propulsion system where we need to launch it from somewhere, which would likely be using that invention. So because we are reaching space frequently, but not spending a lot of, at least in person, not spending significant time there yet, we don't have settlements or that sort of thing, our terrestrial system actually sort of works for right now. I guess you might think of an example where it might not work, for example a communication satellite, maybe it has some function that is only used once it reaches space. And in that case, I think we're back to the Space Act extension of patent protection to U.S. launched vehicles type of situation. But yeah, I think for the most part, space protection is open ended, but I think that territorial protection still works in a vast majority of cases for right now at least.

John Gilroy: In my previous question, I carefully use the word enforceable, but I think if we went to Google and typed in "job description patent attorney", it might say, well, these patent attorneys maybe counsel companies, as far as what they can do. They maybe apply for patents and trademarks because that can be a complex process. And then the other part is the enforcement. So there's a whole lot to this whole area of patents and patent attorneys, isn't it?

Kevin Myhre: Sure. Yeah. So we do really that whole range of services ranging from actually filing for the protection, including consulting on what can be protected, how we can protect it, that sort of thing. And then enforcing it down the line too if it does come to that.

John Gilroy: Kevin, we've been doing this podcast for four years. We used to have "Made in Space" on the air and it never dawned on me during that interview to ask them about trademarks and patents. I mean, is the last thing I thought about, I was just dazzled that they could print stuff out in space. It just shows you how fast this industry is changing. So how do you keep up? How does IP live even keep up?

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Kevin Myhre: Yeah. And I think that's the interesting question too. As we've discussed, it's really territorial, and for now it's working because most things need to happen here somewhere on Earth before they're launched and reach space. But I think really anybody see that coming up at some point when there's more of a presence in space and things are being developed there or maybe even invented on these vessels in space, then the question becomes much more complicated and because we're no longer just being able to tie something back to an Earth jurisdiction and say, okay, well, these frameworks that we have now work.

Kevin Myhre: The further we get away from Earth and the less we're intersecting with some particular area of Earth, the current system starts to lose its effectiveness, which I could, certainly see happening over the next 10 plus years or so. There have been some pretty interesting proposals for how we might deal with this going forward. There's a World Intellectual Property organization that has, in very early stages, not in any sort of, and hasn't made much progress like a thought leadership article that they put out, but they proposed for a unified patent law jurisdiction space. So essentially saying that, okay, we can have our terrestrial protection, but as far as things apply to space, we might have a single patent application that is universally enforceable throughout space.

Kevin Myhre: So, space itself would be a single territory that all these international, all these bodies would agree to, as something that's separate from our territorial protection in there. And there is some precedent they have set up a patent application system that centralizes some filing elements across the world. Europe has gone from multiple member states to France or Germany or England or you can file individually, and you can still do that. But now Europe also has an alternative single patent process where you can obtain one that covers multiple jurisdictions. So that could potentially be an analogy here for how we might approach this problem space.

John Gilroy: Kevin, space law has been around for a while. I think 1967, you mentioned that earlier, but never has had much interest until the last few years. I'd like to thank you for giving our listeners an introduction to some legal concepts involving Intellectual Property and space. I'd like to thank our guest, Kevin Myhre, patent attorney.

Kevin Myhre: Thanks, John. Happy to participate.