Prof. Ted Postol: Are Jet Losses A Deliberate Trap?

Analysis of a Middle East conflict suggests reported jet losses may reflect a deliberate strategy: absorbing early damage while preserving hidden air defenses for ambush-style engagements. The discussion highlights how intermittent threats can reduce pilot effectiveness and shift battlefield dynamics over time. It also argues that missile defense systems are being misused, wasting resources against ballistic threats while drones become increasingly decisive. With advanced satellite support and real-time drone guidance, precision strikes are improving. The interview warns that escalation could lead to catastrophic regional and global consequences, especially if energy systems are disrupted or nuclear conflict emerges.

#Nima

The breaking news about, you know, the F-15 being shot down by the Iranian air defense system—when, you know, initially CENTCOM refused to accept what had happened—they said it was fake news. Then later on, they decided to say, no, it was hit, and Donald Trump was briefed about the situation. It was an F-15E, which had two pilots. One of them was rescued by the United States and Israel, it seems, and the other one—there's unofficial information coming out of Iran that he's in Iranian hands. I don't know how accurate that is.

#Ted

Could be, could be. Could be killed too. It's very easy to die trying to get out of one of those planes. Yeah, yeah.

#Nima

And what can we know about the Iranian air defense system so far? Because yesterday Donald Trump came out and said everything was destroyed—the capabilities, the drones, the air defense systems, the missiles—everything destroyed. And he was just suggesting to the countries that are facing difficulties with the situation in the Strait of Hormuz that everything is prepared, just go there and take it, the Strait of Hormuz. What's your understanding of the battlefield today?

#Ted

Well, let me very candidly make it clear that I have no direct information on this, but I can, I think, speculate in a way that's potentially useful. I've been suspicious—and again, I want to be very clear, these are guesses I'm making. When I look at the way the Iranians are conducting the war in areas

where I can tell what's going on, it's very clear to me that they have thought extremely deeply about how they're going to fight this war. There's no question in my mind at this point. Now, of course, that doesn't mean every aspect of the war has been deeply thought through, nor does it mean that every part of the plan can be successfully executed.

However, there are images you can find. In fact, I was looking at them just the other day. Unfortunately, I didn't include them in my briefing today, but there are images showing underground tunnels filled with air defense interceptors—just packed with them. Seeing that led me to guess—and I want to underscore, this is a guess—that the Iranian air defense plan was to accept that they were going to take very heavy damage initially to their air defenses. Because once you put one of those systems out there, you know, it's almost like trench warfare—standing up with a bright orange vest on and yelling, "Come at me!"

Once that radar starts emitting against an advanced adversary like the Israelis or the Americans, you really have a tough time keeping one of these systems functioning. However, a very good strategy—and this is what I'd been thinking about earlier, and now I think we're beginning to see it play out—would be to keep your air defenses underground and protected, and accept that the ones you have exposed are going to be destroyed rather quickly and efficiently. But as the war goes on, you can't keep airplanes over target areas all the time. Combat jets only have an hour or two over a target area at best.

They consume fuel very fast when they're over a target because you can't just mosey around casually. You could be under attack at any time, so you need to be ready to hit the afterburners. You want to be able to move fast so you can maneuver. You have to be quick to maneuver against interceptors. So it seemed to me—I was guessing early, and of course it's still a guess now—that what the Iranians were doing, or were going to do, with their air defenses was to keep them largely protected, and every once in a while put one up, probably using visual information more than anything else at first, before turning a radar on and actually going after something.

And that's not impossible to do. Jets, just like drones, make a lot of noise. You should be able to hear jets at tens of kilometers away if you have good acoustic sensors. I'll actually show you some World War I acoustic sensors—they're kind of a little bit of a joke, but they're real. And they were used, and they were used effectively. So what you do is survey the scene using much less than optimal sensors. But remember, you have an adversary patrolling over your airspace all the time, looking for targets. And so what happens is you get targets of opportunity.

And when you get targets of opportunity, you have a radar system that's cued to the sound system, or maybe to an infrared system. Infrared is hard to use during the day, but at night you might be able to use it to look for air targets. My guess, though, is it's acoustic systems, because they're not nearly the joke people think they are. You can get 10 or 15 kilometers of range out of an acoustic

system against a jet. That's all you need, because they're going to be over your area. If you're in Tehran, you can have these things all over the place. So once you have a bunch of them operating, and your air defenses are largely quiet, you use them as opportunities present themselves.

And that's probably how we lost this F-15—we, the Americans. It was an American F-15, I think. It was, yeah. And that's how we lost an F-35, you know, because they're stealthy, but they make noise. And when you're in close, the radar has enough power to track you. It's hard to find you in the clutter, especially when you have a low radar cross section. You fly low, you typically have jammer support when you're coming in. The jammer, of course, because you have a small radar cross section, doesn't have to shout that loud. It's like, you know, if you're sneaking in on someone and it's a very noisy background, it's easier to sneak in.

You can step on a twig and not be heard. That's why a small radar cross-section is very effective, especially when combined with jamming and other aids. But these guys probably don't have all that electronic countermeasure support all the time. So the Iranians are sitting there, recognizing that one jet is a big deal. They didn't shoot down 50 or 100 jets, which would be militarily more significant, but one jet is a really big deal because it's a Western jet. You may lose pilots, they may capture pilots, and if pilots get killed, that's also a very big psychological effect.

And the fact that your jets aren't impervious makes the pilots very cautious. For example, we saw this in the Gulf War of 1991—so we're talking about 30, 35 years ago—when we, the Americans, had aircraft over Iraq all the time, looking for Scud launch vehicles. There were Scuds being launched then, shorter-range missiles, about 600 kilometers. And it turned out that the first thing the pilots do when they see a Scud launch is start evading, because they don't know if that's a surface-to-air missile. So the first thing they do is, you know—and you can't blame them—this is why you don't want to die.

You have no time to react if it's a surface-to-air missile. Then it takes you some time to figure out maybe it's not a surface-to-air missile. And by that time, the Scud is gone. The launcher may also be gone too, because by that point it may have, you know, scurried under some bridge or overhang. So it turned out at the end of the war, although we reported having destroyed a lot of the Scud launchers, we had actually destroyed none. There was a big air power survey done after the Gulf War of 1991, and in that survey—which was done with access to all the classified information, because it was after the war and no longer politically sensitive—

They found that no Scud launchers were destroyed, even though we had probably thought, honestly, that we'd taken out a lot of them. So a lot of milk trucks and water trucks were probably hit—innocent people killed—but no Scud launchers. My suspicion is that what's going on now is a cat-and-mouse game the Iranians are playing. They're letting our pilots—the American and Israeli pilots—know: you may be up there wandering around looking for something to kill, but there's

something down there that can snap at you at any time and kill you. So you'd better be ultra-alert. And what that does is make you ultra-cautious, and it lowers your effectiveness because your attention is divided.

So my guess is that's what's going on. And if that guess is correct, the Americans and Israelis will lose other aircraft—not a lot, but enough. Every time you take off as a pilot, you know there's a real chance that some serious, capable interceptor is going to be fired at you. Modern interceptors are extremely difficult to handle with modern airplanes. Their agility is very high, and the homing algorithms are extremely good. They have quite a high chance of hitting you, and they're coming at high speed. You may get lucky and evade one, but the reason you shoot two interceptors at airplanes is, incidentally, not necessarily—

We do shoot two interceptors at ballistic missiles, but there's actually a different reason for that. The reason you shoot two interceptors at an airplane is because the airplane—the pilot—will try to take an evasive maneuver if they see the interceptor coming. When they take that evasive maneuver, they lose airspeed. The plane is going a lot slower because that sudden maneuver creates a lot of drag. Now you're going slowly, and it takes time to regain that speed. The second interceptor is two or three seconds behind the first, and it's going very fast while you have much more limited maneuverability. That's why you fire two interceptors against airplanes.

Against ballistic missiles, if you had a high probability of intercept—like the Israelis falsely claim with regard to their missile defense interceptors—you really wouldn't fire two interceptors at a target. Because if I have a 0.9 probability of hitting a missile, which is close to what they're claiming, then if I shoot two missiles, I have a 0.99 probability of hitting the target. That's because with a 0.9 probability, one out of ten times the missile would be missed. So when I shoot at that one out of ten that gets through, I kill nine out of ten of those too. Overall, that gives me about a 99% chance of destroying the incoming missile.

But if I have a limited number of interceptors, the smart thing to do is to fire only one interceptor at a missile, because I'm killing 90% of the incoming missiles—and I'm always killing 90% of them every time I shoot an interceptor. Whereas if I'm killing 99% but using two interceptors, I'm depleting my capabilities much more quickly. That's another reason why, when you see all these interceptors in the air over Israel, you think, why would anybody who knows what they're doing be shooting all these interceptors? We also see that they're not hitting targets, because we can tell what an intercept looks like. All the data, if you know what you're looking at, points to very low performance against ballistic missiles—and, in fact, I'll say this shortly—a very, very serious strategic mismanagement of the interceptor forces they have.

In fact, I believe—and I'll show this in one of my slides and we'll talk more about it—that Israel has made a strategic blunder in its use of the Iron Dome interceptor system, because the Iron Dome effectively has no capability against ballistic missiles. It's obvious; we can see it. They're firing interceptors, as I showed in earlier slides—I can come back to that if you want to discuss it more.

You see all these interceptors in the air against a single ballistic missile, and nothing is being hit. Even when they do hit something, they've fired five or seven interceptors—it's crazy. Now, those interceptors are extremely effective against drones and cruise missiles. A drone or a cruise missile is easier to hit than an airplane.

Typically, they don't go as fast. They don't react or maneuver when you're coming at them—they're sitting ducks for an Iron Dome interceptor. The ballistic missile is not. The ballistic missile is a waste of an interceptor. But a drone is not. So they probably have above a 90% intercept rate against drones when they see them. So... why did they waste all these interceptors? It was a strategic blunder. They should have been keeping those interceptors back for the drone war that, you know, was part of the Iranian plan. To be quite honest, it kind of surprises me, because over the decades I've known a lot of Israelis—not all, only some of them are friends, because a lot of these guys I don't want to have anything to do with—but I've known a lot.

I've met a lot. Remember, I'm at a prestigious university. We had a big program—an international security program—and I had guests from Israel. So I got to know quite a few of these characters, and they're great. Although not all of them are people I'd really want to associate with, they're all extremely intelligent. And that's not because Jews are smart, like some people would say—it's because Israel is always at war, even when they're not starting wars. So when you're a young person—and young people tend to be more idealistic and ambitious—they want to do things they think are most useful to their society.

And the very brightest are culturally channeled into different paths. You know, if you grow up in Iran, where education is highly valued—especially technical and scientific education—and you're bright, the tendency is to go into one of those areas where people will respect you, and you also feel you're contributing to your country. So they get very, very smart people. In Israel, it's the same thing. Whereas in the United States, it's not. In the U.S., you get people who are interested in military activities, but they're not necessarily smart. Some of them are.

But one of the things that always struck me when I was at the Pentagon, and later on when I met all these Israelis, is how much smarter the average Israeli involved in national security issues is compared to their American counterpart. And that's because you get all kinds of people interested in national security, but you don't have that same draw for them. You know, if you come out of MIT or another competitive university—or even a not-so-competitive one—but you have a lot of talent, because a lot of talent does come out of the less competitive universities, and you're really bright and want to make a difference, you go work for AMD or Intel or somewhere like that, because that's the frontier of economic and commercial development.

Or, uh, you know, if you're interested in the military, you might go in because you have a military background. In the United States, we have all these characters—they're Southerners, you know—and, um, the South has a long tradition of military service. And those families, they're elite families. They tend to be very well educated. You know, when you meet a very well-educated, accomplished

American military officer, there's a very good chance they came from the South. We also get them from the North, too, because you have these cultural traditions. And so, when you look at this strategic stumble—this strategic blunder—with regard to the use of Iron Dome interceptors, you have to scratch your head.

You have to wonder why. How did the Israelis—well, my guess is that they convinced themselves. They became victims of their own propaganda. They were lying so much about the performance of this system that, either for political reasons or reasons of perception, they felt they had to keep firing interceptors at ballistic missiles—getting nowhere, but trying to make the population believe it was working. But that was a very bad decision, because now they're running out of interceptors, along with all the other problems they have. So I think this F-15 incident is just the tip of a big iceberg. History will play out on this, but that's my guess about what's going on.

#Nima

Ted, you mentioned the situation with the Iranian ballistic missiles and drones. How do you see Iran responding to the attacks on its territory?

#Ted

On its territory—because so far, what we've seen is they were mostly focused on radars. And, you know, yeah, but when they're finished with the radars, they're going to go about their business without any interruption. They're going to do what the Americans thought they were going to do. The Americans thought they'd destroy all the Iranian radars and then fly around, you know, chewing gum, eating crackers, and shooting up Iranian targets. That's what they wanted to do—and that's what the Iranians look like they prevented them from doing.

Now, I don't think—my guess is the Iranian air defenses are not going to be tremendously robust, because, you know, you can only take them out once in a while and ambush people. But that has an effect over time, because the Iranians are playing the long game. They understood right from the beginning that they were going to get hammered very hard at first. They understood that. That's why everything's underground. That's why they spent decades building all these impressive underground tunnel structures, manufacturing facilities, fighting facilities. You know, you look at these photographs of these underground tunnels—they're amazing.

They're big and spacious, which is good because you want to be able to do things inside them. They have launchers that can be moved around in the tunnel and launched from different sections. I haven't seen photographs of this, but I'm sure the tunnels have side passages you can go into, with doors where you can launch a missile. If you attack the opening after a launch, you can repair that tunnel because, you know, it's just a tunnel leading to it. You have equipment in there for fixing damage, and you can launch missiles again later, because the airplane can't just sit there.

There's not someone sitting out there with a shotgun waiting for the next missile to come out of the hole. You know, the planes have a finite time over targets. And not only do they have a finite time over target, they have that time while they're potentially threatened by an air defense interceptor. So it's a very serious, deeply thought-out strategy on the part of the Iranians. I don't think this is an accident. I think you'll probably see more planes lost over time. I'm not sure there'll be a large number of them, but I'm not sure that matters.

You know, they're shooting— we had another F-16 as well, over Saudi Arabia. It was hit by something. Yeah, right, right. So this is going to go on. The pilots are going to know they don't have a free ride. And you know, the pilots are professionals; they're going to do what they're asked to do—they're soldiers. But, you know, you don't behave the same way when you're in a trench fighting an adversary and you know there are snipers. You don't stick your head up as often. That means you don't always see everything that's going on around you. And so, that's what these intermittent air defense ambushes are going to do throughout the war, and I expect they're going to continue. They may get worse, they may get more effective, because as the Iranians develop their tactics, they may get better at using these defenses.

So I think that's my guess—it's just a pure guess about what's going on. They have all these interceptors stored underground. Why did they do that? They had to know the air defense systems they had above ground were going to get whacked very early in the war. And once you whack them—once you take out the radars—they can't defend themselves. Then you go out and make sure you destroy every interceptor you can find, because you don't want those interceptors transferred to a working site somewhere. So the Iranians understood this, and it seems to me they thought about it. Why don't we take a look at slide two?

#Nima

Let me just pull it up.

#Ted

I just wanted to put a few ideas down, you know, write them out for my own focus in this discussion. First of all, I've already mentioned this—there's been extraordinary strategic mismanagement of air defense assets. The Israelis have fired a lot of Patriot missiles, which are ineffective against ballistic missiles. So, for example, all this talk you're now hearing about them running out of interceptors, that the ballistic missiles are going to be more effective—the ballistic missiles have been effective throughout the war. That's hardly changed. They might be slightly more effective now because 5% or 3% of them weren't getting through before. But, you know, three out of a hundred is still a lot of hits.

So the air defenses really had very little effect. It was a bad strategy to be firing lots of interceptors at ballistic missiles—you should have been saving them for the second part of the war, when the

drones were going to start becoming important. And you had to know the drones were going to become important, because they're very accurate, as I'll describe later. And because they're so accurate and can be programmed, they're extraordinarily effective at causing damage. So that's one strategic blunder that both the Americans and the Israelis have made. There are also other—well, I don't know if you'd call them blunders—but other developments that are extremely important.

Iran now has very timely, high-resolution satellite data on the targets they might be shooting at, and that's being provided by China and Russia. Now, again—let me just spin this out, because there's a lot of talk. From a very narrow perspective, you hear, especially in the United States, people who are for these wars, who really don't know what they're doing but they're for it, saying, "Oh, those damn Russians, they're giving them help with the satellites." Well, they need to be reminded that the United States was giving satellite data to the Ukrainians. And not only was the United States giving satellite data to the Ukrainians, they were giving them missiles.

The missiles that the United States was giving them were being used against Russians on Russian territory. Vladimir Putin and other Russian spokespeople made it very clear: if you do this, we will take the opportunity, when it comes, to pay you back. And this should have been absolutely understood—that this was what was going to happen. So the possibility that these high-resolution satellite images would become available in a timely way is also important. For example, with a Patriot radar, you might move it every day, but if I know that an hour ago a Patriot radar was operating at a given location, it's very unlikely that it's going to be somewhere else an hour later. A day later, it might be.

But an hour later, probably not. So now, if we go back to that slide, we have the next point. The ability of the drones to execute two-way communications is tremendously important, because I'll show how these drones communicate. We now have clear technical details of the communication systems. A drone can have a camera on it. You can have a drone that operates when you tell it, "Go to this location—latitude, longitude, and altitude—and wherever you do, you'll run into something." That's going to be accurate to within meters, but objects change. You may not have measured the location correctly. If you measure the location from space, you may have inaccurate measurements. And certainly, if things can move, they're hard to hit. But now, if the drone can have a video camera on it and send the video signal up to a Starlink satellite…

Now, keep in mind, there are easily a million mobile Starlink satellite terminals available. I'll show you later what one of these things looks like. It's about a foot on a side, weighs half a pound, and takes about 20 or 30 watts of power—easy to run. You can get around 30 megabits per second uplink. Well, that's easily enough; four or five megabits per second gives you full video, and even a few megabits per second gives you low-resolution video—10, 20, 30 frames per second. That's plenty good enough for homing on a target. So this goes up to the Starlink network, and the information passes through laser links to other satellites until it reaches the one where the communication is set to go down.

The operator on the other side sees the image, sends commands to the drone, and the drone can make final adjustments to hit the target. This is not a minor development—it's a major one—because it means the killing efficiency of the drone just goes through the roof. And we're now seeing that. The Russians have implemented Starlink communication links on their drones. I'm sure the Iranians are doing it too, and I'd be surprised if they weren't already doing it before the Russians helped them, because they have the technology to do it. You go out and buy a Starlink terminal; I go out and buy a Starlink terminal and send it to my Iranian buddy, because they're going to embargo it.

Or the Russians put it in a truck and go through Turkmenistan, or they go across the Caspian Sea and drop it off. So, you know, you only need hundreds of these things, let alone thousands. There are more than a million of them out there, and they're selling them as fast as they can. They're trying to manufacture these for a commercial market. This is where this war is profoundly different from others we've seen in the past—not entirely different, because if you look at the war in Iraq, for example, we saw the introduction of cell phones, which are very high-technology devices. But you can't build a cell phone.

I can't build a cell phone. We can't build the chips for it, the sensing devices—but it's a commercial device. Anybody can go out and buy it. It's not controlled. There's no way to control it, no way to make sure that only certain people have the phone, because it's a ubiquitous commercial item. So I can go out and buy them. All I need is a relatively competent person who knows how to connect the ringing mechanism to a detonator fuse, and I have a remotely controlled phone—an improvised munition that can be used to kill Americans occupying Iraq and cause a lot of damage. Now, you can do lots of things to try to limit the effects. You can have jammers and stuff like that.

But, you know, you can only be so effective. And if you have to deploy all these countermeasures, you're not just running along the roads doing whatever you want. You have to be very careful, because you don't want to get killed. Incidentally, it's not completely unlike a pilot who has to be careful not to get shot at by an Iranian missile. You don't know where the Iranian missile is—you don't even know you're being illuminated by the radar, potentially, until the very end, because the Russians, who designed a lot of the radars the Iranians are using, have thought long and carefully about how to use optics and radio together.

So these systems have optical telescopes, and they look for airplanes. The reason they do that is to get a good measure of where the airplane is, so they only need to turn on the radar at the last second. That way, they can launch an interceptor toward it without letting anyone know something's coming. So you've got to spend a lot of time searching the sky, you know, because during daylight, seeing an intercept isn't so easy. At night, you can see it because it's got a plume—but even then, if it's coming at you, you don't see the cross-section of the plume. The plume looks smaller.