

MY WEIRD PROMPTS

Podcast Transcript

EPISODE #194

The Drone Dilemma: Why Slow is the New Fast

Published January 08, 2026 • Runtime: 26:02

<https://myweirdprompts.com/episode/drone-warfare-defense-paradox/>

EPISODE SYNOPSIS

In this episode, Herman and Corn dive into the counterintuitive reality of 2026 air defense: why hitting a ballistic missile in space is often easier than stopping a slow-moving, off-the-shelf drone. They break down the technical hurdles of radar detection, the "nap of the earth" flight profiles that hide drones from sensors, and the lopsided economics of the cost-to-kill ratio. From the rise of coordinated swarms to the shift toward un-jammable optical navigation, this discussion reveals how the democratization of precision strikes is rewriting the rules of modern conflict and forcing a total rethink of military superiority.

DANIEL'S PROMPT

Daniel

What are the challenges involved in intercepting drones that make it so difficult for otherwise very capable militaries? It seems paradoxical that Israel can neutralize Iranian missiles traveling at Mach 4 in the outer atmosphere, yet have difficulty tracking and shooting down a drone moving at a much lower altitude with a smaller body. Why are drones so hard to neutralize, and what is it about drone swarms that makes them a preferred method of attack for offensive parties?

TRANSCRIPT

Corn

Hey everyone, welcome back to My Weird Prompts. I am Corn, and I am sitting here in our sunny living room in Jerusalem with my brother.

Herman

Herman Poppleberry, at your service. It is good to be here, Corn. Though I have to say, the sunny part of the morning was a bit interrupted by the sound of those jets earlier. It is a reminder that even in a city as ancient as this, the sky is never just the sky anymore.

Corn

Yeah, it has been a loud few days. And that actually ties directly into what we are talking about today. Our housemate Daniel sent us a voice note this morning. He has been watching the news and looking out the window, and he is stuck on a really fascinating contradiction. He was asking about drones. Specifically, why they are so incredibly difficult to stop. He was watching the footage of the interceptions over the city last night and noticed that while the big, glowing streaks of the ballistic missiles were being picked off way up in the atmosphere, some of the smaller, slower drones seemed to be causing a lot more stress for the defense systems.

Herman

It is the paradox of the modern battlefield, Daniel. We can hit a ballistic missile moving at four times the speed of sound in the vacuum of space, but a slow, buzzing lawnmower with wings can sometimes slip right through. Daniel wanted to know what the technical hurdles are and why drone swarms are rapidly becoming a preferred option for many offensive operations as we head into early twenty twenty-six. It feels like a glitch in the matrix of military superiority.

Corn

It really does feel counterintuitive. If you can hit a bullet with a bullet, which is how people often describe missile defense, why is a drone such a headache? You would think something moving slowly would be an easy target. But as we have seen over the last year, especially leading into this January of twenty twenty-six, the reality is much more complicated. It is not about how fast you can shoot; it is about whether you can see the target at all, and whether you can afford to hit it once you do.

Herman

It is all about the physics of detection and the economics of attrition. To understand why a drone is harder to hit than a Mach four missile, we first have to look at how we see things in the sky. Most of our defense systems were built during the Cold War to find big, hot, fast things. A ballistic missile is like a burning skyscraper flying through the air. It has a massive thermal signature because of the rocket motor, and it follows a very predictable parabolic arc. Once it is launched, gravity and physics do the rest of the steering.

Corn

Right, so once you spot it and calculate the trajectory, the math is relatively straightforward, even if the engineering to actually hit it is incredibly difficult. It is like catching a baseball. You know where it is going. But a drone? A drone is a different beast entirely. It does not follow a parabola. It can turn, it can stop, it can change altitude, and it barely gives off any heat.

Herman

Exactly. Think about the Radar Cross Section, or R C S. This is basically a measure of how visible an object is to radar. A large fighter jet might have a radar cross section of several square meters. A ballistic missile is also quite large and made of metal. But a small suicide drone, like the ones we see being used in swarms, might have a radar cross section equivalent to a large bird. We are talking about zero point zero one square meters.

Corn

And that is where the clutter problem comes in, right? Because if your radar is sensitive enough to pick up a tiny drone, it is also going to pick up every eagle, stork, and large crow in the Levant. I remember you telling me that during the migration seasons, the radar screens here look like they have chickenpox.

Herman

That is exactly the issue. It is the signal-to-noise ratio. If you tune your radar to be extremely sensitive, you get thousands of false positives. Imagine being an air defense operator and seeing five hundred targets on your screen, four hundred and ninety-nine of which are migrating storks. You cannot fire a million-dollar interceptor at every bird. This ties into how Doppler radar filtering works. Radar systems often filter out very low-speed returns to avoid clutter from trees and waves, and small drones can fly in that low-speed band where the radar and filters are trying not to show background motion.

Corn

I remember when we talked about networking in episode two hundred eighty-eight, we touched on how systems filter data. In this case, the filter has to be incredibly sophisticated to tell the difference between a bird flapping its wings and a drone with a small propeller. And then there is the altitude. Drones love to fly low. They are not up in the stratosphere where the air is thin and the view is clear.

Herman

The nap of the earth flight profile. This is a huge factor. Radar generally works on a line-of-sight basis. Because the Earth is curved, there is a radar horizon. If a drone stays below that horizon, or hides behind hills, valleys, and tall buildings, the radar literally cannot see it until it is very close. If a drone is flying at only one hundred feet off the ground, a ground-based radar might not detect it until it is only a few miles away. At that point, you have seconds to react.

Corn

It is like playing hide and seek in a forest versus an open field. The ballistic missile is high up in the open field of space. The drone is scurrying through the bushes. And even when it is in the open, the materials it is made of are basically invisible to traditional sensors, right?

Herman

That is right. Modern drones are often made of carbon fiber, plastics, or even specialized plywood. These materials do not reflect radar waves nearly as well as the high-grade aluminum or titanium you find in missiles or jets. They are naturally stealthy just by being cheap and small. Some of the newer models we are seeing in twenty twenty-six even use 3D-printed lattices that further reduce their radar cross-section, making them much harder for older X-band radars to detect and track reliably.

Corn

So we have the detection problem. But let us say we do see it. Daniel was also asking about the interception side. Why can we not just shoot them down with traditional anti-aircraft guns or missiles? If we can hit a missile moving at five thousand miles per hour, surely we can hit a drone moving at eighty miles per hour.

Herman

Well, we can, but that brings us to the second-order problem: the cost-to-kill ratio. This is where the economics of modern warfare get really lopsided. A typical interceptor missile for a system like Iron Dome is usually estimated at around forty to fifty thousand dollars per shot. An interceptor for a higher-altitude system like David's Sling is reported in the hundreds of thousands of dollars up to around a million dollars, and an Arrow interceptor can cost roughly two to three million dollars per shot.

Corn

And the drone it is chasing?

Herman

The drone might cost five thousand dollars. Maybe ten thousand if it has a fancy camera. If an adversary sends a wave of thirty drones that cost a total of one hundred fifty thousand dollars, and you use thirty missiles that cost two million dollars or more to stop them, you are losing the economic war even if you win the engagement. You will eventually run out of expensive missiles before they run out of cheap drones. It is a mathematical certainty. This is what military theorists call cost imposition. The goal of the attacker is not necessarily to hit a target, but to make the defender go bankrupt trying to stop them.

Corn

It is a war of attrition where the defender is at a massive disadvantage. It reminds me of our discussion on white-labeling in episode two hundred ninety-one. These drones are often built using off-the-shelf civilian components. They use G P S chips from smartphones and engines meant for remote-controlled hobby planes. The supply chain for the attacker is almost bottomless. You can buy the parts on any electronics website.

Herman

That is a great point. The democratization of precision strike capability is what makes this so scary. You no longer need a billion-dollar aerospace industry to have a cruise missile capability. You just need a garage, some carbon fiber, and a decent flight controller. In fact, we are seeing groups use the same brushless motors that you would find in a high-end kitchen blender or a vacuum cleaner to power these things. It is the ultimate MacGyver weapon.

Corn

Now, Daniel mentioned the idea of swarms. And this is where it gets really technical and, frankly, a bit overwhelming for defense systems. What is the difference between just a lot of drones and a true swarm? Because I think people use those terms interchangeably.

Herman

That is a crucial distinction. A lot of drones is just a saturation attack. You send fifty drones at once hoping the defense gets overwhelmed. It is a brute force method. But a swarm implies coordination. In a true swarm, the drones are communicating with each other. They are using mesh networking, similar to what we discussed in that networking episode, to share data in real-time. They act like a single organism, like a school of fish or a murmuration of starlings.

Corn

So, if one drone in the swarm spots a radar source or a gap in the defense, it tells all the others instantly?

Herman

Exactly. Or if one drone gets shot down, the others can re-calculate their paths to fill the gap. They can perform collaborative sensing. Imagine a swarm where only one drone has a high-quality camera, but it shares that visual data with ten other dumb drones that are just carrying explosives. This makes the swarm as a whole very resilient. You have to kill the brain or kill every single body to stop the threat. And in twenty twenty-six, we are seeing swarms that use edge computing to make decisions without any human input at all.

Corn

And the sheer numbers create a mathematical nightmare for the fire control computers. Every air defense battery has a limit on how many targets it can track and engage simultaneously. If a battery can handle twenty targets at once, and the swarm has forty drones, twenty of them are guaranteed to get through unless there is a secondary defense layer. It is a simple matter of saturating the processor.

Herman

Right. And those secondary layers are struggling to catch up. We are seeing a move back toward old school tech like anti-aircraft guns, but with modern computer aiming. Things like the Gepard system or even just mounting heavy machine guns on trucks with A I-assisted optics. But even then, the range is limited. You have to be right where the drone is going to hit. You cannot protect an entire country with machine guns. You can only protect specific points.

Corn

What about electronic warfare? Daniel mentioned jamming and how that seems like the obvious solution. If these things are remote-controlled or use G P S, can we not just turn off their signal? I know we have been experiencing a lot of that lately here in Jerusalem.

Herman

We try! In fact, if you use a food delivery app in Jerusalem or Tel Aviv these days, your G P S might show you are currently at the Beirut airport or in the middle of the Mediterranean Sea. That is intentional spoofing and jamming by the military to confuse drone guidance systems. But the attackers are adapting faster than we are.

Corn

How so? If they do not have G P S, how do they find their target? Do they just use a compass and hope for the best?

Herman

They are moving toward Inertial Navigation Systems, or I N S, which use internal gyroscopes and accelerometers to track movement without needing an external signal. It is less accurate over long distances, but it is completely un-jammable. And the even bigger development we are seeing here in early twenty twenty-six is optical navigation. This is the real game-changer.

Corn

Like terrain contour matching? I think I have heard of that in cruise missiles.

Herman

Exactly. But now it is being done with cheap smartphone cameras and A I. The drone has a basic map of the ground stored in its memory. It uses a camera to look at the ground, compares what it sees to the map, and figures out where it is. It does not need a pilot, and it does not need G P S. It is essentially an autonomous robot. Once it is launched, it is silent electronically. There is no link to jam. You could blast the area with every radio frequency in the book, and the drone would just keep flying because it is only using its eyes.

Corn

That is terrifying. It means the electronic shield we have relied on for years is becoming less effective. It brings us back to kinetic interception—physically hitting the drone. Which leads us to the Iron Beam. We have been hearing a lot about the laser systems lately. People are calling it the end of the drone era. Is that true?

Herman

The Iron Beam is the great hope for fixing that cost-to-kill ratio we talked about. Instead of a fifty-thousand-dollar missile, a laser shot costs about the same as the electricity used to power it. Maybe two or three dollars per shot. And it travels at the speed of light, so there is no travel time for the drone to dodge. If you can see it, you can hit it instantly. It is a promising solution for dealing with large numbers because you can switch targets in milliseconds.

Corn

But lasers have their own problems, right? I have heard they do not work well when it is cloudy or dusty.

Herman

Huge problems with weather. If there is heavy fog, rain, or even a lot of dust in the air—which we get plenty of here in the Middle East—the laser beam scatters. It loses its punch. You need a lot of dwell time on the target to melt through the casing. If a drone is spinning or made of reflective material, it takes longer to kill. And in a swarm, time is the one thing you do not have. If it takes five seconds to melt one drone, and there are fifty drones, you are going to be overwhelmed before you finish the tenth one.

Corn

So, if a swarm of fifty drones comes in during a sandstorm, the laser might only be able to pick off a handful of them before the rest are on top of you. It is never a single silver bullet solution. It is always a game of cat and mouse.

Herman

Never. It is what militaries call Multi-Layered Defense. You use the long-range missiles for the big stuff, the medium-range for the faster drones, the lasers for the bulk of the swarm, and then electronic jamming and point defense guns for whatever is left. But even with all those layers, the drones have a statistical advantage. You only need one drone to get through to cause a disaster. The defender has to be perfect every time; the attacker only has to be lucky once.

Corn

It feels like the ultimate asymmetric weapon. One thing that strikes me is the psychological aspect. When a ballistic missile is intercepted, there is a big boom high in the sky, and it is over. But a drone can linger. It can circle. It can loiter. It feels more personal, somehow.

Herman

The Loitering Munition. That is the technical term. It is a mix between a scout drone and a missile. It can fly over an area for hours, waiting for a target to emerge. For a civilian population, or even for soldiers in a trench, that constant buzz is a form of psychological warfare. You know something is up there, you can hear it, but you cannot see it, and you do not know when it will decide to dive. It creates a state of constant hyper-vigilance that is incredibly draining.

Corn

You know, it reminds me of the leaky faucet episode we did—episode two hundred ninety—where we talked about how small, persistent problems can be more draining than one big crisis. A drone is like a leaky faucet of the sky. It is a persistent, low-level threat that demands constant, expensive attention. It wears you down over time.

Herman

That is a great way to put it. And the swarm takes that persistence and multiplies it. One of the things Daniel mentioned was the idea of compute being aggregated. This is where it gets really futuristic. Imagine a swarm where the drones are not just sharing where they are, but they are sharing their processing power. They are essentially a flying supercomputer.

Corn

Like a distributed network in the sky?

Herman

In a way, yes. If you have a hundred drones, you can run much more complex AI algorithms across the whole group than you could on a single drone. They could perform real-time facial recognition or identify specific types of vehicles from high altitudes by pooling their sensor data. They could decide as a group which drone is in the best position to strike, while the others act as decoys. They can even perform electronic warfare against the defender, jamming the defender's radar while they approach.

Corn

This really changes the nature of command and control. Usually, you try to cut off the head of an enemy force. But a swarm is a hydra. There is no single point of failure. If you shoot down the lead drone, another one just takes over the leadership role automatically.

Herman

Precisely. And for the offensive party, this is incredibly attractive because it is fire and forget. You launch the swarm toward a general area, and the swarm's internal logic handles the rest. It reduces the need for highly trained pilots and expensive satellite links. It makes high-precision warfare available to almost anyone with a decent budget. We are moving into an era where quantity has a quality all its own.

Corn

It is a bit of a grim picture, Herman. But what about the counter-drone drones? I have seen videos of drones that carry nets or even their own small explosives to ram into other drones. Is that the future? Fighting fire with fire?

Herman

Interceptors are definitely a growing field. It is one of the only ways to match the maneuverability and the cost of the attacker. If they send a five-thousand-dollar drone, you send a six-thousand-dollar interceptor drone to knock it out of the sky. It is basically an aerial dogfight between robots. We are seeing companies develop high-speed interceptors that can pull ten Gs of force to ram into a target. It is much cheaper than a missile and much more effective than a gun.

Corn

It is like something out of a sci-fi movie, but it is happening right now, just a few miles from where we are sitting. I have seen the footage of these small interceptors launching from tubes like fireworks. They are incredibly fast.

Herman

It really is. And the tech is moving so fast. By the time we get to the end of twenty twenty-six, we may start to see early versions of more autonomous interceptor nests stationed around key sites. Basically, boxes on rooftops that can automatically launch a counter-drone when an unauthorized signature is detected. It will be an increasingly automated war happening above our heads while we drink our coffee.

Corn

So, to answer Daniel's question, the paradox exists because speed is not the only metric of difficulty. A ballistic missile is a high-speed physics problem. A drone is a low-speed, low-visibility, high-complexity, and high-volume economic problem. We are good at physics. We are still learning how to handle the economics.

Herman

Well said. We have spent seventy years perfecting the physics side of air defense. We are only about five or ten years into the volume and economics side. We are playing catch-up. And as soon as we find a solution, the attackers find a way to circumvent it. It is the ultimate arms race because the cycles of innovation are measured in weeks, not decades.

Corn

It is fascinating and a bit sobering. I think the big takeaway for me is that capabilities are relative. A military can be capable of stopping a nuclear missile but have a much harder time stopping a swarm of plastic toys. It all depends on what you optimized your systems for. If you build a wall to stop a giant, you might not notice the thousand ants crawling through the cracks.

Herman

Exactly. It is like having a high-tech security system with laser sensors and thumbprint scanners, but then someone just crawls through the tiny doggy door. The system was not bad, it just had a different threat model in mind. We are currently redesigning the doggy doors of the world.

Corn

This has been a lot to chew on. I think we have covered the why and the how pretty deeply. For our listeners, if you are interested in the more grounded side of technology and how it affects daily life, definitely check out our recent episode on white-labeling. It explains how the components in these drones often end up in your home appliances too. Your toaster might have the same processor as a loitering munition.

Herman

And if you want to understand the glue that holds the digital side of this together, episode two hundred eighty-eight on B G P and internet networking is a great companion piece to this discussion on mesh networks. It helps explain how these drones talk to each other without a central server.

Corn

Before we wrap up, I want to say a quick thank you to everyone who has been listening. We have been doing this for two hundred ninety-two episodes now, and the community around My Weird Prompts is just incredible. We appreciate you sticking with us through the heavy topics and the light ones.

Herman

It really is. We love the deep dives. And hey, if you are enjoying the show and finding these breakdowns helpful, we would really appreciate it if you could leave us a review on Spotify or whatever podcast app you use. It genuinely helps other curious minds find us. We are trying to grow the community, and every review counts.

Corn

Yeah, it makes a big difference. And of course, a huge thanks to our housemate Daniel for sending in this prompt. It was a great excuse for us to actually sit down and look at the why behind the sirens we have been hearing. Daniel, we will save you some of the coffee we just brewed.

Herman

Definitely. You can find all our past episodes and a way to get in touch at myweirdprompts.com. We love hearing your weird prompts, even if they are a bit heavy like this one. Send us your voice notes, your emails, or your carrier pigeons.

Corn

Alright, that is it for today. Stay curious, stay safe, and we will talk to you in the next one. Jerusalem is beautiful today, despite the noise.

Herman

Until next time! This has been My Weird Prompts.

Corn

Thanks for listening. Goodbye!

