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AFJAGS Podcast: Episode 70

Space Debris and the Gray Zone with Major Edwin Kisiel (National Security Law Competition)

Host: Major Charlton Hedden

Guest: Major Edwin Kisiel

"Space Debris and the Gray Zone" is a continuation of our National Security Law Competition series. In this episode, Major Charlie Hedden sat down with the competition winner, Major Edwin Kisiel, to discuss his paper on how Russia, China, and other Great Power competitors can take advantage of gaps in space and environmental laws in the Gray Zone.

Introduction

Major Laura Quaco:

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In this episode, we interviewed another contestant from the Seventh Annual National Security Law Writing Competition. At the time of recording this episode, the winners of the competition had not yet

been announced. However, we are happy to announce that the interviewee in this episode, Major Edwin Kisiel, achieved first place in that competition.

Second place went to Major Matthew Ormsbee, who was interviewed in Episode 69. And third place was Major Jessica Tirado, who was interviewed in Episode 68. Be sure to go back to those episodes if you missed them. Congratulations to you three and thank you to all of the contestants of the competition. Enjoy this episode with Major Kisiel.

[Music: Band playing clip of Air Force song]

Major Charlie Hedden:

We are joined today by Major Edwin Kisiel who is one of the writers who is competing in the 2022 national security law writing competition that is presented by The Air Force Judge Advocate General School with support and sponsorship from the JAG School Foundation. Maj Kisiel submitted a paper titled Strategic Competition Implications for Commercial Space Operations, and he's here to talk to us about that and the ideas contained in that paper today.

Major Kisiel, could you introduce yourself, please?

Maj Edwin Kisiel:

Absolutely. Thank you, Charlie, for the introduction. So, I'm Maj Edwin Kisiel. I'm a judge advocate with the United States Air Force and I'm currently assigned to Space Systems Command in El Segundo, California. And I became interested in space law during my time in the JAG Corps working within space enterprise, as well as the space law course that I took at George Washington University while earning my environmental law [LL.M.](#), and the perspective I bring is that I see space law as part and parcel of environmental law. Space law involves responsible behavior and use of a resource in the extraterrestrial environment.

Quick Look

Maj Hedden:

Right, and so this year's topic for the national security law writing competition was how national security law impacts America's strategic competition in the gray zone. So, the gray zone kind of encompasses a whole lot of different ideas in that space between peace and outright war, including operations in space. So that was kind of the angle that you took, discussing some of the ways that national security law impacts that—specifically, space law can impact that. So, generally speaking, can you kind of outline just the broad strokes of your paper, and the thesis therein.

Maj Kisiel:

Certainly. So, I take a look at gray zone activities, so, which are adversarial actions falling short of outright war and gray zone activities can encompass aggressive action that deliberately avoids the red line to trigger conflict. It can encompass non-attributable actions done through proxies or intermediaries, as well as bullying to force the hand of an adversary to escalate conflict, and I look at gray zone activities and the implications for commercial space entities because commercial entities operating in space are not immune to these kind of aggressive activities from competitor nations.

When you look at the development of space, government actors were exclusively in the space domain up until about the 1980s. However, we've seen since then the rapid growth of commercial entities launching operating satellites, and it's not just commercial entities acting as defense contractors either. You know, you may have space companies that perform national security services for the Department of Defense, but then they also have entirely civilian operations, as well, for the for the civil sector.

However, because a lot of these space technologies and commercial actors do serve a national security role, they can be subject to the same gray zone activities from strategic competitors. So that's why I think it's important to highlight this issue of gray zone activities in space, not just from a government user and government actors standpoint, but from the commercial side as well.

Commercial and Military Clients

Maj Hedden:

Yeah, one of the one of the passages from your paper says that "commercial spacecraft can serve both government and private sector requirements on the same platform. Many commercial space technologies can provide dual use for civilian and military purposes, making them potential targets of gray zone aggression," kind of like you just mentioned. I wanted to just kind of dig into that just a little bit and get you to explain how that comes about.

Are we talking about one actual piece of hardware that at the same time is being used for national security, as well as commercial uses or how does that actually look out there?

Maj Kisiel:

Yeah, absolutely. I mean, you can have the Department of Defense as a client for a commercial space entity, the same as several other clients, or even clients from different nations using the same technology from the same satellite platform. And a lot of—when we talk about dual use technologies, so a lot of the space technologies that the Department of Defense relies on, such as the global positioning system for positioning, navigation, timing, remote sensing activity, communications—these are also the same kind of uses that the civilian sector employs, it's just Department of Defense use is for the national security enterprise, while the civil sector uses it for, you know, even activities of day-to-day living.

So, yeah, you can certainly have one satellite or one system of technology supporting both a national security purpose and a civil sector purpose, which can render that civil sector use as a target when you're looking at gray zones of operations.

Aggressive Actions

Maj Hedden:

Right. And that kind of brings us to the next part of what sort of possible aggressive action could they be opened up to by being dual use? And what sort of—what are some of these concerns we have that not necessarily just blowing them up, which might be a little past the gray zone, but short of that, what are some of the concerns concerning possible actions against these devices or spacecraft are we talking about?

Maj Kisiel:

Some possible actions you may see would be jamming radio frequency to prevent the satellite from communicating with the Earth station. You could see the creation of an orbital debris field, basically creating space junk through deliberate collisions in the path

of the satellite to either cause the operator to have to make some alterations to that satellite flight path or risk collision of the satellite, and that damage or destruction to that resource. You can even see on the horizon potential for using focus directed energy from the sun to fry the components of another spacecraft. So, outside of a kinetic ground to satellite missile, anti-satellite missile, there are several activities that you could see falling within the gray zone, and that could affect both military satellites, as well as commercial satellites.

Maj Hedden:

And there's one other thing I wanted to ask you about. It sounded like there's a possibility that soon there will be satellite or spacecraft up there designed primarily to do debris cleanup, but could also be employed to possibly disrupt the mission of other satellites. Is that something that we're looking at, too?

Maj Kisiel:

When you're looking at the technology for orbital debris removal, where you can have satellites that use net or tethers or can even swallow a smaller satellite to bring it out of low-Earth orbit, for instance, either burn up in the atmosphere or send it out to graveyard orbit, well, that same technology could be used to capture an active satellite and destroy it or collect it and bring it down to Earth.

So, there is some concern, including from our competing—from—there is some concern, including from strategic competitors on the other side of the spectrum that those same technologies, you know—you have Russian inspector satellites, for instance, that can do these sort of on-orbit services—that those could be used to take out active satellites, as well.

Space Law Limitations

Maj Hedden:

Yeah, it's fascinating. So, all of these things with the other satellites, the debris, the intentional debris field creation, possible jamming and directed energy disruption, all of those are some of the kind of threats that we're

discussing here. And the point of your paper was kind of here are some proposed changes or advances in space law that could help mitigate the possibility of this becoming an even more active gray zone between us and our strategic competitors.

So, that begs the question, why doesn't the current law do more to mitigate that? So, can you kind of give us a little rundown of some of the major sources of current space law and the limitations that are in those?

Maj Kisiel:

Absolutely. And so every discussion in space law starts with the Outer Space Treaty, which is—it's over 50 years old and it forms the bedrock of what we know as space law. It sets out a general framework for behavior in space—that space is the province of all humankind. Space is to be used for peaceful purposes and exploration.

Unfortunately, the Outer Space Treaty does not provide any enforcement mechanism, and if one nation believes that another nation is engaging in harmful interference with its actions, the Outer Space Treaty only provides that you can seek consultation. So, unfortunately, while it does set out an aspirational language on responsible behavior, there is no way to enforce the provisions of the Outer Space Treaty.

A few years after the Outer Space Treaty, we had the Liability Convention, and the Liability Convention focuses on assessing liability and monetary damages for satellites that crash into the Earth or satellites that crash into other satellites. Liability Convention is outdated because it only includes national governments as parties, and so it does not provide commercial entities any recourse except through the consent of or except through the national government asserting the claim of the commercial entity. And it does—while it does provide a claims commission process to resolve who's at fault and resolve the issue of quantifying damages, any claims commission award is expressly non-binding,

which again brings you back to the same problem as the Outer Space Treaty, where there's no enforcement mechanism.

We get to the International Telecommunications Union Treaty, and this one is interesting. So, it governs allocation of space within geostationary orbit and it prohibits harmful interference with communications services, with some certain exceptions for—including open conflict. But what makes the International Telecommunications Union Treaty interesting is that it actually provides for binding arbitration for any claims brought under the treaty and so that's the direction that it would be good for space law to move, especially to try to quell and reduce the threat of gray zone activities that is providing some kind of enforcement mechanism. But we're not—we're only there for a limited scope at this point. In recent years have seen the U.S. and other nations get together to develop orbital debris mitigation standards, which essentially are—these are things you will view as an operator of a spacecraft to ensure that your spacecraft does not create additional space junk. However, these standards are expressly non-binding. So again, no enforcement mechanism. Their orbital debris mitigation standards are more along the lines of soft law, where you're trying to get a general international consensus on norms of behavior in space. And then from there you build up to try to get to an enforceable system. But we are far away from that.

Within domestic space law, you have licensing requirements for launch and operations. And so both the Federal Aviation Administration, which covers satellite launch, spacecraft launch as well as the Federal Communications Commission, which governs satellites that operate using communication frequencies to and from the U.S., there are increasingly stringent collision avoidance standards that are baked into the regulations required to get a license and then for launch licensing the spacecraft has to be insured for launch plus 30 days after launch under the regulations.

So, that's the current scope of space law. Main limitations are you don't have enforcement mechanisms and it doesn't really provide any protections for commercial entities from gray zone actions as strategic competitors.

Proposal

Maj Hedden:

Right. So, kind of in a perfect world, we'd want something that could bridge the gap between what we—what you just discussed and something that would do a better job of deterring some of those dangerous possibilities we discussed earlier. So that kind of is the meat of your paper here where you proposed a number of advances and tweaks in current laws.

Can you start off by talking about the first one of those that you listed in your paper where you compare it to something that we already have on Earth in America with environmental concerns and how that would look applied to the space domain.

Maj Kisiel:

So we have the National Environmental Policy Act and the National Environmental Policy Act does apply to obtaining a launch license or operator permit, because it applies to any major federal action. However, we don't really see it applied to—in the extent that it could be—it doesn't really seem to cover—or at least the analysis of the effect of activities in space seems to escape the process used by the Federal Aviation Administration, so, Communications Commission when they are issuing licenses—so.

Maj Hedden:

And that's the that's kind of the subject of a current lawsuit, right? Can you give us just briefly what kind of question is tasked here?

Maj Kisiel:

Yeah. And, so, you have launch licensing that has higher environmental assessment an analysis requirement than an operator's license. And, so, you have this result

where satellites that are launched from the United States may undergo a more extensive analysis than satellites launch elsewhere, but they are operating with a license from the United States. And, so, my proposal is to level the playing field and make sure that orbital debris or potential impacts from operations in space to include the potential of a satellite to experience gray zone activity and need to survive that without creating orbital debris should be included in an environmental impact analysis.

So, with the current litigation, we're tracking the case of *ViaSat vs. Federal Communications Commission*. ViaSat is a commercial satellite Internet provider that has three satellites that operate in geostationary orbit, and it's suing the Federal Communications Commission over the operator license that was granted to StarLink, StarLink being a constellation that will include anywhere from 17,000 to 30,000 satellites in a low-Earth orbit megaconstellation. And ViaSat alleges that in granting the operating license to StarLink that the [FCC](#) failed to properly analyze the environmental impacts for the increase of light pollution at night due to this megaconstellation. And we're starting to see more articles coming out about the potential issue where these large constellations are brightening the night sky and making it more difficult for astronomers, and so you're—and you may even have incidental effects on wildlife and so on from a terrestrial standpoint.

But my proposal would be—and it'll be interesting to see how that litigation shakes out—but my proposal would be just to make sure that you heighten the environmental effects analysis that needs to be completed for both launch licensing and operating licensing so that you have—so that you ensure that satellites, if they encounter gray zone activities, that they will be able to survive in some way, shape or form and avoid creating additional orbital debris.

That's how I would apply the—recommend applying the National Environmental Policy Act to this problem.

Maj Hedden:

Gotcha. Yeah. So that's one part of it that has to do more specifically with kind of the debris threat in the gray zone. What are some of the other proposals that you had?

Maj Kisiel:

So when you look at insurance requirements—so a satellite that receives a launch license only needs to—only needs to carry insurance for launch plus 30 days. And with the increase of the orbital collision risk, the increased risk of a commercial satellite encountering gray zone activities, I believe that 30 days would be insufficient and instead the insurance should cover the satellite's entire lifetime because then you are making sure that the operator of the satellite carries adequate insurance for any claims that arise, but also for the loss of use of that satellite, which is pretty costly and making sure that there's a—you know—some kind of—some kind of way to spread the risk of gray zone activities among all of the potentially affected users that operate in space.

Additionally, as we're developing orbital debris remediation technology, which is a very good thing to be able to begin to clean up the orbital environment, especially from the effects of prior gray zone activities like anti-satellite missile tests by China, Russia, and the United States. It would be good for the federal government to indemnify those commercial entities that develop this orbital debris removal technology so that if you do have a claim where a strategic competitor is trying to use the legal process through lawsuit or whatnot to stop this entity from operating because they don't want the orbital environment cleaned up, there should be some kind of indemnification where the federal government says, okay, this is a common good that needs to happen and we will step in and make sure that these companies engaging in this activity are protected and their conduct. So, I believe indemnification for debris remediation would be a good thing.

Maj Hedden:

Yeah, it does seem like it could act as a way to encourage more companies to get involved in that venture. If you can remove that risk category from those kind of operations.

Maj Kisiel:

Yeah, because it serves both a national security purposes, as well as a just common good of cleaning up the environment purpose, as well.

Maj Hedden:

Right. Yep. So moving on from, from that part to one of your final proposals, which is sanctions, international sanctions against actors who step over the line in this space domain with these gray zone activities. What did you—what did you propose there?

Maj Kisiel:

Well, looking at how things are shaking out with current events and the international response to Russia's invasion of Ukraine, imposing unprecedented sanctions on the nation, as well as individual oligarchs, and—it will be interesting to see how that affects both Russia's activities, as well as other potential strategic competitors. And I think that sanctions should be applied not only for terrestrial activities and aggression, but also aggression in space, as well, because what you do in space has a direct impact on daily life on Earth. So, when you're looking at the theories of punishment, and we talk about specific and general deterrence, the idea is that sanctions create specific deterrence for the entity engaging in the bad behavior because it makes it more difficult for them to continue to engage in that behavior, but also it provides a general deterrence to other strategic competitors who may be considering engaging in irresponsible behavior to show them that there are consequences for these kinds of actions. So, I believe that sanctions should absolutely be on the table when you're looking at a response to gray zone activities in space.

Closing Thoughts

Maj Hedden:

Yeah, that makes a lot of sense, kind of paired with the other more defensive, prophylactic sort of measures that you talked about having that big stick at our disposal—at the international community’s disposal certainly seems like it should be a good way to round out this legal approach to discouraging people from getting—or nation states—from getting too crazy or against other people’s assets in space.

So that makes a lot of sense. We appreciate the effort you put in to coming up with this and writing it and submitting it and walking us through all of your proposals for this new regime in space law. What were some parting thoughts you can leave us with, Maj Kisiel?

Maj Kisiel:

So ultimately, it would be good to have some kind of binding international treaty that defines harmful interference, covering gray zone activities and providing a binding enforcement mechanism. But unfortunately, we’re not anywhere close to getting there. And until—if and when we do eventually get there—we need pragmatic solutions to provide protection for commercial space operators. And so that’s what I’m seeking to do here, is to apply an environmental perspective to develop those protections within the space domain.

And space is only going to become more congested. We’re seeing more megaconstellations. It’s a contested resource among strategic competitors, and there’s only increasing risk of harm from gray zone activities as tensions escalate. And of course, commercial entities are not immune to grays in activities, because a lot of the technology that commercial entities provide has a dual military and civilian purpose, which makes them targets of gray zone aggression.

And additionally, from a national security perspective, we source a lot of our capabilities in space from commercial entities. So, we’re all part and parcel in this together, government actor as well as commercial operator. So, we need common sense, international and domestic legal approaches to protect space as a resource for the use of all humankind as set out in the Outer Space Treaty. And I’m thankful to be able to contribute to the discussion and the development of space law.

Maj Hedden:

Yes, sir. Thank you for that wrap up. And we’re thankful for your contributing to that discussion, too. Thanks again for lending your time and your expertise to not only the writing competition but also to our podcast here. Major Edwin Kisiel, thanks again and we will talk to you again soon, I hope.

[Music: Band playing clip of Air Force song]

Maj Hedden:

Thank you for listening to another episode of The Air Force Judge Advocate General’s School Podcast. You can find this and all our available episodes, transcriptions, and show notes at www.jagreporter.af.mil/podcasts. You can also find us on Apple, Spotify, Stitcher or wherever you like to listen. Please give us a like a rating, a follow, or a subscription.

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Glossary

- **AFJAG:** Air Force Judge Advocate General
- **FCC:** Federal Communications Commission
- **JAG:** Judge Advocate General
- **LL.M.:** Master of Laws

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