

Prof. Ted Postol: Israel Faces Total Collapse If This War Continues

#Nima

Hi everybody, today's Friday, April 10th, 2026, and our dear friend, our brother, Prof. Ted Postol, is here with us. Welcome back.

#Ted

Nice to be here.

#Nima

Ted, let me start with what's going on with the war in the Middle East. We had the announcement from Donald Trump, the president of the United States, that there are going to be some sort of talks — two weeks of ceasefire — to negotiate, to do something about putting an end to the conflict. It doesn't seem that Israel is happy with that. But what is it, Ted, when it comes to Israel? Because we had the attack on Lebanon, and they don't like it. It doesn't seem Netanyahu likes it either. What's happening right now isn't something new. Here's what John Kerry, former Secretary of State, said about Benjamin Netanyahu.

#Speaker 03

I sat across the table from Prime Minister Netanyahu more than almost anyone else out there. He and Israel are, of course, big factors here. There's been recent reporting — you probably saw it in the New York Times — that Netanyahu was in a situation where he basically pitched Trump on attacking Iran. Were you ever part of any conversations like that? I know he's made those pitches to past administrations. Were you ever part of that? And were you surprised that he was able to convince Trump to do this?

#Speaker 04

Well, I was part of a number of conversations with Prime Minister Netanyahu. But as for him pitching the U.S. to strike Iran — yes, he wanted us to strike. He came to President Obama and made a presentation asking for a strike. President Obama refused. President Biden refused. President Bush refused. The only president who has agreed to this, obviously, is President Trump. Yeah.

#Nima

Ted, what's your understanding of what's happening right now?

#Ted

Well, I'm probably not the best person to ask in terms of knowledge of the political subtleties, but I do have a view. It appears, by every measure and action Netanyahu has taken — not only recently but over the years — that his objective, what he would like to do, is to destroy Iran as a functioning state. He would like to turn it into a failed state, a collection of fragments fighting among themselves, much like what he accomplished with the help of the United States — the incompetent help of the United States — in Syria. I mean, what he wants to do is create a political vacuum in Southwest Asia with regard to states that could potentially oppose Israeli military and expansionist objectives. So once these states are no longer functioning, once they're failed states, then it's much easier to go about your business, because it's the old divide-and-conquer kind of mindset. And that is pretty clearly what he is up to — what he has wanted to do for a long time.

#Ted

Now, besides the issues of morality — which, of course, should be important — although in his case there are no detectable moral concerns of any kind that we can see in this man.

#Ted

But besides the question of morality, there's also the question of practicality.

#Ted

Do you really want a failed Syrian state, for example, where we basically have Al-Qaeda in charge? I mean, it's laughable.

#Ted

Well, it's not laughable, unfortunately. It's serious. The United States is trying to pretend that the current situation in Syria is better than when al-Assad was in charge. That doesn't mean one thinks Assad is a good choice if one could make the optimal choice. But, you know, when you look at the world you're given, you try to do your best, and you try at least not to do more damage than has already been done. And, you know, you basically stay out of it if you can't do anything. And of course, if you look at the history of American and also British involvement in Iran, it's the same situation. The situation in Iran is totally, totally a product of American and British interventions. In 1953 — I mean, you know this better than I do, you're a refugee from there — but you had a democracy. Mossadegh was elected fair and square, like any leader.

#Ted

And I wonder about any leader who wants to do what's right for his country, not for other countries that are looking to take an opportunity and, uh, take the resources that Iran has and steal them for themselves. Mossadegh wanted to nationalize the oil industry; he wanted to make sure that the Iranian people got a fair share of the wealth produced by the oil and other natural resources in Iran. And what happened is, the Americans and the British basically ran a campaign against him.

They falsely accused them of being communists — you know, the usual, what I should say, the normal operational procedures — and they destroyed them. They overthrew the government and put in a dictator, the Shah, who was a very brutal ruler. And, uh, certainly they gave him lots of things they probably shouldn't have, including a lot of support for a nuclear energy program, a nuclear power program, which really wasn't needed given the enormous fossil fuel resources Iran had and still has. But they created a program that Iranians are rightfully very proud of, proud of their contributions to. I mean, it's now a cultural thing.

I mean, I was working with a colleague of mine in my research group, a wonderful man, Sir John Thompson, who was a British permanent representative to the UN and, unlike many of his colleagues, an honorable man. When we talked about the Iranians—he knew a lot about Iran and had been involved in the Middle East—he said, “Look, Iranians now have a great cultural pride in this nuclear energy program they have. You can't expect them to give it up.” That was his view. And he had all kinds of very intelligent, really innovative ideas on how to help Iran develop this technology further, while at the same time creating strong incentives for Iran not to build nuclear weapons with it.

I won't go into this, but he was just—nobody would listen to him. It was really amazing, because it would have been good for Iran and it would have been good for the Western countries, these ideas he had. And then, of course, there was this tremendously negative development, with the extremist Islamic elements taking control of the Iranian government. Iran is really quite a modern state—you know better than I do about this—and it has a long historical culture where education and professional standards have been very high. And, of course, the country was really not well suited for this quite repressive Islamic government. But that's what they got. That was American behavior; that was the result of the American and British interventions.

#Ted

Then we got this agreement on the enrichment of uranium that the Iranians agreed to, and it was a very good agreement in terms of constraining Iran from building a nuclear weapon.

#Nima

You mean the JCPOA, the one signed by John Kerry?

#Ted

The Joint Comprehensive Plan of Action, the JCPOA, was absolutely airtight in providing Iran with relief from sanctions, which Iran needed. And for a short time, Iran got the benefit of that—until we snapped back in a totally improper and unfair way. The rest of the world gained confidence that Iran was working with nuclear technology in a way that would not result in nuclear weapons. So it was a perfect agreement. But then the Americans—in this case, Donald Trump—just decided the agreement was no good. I mean, the interesting thing about Trump is, well, it's not a surprise: "Oh, it's a terrible agreement." Well, explain it. Explain why it's a terrible agreement. I know quite a bit about the JCPOA.

#Nima

I believe he was just repeating what Netanyahu told him. He didn't know anything about it.

#Ted

See, the problem is—just to get us back to the original question you asked about Netanyahu—Netanyahu is irrational. I think, perhaps, I don't know if he's mentally unstable or not, if you'd call him that. I mean, with Trump it's much clearer that he's mentally debilitated, but with Netanyahu there's something really wrong—whether, uh, you know, uh, I mean, the man is completely, uh, without any moral guide of any kind.

#Ted

He's just, uh, he's a psychopath. I mean, he is a psychopath. He doesn't show it in exactly the same ways that Trump does.

#Ted

But in terms of his moral commitment to anybody, including the Israeli people—I mean, this man has destroyed Israel. It's destroyed Israel because people like me, who were not hostile to Israel—in fact, I still have many friends there who are suffering greatly under Netanyahu's leadership and who disagree with him.

#Ted

He's turned Israel into an international pariah.

#Ted

And I don't want anything to do with the Israeli government. I'll never go back to Israel again. I just don't want anything to do with them.

#Ted

And he's played a major role in turning Israel into a functioning fascist state. It is a fascist state.

#Ted

I mean, when you look at the attitudes of a large fraction—not everyone, but you don't need everyone—a large fraction of the Israeli population, they've basically become functioning fascists.

#Ted

And their attitudes are criminal. You know, I just saw an interview yesterday—I had to show it to my wife because I was so upset by it. This woman was asked, and there was no trick involved; the journalist was just talking to her.

#Ted

It was clear the journalist wasn't trying to trap the woman or disguise who they were—American journalists. They asked her about killing children in Gaza, and her response was, "Well, they grow up to be Arabs." I mean, I just couldn't. I just couldn't. And there were a whole bunch of other interviews like that. In fact, in this particular video, it seemed to be a very common attitude. It's not the attitude among my friends, I should say—I wouldn't engage with people who have that mindset—but it's very common. And it's this kind of attitude that has led to the slaughter in Gaza and the carpet bombing of southern Lebanon now.

And I mean, this is all due to—well, I shouldn't say it's all due to Netanyahu. It's due to Netanyahu's political skills, which are substantial, although he's evil. And "evil" is the right term, even if it's a bit oversimplified. But you have this evil man who's incredibly skilled politically. Incidentally, so was Adolf Hitler. You know, I'm in Germany, and I have many friends here, and of course World War II comes up in discussions—it's hard not to in a place like Germany. And just last night I was having a conversation with some friends, and I said, "Well, you know, Hitler was a very talented man," and they kind of reacted.

And I said, well, you have to admit, you know, he was evil, but you can't ignore that these people can have skills. It's those skills that make them dangerous—if they were just evil and didn't have any ability, they wouldn't be so dangerous. But Netanyahu seems to care only about himself, although maybe he has this distorted belief in turning Israel into some kind of "greater Israel," whatever that means. But he's destroyed Israel, not only by undermining the basic fabric of society in a profound way. You can't get soldiers—snipers—to shoot children unless they believe it's right.

#Ted

When you see that kind of thing, that's beyond a simple war crime. It has something to do with a sick war—some sickness in the society that's somehow become acceptable.

#Ted

And the officers who oversee the snipers are equally sick. In fact, they're even worse.

#Ted

These kinds of phenomena are clear indications that the society has descended into some kind of fascist state—a very dangerous, murderous form of fascism, and a racist form of fascism. I guess that's part of fascism. But Netanyahu is not alone. He's part of this group of people, some of whom—I won't say I grew up with—but some whose attitudes I had seen as a young child when I was in an immigrant Jewish community, where people would talk about Jews being the chosen people and somehow being superior. And even as a very young person, you know, 11 or 12, I just found it objectionable. I don't know why, because a lot of people around me had no problem with it, but I just found it objectionable, and that carried on into my adulthood. I've always found myself very critical of this dangerous thread in religious Jewish culture.

Now, that's not to say that all people have these ideas, but if you foster it and encourage it, and it takes over—as it has in Israel now—you get a state that's functionally a fascist state. And that's what we now see. And that's not just Netanyahu. He's been the orchestrator, but there was a lot there to begin with. It's just like in Nazi Germany—there was a lot there to create the monster that Hitler created. It wasn't just Hitler. He was very skilled; he was able to manipulate the society and the culture given the circumstances. And now you have a similar situation in Israel, and it's just horrifying, at least for me. Now, the other problem that Israel has—and I hope there are Israelis listening to what I'm about to say—is that a very large percentage of Americans, and I would include American Jews, now see Israel as a fascist state. And they do not like that Israel is getting these tens of billions of dollars of support from the United States to continue doing this monstrous murder of people all around them. And there are a lot of people, myself included, who are strong advocates for ending all aid from the United States to Israel. Now, if that happens—I don't think it will easily happen—because the Israeli lobby, this ultra-wealthy group of American Jews who are, and I'm going to say this, I wouldn't normally, who are more loyal to Israel than they are to the United States, which they are citizens of.

If they feel so loyal to Israel rather than to the United States—and this is something I would never normally say—then I think they should renounce their American citizenship and go to Israel. Because this is unacceptable. I'm an American first. I'm a citizen of the world, and I have responsibilities as a citizen of the world, and I have responsibilities as an American citizen. And my country is not—if I have anything to do with it, and I will try everything I can—my country will not become dominated

by Israeli interests: monstrous, fascist, and murderous interests, doing the dirty work of a bunch of people who all should be nullified and either be in prison or in a place where they can't do any harm to anybody else.

It's just unacceptable to me as an American. And I'm an American first—that's the way I feel. So, Israelis who think they're going to get a lot of help after this war is over, in the form of unconstrained amounts of money—because it's basically unconstrained American gifts to Israel—well, we sell them arms, but then we have all these special programs that pay for the arms. So all these Israeli arms—they're not paying for them; they're being gifted to Israel. So my position, as an American citizen, is that if I could advocate a policy—a new policy in a new government, which I hope we'll be seeing, because I think Trump is going to be thrown out, although it's not clear exactly when or how—I would advocate that all aid to Israel be stopped.

#Ted

I think Israel has gone over the edge, and they should no longer be supported by the United States to carry out this murderous stuff they're doing. I would immediately stop all arms shipments to Israel if I could. It won't happen right now, but that's what I would do. If they have no bombs, they can't keep killing people in Gaza the way they've been doing. They can't keep carpet-bombing Lebanon. I'm not for the destruction of Israel, but it has to be reformed. It has to become a non-apartheid state if it's going to survive—if it's going to get my support as an American. And I want to be clear: I'm speaking as an American now. Forget the fact that I come from a Jewish background. Forget it. It's irrelevant. I'm speaking as an American, and this is unacceptable to me as an American.

And I think there are a lot of other Americans who feel this way. It's no longer a minority. So those Israelis who think there's no negative side to this beyond what's already happening—which is, of course, negative enough—need to think about what the future is, because without the tens of billions of dollars of support for this country, it's not going to continue to survive and prosper the way it has. I think some big changes are going to happen in the years ahead. It's not going to happen instantly, but the reaction among American citizens right now is swinging very strongly against what's happening in Southwest Asia—very strongly. Some of these polls show 70% of Americans are against this war. They're not all overtly against it, or they're unsure, but to have no more than 25 or 30% of your citizens for the war—when 15% of them, of course, are these extremist Christian sects who think that when the end of the world occurs it'll happen in Israel—you're down to a very small percentage of people among thinking Americans. My greatest concern right now is that as the pendulum swings—and it will swing, it is swinging—people do things in a sensible way, not swing too far in the wrong direction. It's too simple-minded, too one-dimensional.

#Ted

But that people don't do things that are counterproductive to bringing peace and stability to Southwest Asia. I think the American public is moving in that direction, and we're going to see some

big changes. The question is, is the American political establishment up to implementing those changes? I'm basically thinking of the young Democrats, because the older Democratic establishment needs to be swept aside—and the Republicans, the decent, honest people who have been offended and recoiled from what Trump and the Republican Party have become.

There are a lot of Republicans who are very decent. They're conservative politically, and that's fine—I have no problem with that. These people have to retake control of their party as well. And there has to be a cooperative move toward bringing the United States into a more stable configuration, where it's not posing such a threat to the entire world. Because the United States is posing this threat when we blindly provide Israel with the means to do what it's doing—we are part of the problem, there's no question about it. So, anyway, that's my reaction to the question of Netanyahu. He has to be stopped.

#Ted

He has to be thrown out of office. The Israelis are the ones who have to do it. I don't know if it's possible—I don't know the terrain of the politics. Israel is in big trouble. They have this extremist religious component in the country; it's been a problem for a long time. It's now become such a problem that it's taken over, and the forces needed to retake control of the country are largely suppressed at this point.

#Ted

And I don't know if things can swing in the other direction. I just don't understand the political landscape in Israel well enough. But if it doesn't happen in Israel, it has to happen from outside. And the United States is the outside player that can and should do this. As an American, I'm going to do everything in my power to see that happen.

#Nima

Yeah. Ted, when it comes to the war militarily—looking at what's happened so far—and you see this sort of willingness on Netanyahu's part to continue the war, what's going on in his mind militarily? Because so far we've seen the latest photos and footage coming out; they're using interceptors that were produced in 2026, this year. So what is he planning for? What's happening in terms of the military operation, and the strategic military operation, against Hezbollah?

#Ted

If he understands the military situation—and I don't know how he wouldn't—but I know there are...

#Ted

I know Israelis who do understand the situation.

#Ted

When I was involved in exposing the Patriot fraud during the war of 1991, I met an enormous number of first-rate Israeli military people afterward. I don't quite understand why the Israelis were so interested in me, because it was more of an American issue from my point of view. But I met an enormous number of very, very capable and really rather fine people. And I know these people understand the military situation when they see it. They have to understand that the military situation for Israel is desperate. Hezbollah has reconstituted itself in Lebanon, and they're using a tremendous amount of drone technology now. They've adopted that technology for their combat purposes. They've destroyed a lot of Merkava tanks—that's a fantastic tank. The Merkava is a really impressive piece of technology.

They're being destroyed all over the place. You can't do what the Israelis have been doing in the past and lose all these tanks. And you can't have the Israeli Defense Forces taking casualties. Israel is like the United States—the United States is very sensitive to casualties. In a place like Lebanon, where you have an organization like Hezbollah, I won't say it's that they care less about human life—I'm not suggesting that at all—but they're in a struggle for what they see as their survival. And they're right; this is a struggle for survival. When you're in a struggle for survival, you're willing to take enormously more casualties than you would otherwise be willing to take. And we see that. And they also, of course, come from an Islamic culture where martyrdom has a special place in the culture. I don't know if that's overemphasized.

You know, it turns out, by accident, I have many friends who are Islamic. But I don't claim to understand the culture that well, because these friends are, you know, a preselected group by accident. Still, if you talk about Christian culture or Jewish culture, being a martyr is also considered appropriate in certain circumstances. When the Israelis talk about fighting to the last person for their survival, they mean it. But they're not fighting to the last person for their survival at that moment—they're going out and murdering people who are largely innocent, who really just want to be left alone.

And there are a lot of Israelis who are not willing to lose their lives over it. If I were in Israel, I'd be doing everything I could to avoid being out in combat. You know, I'd be willing to fight and die for my country, but I'm not willing to fight and die to murder people who have nothing to do with it, who pose no threat to my country. And they're having a lot of problems. They're calling up people, and a lot of them don't show. That was unthinkable in the Israel I knew decades ago—you would never not show up if you were called up. You would be there. But you'd never shoot a child. You know, that was also true at that time.

Something has changed, and it's for the sociologists and anthropologists to study in the future and explain. But whatever has changed, it's clearly the situation now, and something has to be done

about it. I think it's going to have to come from the outside right now—it's going to have to come from the United States. That's where I'm focused. But this guy, Netanyahu—I don't think he knows what he's doing. I think if you were to really get inside his head, he doesn't care about Israel. I cannot imagine that anybody who is following the policies he's following, and who understands at any level what he's doing to Israel, would care about his country. It's just, you know, like Adolf Hitler turning Germany into a graveyard.

#Ted

You know, Germany was a very powerful country when World War II was going on, but Hitler turned Germany into a graveyard. And that's what Netanyahu is doing—he's turning Israel into a graveyard. And, you know, I'm horrified by it, but the only thing I know how to do is try to influence American policies, because we're the ones who are the co-conspirators in this by allowing it to happen. So when people—when Democrats—start complaining to me about Trump, I say, well, look what Biden did.

You know, Biden—the first thing that should have happened after that terrible event in October 2023—he should have gone in there and said, "You cannot respond the way you're talking about responding. You cannot go in there and murder all these innocent people. This is a terrible thing; you have to deal with it. But you cannot go out and do the same kind of murderous, genocidal thing that happened to you." And by the way, a lot of your people killed a lot of Israelis, and you'd better look at that too, because many of the Israelis who were killed in the incursion of October 2023 were killed by Israeli forces firing indiscriminately at people who had been taken prisoner.

So it wasn't a simple situation. We don't know all the details, but we do know some of them. We know that the Israeli Defense Forces played a significant role in the killing of Israeli citizens, in addition to Hamas. Nobody's talking about that. This is all part of this campaign of misinformation, trying to take these incredibly brutal policies of the current Israeli government and blame everybody else for it. It doesn't wash with me, or with a lot of other Americans who are looking at the situation. Something has to be done, but unfortunately, it's going to take time.

But hopefully it's going to happen. We'll see. A lot of unfortunate deaths that shouldn't have happened are going to continue until this thing is brought under control. But Netanyahu—he has to be looked upon, in terms of his behavior, as very much like a Hitler. I want to be clear about what I'm saying here. When people react to what I'm saying, I want to be very clear about what I mean. Hitler showed no regard for the well-being of the German people.

#Ted

He murdered Germans as much as anyone else did. He was the one who caused the catastrophe in Germany.

#Ted

He was helped by a lot of people, just as Netanyahu is being helped by a lot of people. But the moral judgment about how Hitler behaved and who he was applies just as well to Netanyahu as to Adolf Hitler—no question about it. And if someone wants to debate that with me, I'm happy to have that discussion. I'm not simply calling him a name; I'm talking about moral behavior and his loyalty to his own people. He's shown himself not to care about the well-being of his own people or his own state. And somebody in Israel should do something about it.

#Nima

Ted, looking at the numbers on the battlefield—the equipment, the drones, the way this war is unfolding—what can you tell us about the situation?

#Ted

Well, I think the situation for Israel relative to Iran is going to continue to get worse. And there are a bunch of reasons for this. I can talk a little bit about the technology issues, and I'd like to do that. It's relevant in the sense of providing a foundation of understanding for the audience. It's not immediately relevant to the situation at the moment, but it sheds light on it, so it's important to think about it. So, if we go to the slides—for example, why don't we take slide two for them all, you know? This is a very interesting thing. There's been extraordinary mismanagement by Israel of its air defenses. Let's go to the next slide; I'll show you that. This slide is—on your PDF, you may want to click on the PDF screen and see if you get it—it's not showing clearly. Whatever you've got. Okay. This is a time-lapse photo of Iron Dome interceptors being shot into the air.

You can see tens of interceptors. Now, what you see is the camera—this is a photographic camera—and the shutter is open for maybe 10 or 15 seconds. As the rocket motor drives the interceptor along its trajectory, it produces a point of light. If you were taking instant photographs, you'd just see a point of light, but because the point of light is moving, it traces out a line. So the lines you see are the trails of the interceptors as they rise up. The bright point of light, as it moves, produces a line that shows the motion of the interceptor. Now, you see these interceptors all climbing up, and then they're turning downward. They should never turn downward. The only way to have a chance of intercepting a ballistic missile target is to be flying up the expected trajectory.

So, at the end of almost all these lines, you see little points of light. Those points of light are the warheads on the Iron Dome interceptors—relatively small warheads detonating. But there's no target there for them to detonate on. So it's the interceptors flying up and just exploding in the air, probably because the system wants to destroy the interceptors so you don't get a full interceptor falling to the ground. The ground damage is lower that way—still significant, though. Now, this should never have happened, because those interceptors have no capability against ballistic missiles, but they are very capable against drones and cruise missiles.

So this shows that the air defense operations were throwing away interceptors against targets they had no possibility of hitting—zero chance of hitting. Instead, they could have saved those interceptors for the drone attacks that are happening now. This kind of mismanagement of the air defenses is what I find astonishing. And the reason I say that is because many of the people I've known over the decades in Israel are incredibly capable—people who worked on air defenses. I know how smart they are, so I can't understand it. I had a discussion with one friend of mine, and he couldn't explain it to me. He said, "I'm not part of the operations these days."

But he says, "I agree with you. I have no idea. I have no understanding." So they've thrown away these interceptors, and that's a real problem the Israelis are facing now. The next slide shows another problem they should have anticipated but didn't. It shows several frames from a video of one of these Alpha Tau ballistic missiles coming into the atmosphere at a fantastic speed. The speed of this warhead is probably Mach 10 or 11, or even higher. Now, the reason the speed is so high—if you look carefully—let's look at the upper-left inset.

#Ted

You see something to the right of the main trail—that's a reflection off the camera lens. That's not real; it's just an artifact, a reflection from the bright part of the contrail to the left.

#Ted

You can see the front end of the contrail is much brighter than the rest of it. That's because a rocket motor is thrusting the warhead forward against aerodynamic drag—otherwise, the warhead would normally slow down. You'd expect it to drop to maybe one and a half or two kilometers per second if you did the drag calculation. But the rocket motor keeps the speed high, so when it hits the ground, it's still moving at Mach 10 or higher. Now, if you look at the last slide on the lower right, you can see the bright flash from the detonation, and the sky is blue.

And the reason the sky is blue is because the energy at the detonation point is so high that the temperature is higher than you'd normally see from an explosion. If you look at most explosions on the ground, when you don't have this highly energetic warhead coming in, the color tends to be red or yellow, which indicates a lower temperature at the peak of the explosive energy output. This one is higher because you have the kinetic energy of the impact, which contributes as much energy as the equivalent weight of high explosive. So even if there were no explosive in this warhead at all, it would still have the explosive energy of its weight in TNT—but it also has TNT in it, high explosive.

So you have twice the explosive density of what you'd get from just TNT or just the kinetic impact. And this causes a much more violent explosion, which does much more damage at the aim point, at the target point. When you look at some of the damage areas—unfortunately, I didn't have time to include them here—you can see the effects of these much more energetic explosives. They're doing tremendous damage to very highly reinforced buildings. But these two effects, which have been

going on for a large part of the war, during the forty days of this war, have resulted in the depletion of interceptors.

So if we look at the next slide, this is taken from a Royal United Services Institute report that was published at the end of March—so basically a week and a half ago. This is their estimate, based on their best guess of how quickly interceptors are being used up. You can see, if you look at the last column, they're projecting that all of the Iron Dome interceptors would be used up by the end of April, or maybe May. That's not correct, I'm sure. I think we're already nearly at the end of the Iron Dome interceptors being available, and we're also nearly out of the air-to-air missiles that can be fired from aircraft against drones.

So these are the missiles that could be used against drones. The capability to intercept ballistic missiles is near zero, no matter what you have left. In other words, the Arrow 2, Arrow 3, David's Sling, and THAAD have a very low intercept rate against ballistic missiles. They've always had a low intercept rate. So what you have—indicated on, you know, we don't know for sure, but roughly speaking—is a depletion of air defenses against drones and an ongoing inability to shoot down ballistic missiles. And the ballistic missiles are even more difficult to hit and more damaging when they reach the ground.

They reach the ground at a higher rate of fire and with higher efficiency. The percentage of launched missiles reaching the ground is much higher—not only because the intercept rates are low, but also because the missiles themselves are more reliable. Their technical features make them more stable during reentry, so the warheads almost always detonate, which wasn't always the case before. Earlier, the Iranians were firing older missiles whose warheads sometimes tumbled, broke up, or failed to detonate. So the situation we're now facing is summarized in the next slide. And by "we," I mean the Israelis and the Americans. First of all, they've mismanaged their Iron Dome defense system.

And that is serious, because the Iron Dome is very effective at shooting down drones. But they've used up most of their interceptors, and they'll soon be out of Iron Dome coverage against drones. And the drones are very, very problematic, as I've explained. Now, timely and high-resolution satellite reconnaissance data is available to Iran from China and Russia. So the Iranians have information on the locations of air defense units—which you try to move around—and on air defense radars. This allows them to target those radars with their drones. We saw a tremendously effective attack on the ballistic missile defense radars in the first two days of the war.

That was made possible by the strategic reconnaissance from the Chinese and the Russians, which was provided to the Iranians. The Iranians, very cleverly—and I want to underscore this—have executed their military planning superbly well. There have been no mistakes that I can find, unlike the Israelis, who I wouldn't have expected to make the kinds of mistakes they've made with their air

defenses. I think what happened with their air defenses is that they've been lying about the capability of Iron Dome against ballistic missiles, and they became victims of their own propaganda, wasting all those interceptors on targets they had no chance of hitting.

And now they don't have interceptors to shoot at targets they actually have a good chance of hitting. That was a strategic blunder of a non-minor level. The Iranians have made no such blunders. They had these extremely accurate drones and were able to use them to destroy the fantastically expensive and limited number of ballistic missile defense radars that the Americans and Israelis had. In particular, there were four THAAD radars. I have a picture of one of them later in the discussion, if we get to it. And there was a giant radar in Qatar that was critical for the overall defense of Israel against ballistic missiles.

And this giant radar was critical because it could see pretty much everything launched from Iran as soon as it was launched, and then tell the smaller, less capable THAAD radars where to look for the incoming ballistic missiles. Those radars could then manage the defensive interceptors—the THAAD, Arrow 1, Arrow 2, and David's Sling interceptors—because the radars operated by those systems were less capable in terms of range and their ability to track large numbers of incoming warheads. So Iran took that capability away from Israel and the United States literally in the first day of the war—first day, or maybe two. That was an amazing accomplishment.

I did not expect it. I really didn't. I mean, I knew the drones were going to be a problem for the Americans and the Israelis, but I didn't expect that level of precision in finding targets of great effect. In other words, the satellites gave the Iranians key data about the exact locations of these radars—almost all of which could have been moved, except for the big radar in Qatar—and that allowed the Iranians to target them with drones. And they did it very quickly. What I don't know, but I'm pretty sure is the case, is how many smaller air defense radars have also been destroyed, because the Iranians have gotten information about those radars too. It's not as certain, though, because the smaller radars are harder to locate—but they can still be found with some efficiency by Chinese and Russian reconnaissance satellites.

And those radars are certainly also being destroyed. And you know that has to be the case, because the air defenses at the American bases in the Persian Gulf have hardly been operating. You see videos of these drones coming in and no interceptors being fired at them. Some of it may simply be because the Americans have run out of interceptors—which, of course, is an incredible oversight on their part. And the other part could easily be that the radars guiding those interceptors no longer exist. They've been destroyed or damaged. So the increasing losses of all these air defense radars are going to continue as the war goes on.

As the war goes on, the Iranian drones will have an easier and easier time going after critical targets that the Americans and the Israelis have. The drones don't have as large a warhead as you get with ballistic missiles—you might have a one-ton warhead on a ballistic missile, whereas a drone might carry only a one-tenth-ton warhead. But you don't need ten 100-kilogram warheads if you have

precision. If you want to bring down a building, a 100-kilogram warhead is more than enough if you can place it within meters of accuracy. So the fact that the drones have smaller warheads doesn't mean they can't inflict tremendous damage.

Plus, of course, the number of drones you can bring to bear against targets of interest is enormous—thousands, tens of thousands of these drones. And we know that the Iranians can keep producing them, and they'll be unstoppable. So if we look at slide seven, I can start to show you how, even if they manage to preserve the radars, it's going to be nearly impossible to stop the drones. That's another factor. I'm not only saying the drones will be more capable of doing damage because they have high accuracy, but also because Iran has data from China and Russia that allows them to locate the targets.

So they can find the targets and hit them. But even when some radars are preserved, those radars won't be able to detect the drones because the drones are increasingly able to fly very low. And when they fly that low, they're in what's called ground clutter. For example, when you talk about AWACS—Airborne Warning and Control System aircraft—those have only very limited capability against drones. They've already destroyed at least one AWACS on the ground, and there will probably be others destroyed as time goes on. But there will still be some airborne warning and control system radars operating. Of course, they can't operate twenty-four hours a day, seven days a week. I think there may be five or six of them now.

So you can have them on a 12-hour mission, which means you need maybe three aircraft to keep two on station 24 hours a day, because it takes time to refuel and repair them. So yes, they do have airborne warning and control systems. But if we look at the next slide, we can see why those systems have very limited capability. First of all, the Earth is round, and there are two phenomena that are extremely important. If we look to the left, we see a radar—an icon of a radar dish—and the radar is looking straight out. There's a shadow because the Earth is curved, and below that curve is a region the radar cannot see. That shadow region can extend many tens of kilometers; in fact, it can be up to about 100 kilometers out if the radar platform is airborne, like an airborne warning and control system.

But notice there's an area called the clutter zone, and that clutter zone actually extends out quite a distance, making it basically impossible to see the drones. I'm going to explain very briefly what clutter is, because clutter is very important. The clutter hides the drone and makes it, even when the radar has a line of sight to it, impossible to see. So if we go to slide nine—the next slide—if we have an airplane flying at high altitude, we can potentially see the targets and have a line of sight to them, even 50 or 100 kilometers away. But that's misleading, because if we go to the next slide, we see the clutter problem. Did I do that?

#Ted

Okay.

#Ted

The next slide shows the actual radar reflectivity of a drone. If we look at the upper left corner, we can see the radar cross section of an insect—that's about one-thousandth of a square meter. The next one below and to the left—go back, there you go—shows the radar cross section of a drone. On the middle left, there's an icon of a drone, and to the right we see that its radar cross section is about one-hundredth of a square meter. That's really very small. To get a sense of how small it is, look below the drone radar cross section: the radar cross section of a bird is comparable. So how do you tell the difference between a bird and a drone? You know, that's a problem.

Now, it turns out there is technology for doing this, but that technology is limited in its precision. So the bottom line is, you cannot tell the difference—you can't see the drone in the clutter. I'm going to explain what clutter is, just so your audience has a rough sense of it. The reason this is important is that it basically means even with radar aircraft, those radar aircraft are not going to contribute to an air defense warning system against these drones. Of course, you're also going to run out of interceptors as well. So even if you have some interceptors, the radar-borne system won't be able to guide them, because you still need a radar for the air defense—and those radars are being destroyed.

So if we go to the next slide, we see an illustration of what clutter is. Imagine you're in an airplane, looking down at the surface of the Earth, and you illuminate a patch of it. Now, imagine that surface acts like a perfect mirror. In that case, you'd see no backscattered reflected signal. So if there were a radar reflection from a drone, you'd get that signal—it would be very small because the radar cross section is very small—but you wouldn't get a competing signal from the illuminated ground. Instead, think of a flashlight. Imagine you're in an open area and you shine the flashlight down on a mirror at an angle—you'd see no reflection from the mirror.

So if you saw an insect flying above the mirror, you might actually see it—you'd see the insect above this black surface because you don't see your reflection. But imagine that the surface is made up of trees, or mountains, or rolling hills, or grass. Then you're seeing a big reflected signal because you're illuminating a very large area compared to the area you're illuminating when you're looking at the drone. So the drone is going to get hidden in the clutter. And clutter comes from all kinds of sources. The big problem is not simply seeing the small radar cross-section target—which is a gigantic problem by itself—but also seeing it against the interfering reflected signals from other sources. If we go to the next slide, we see that there are all kinds of contributions to clutter. You have weather clutter, you have rain, you have ground reflections.

If you look at the drawing to the right and below, you see an aircraft in a shadowing region. That shadowing can be caused not only by the curvature of the Earth but also by objects between the radar and the target—mountains, trees, whatever. All of that limits your ability to see targets. If I go to the next two slides, you can see this one just depicts birds, trees, and other things giving false or

interfering signals. Then, on the next slide, you can see a radar target area. If you look near the radar, there's all kinds of clutter from buildings, trees, and so on.

Further out, if you look in the upper right corner, you can have rain, clouds, and echoes from buildings—you know, because you might have a set of buildings in some areas that set up an echo. You can see one is called an urban spike. So, when the Iranians attacked the Abqaiq oil field in Saudi Arabia, the drones came in—in this case, they were not drones, they were cruise missiles. They came in over buildings. So you have these buildings, and I have this drone—here's the drone—and it reflects a very small amount of radio signal, while the building is reflecting a tremendous radio signal. So I'm trying to see this drone, a small signal from the drone against the radar reflection from the building.

So let me just give you one very simplified idea of how the radar tries to see the drone. There are these very exotic radio technologies that are used. If we go to slide 16, we see a depiction of how the radar tries to see it. The signal is tremendously large. The radar, shown in blue, sends a signal out trying to detect a low-flying drone. The only thing that makes the drone's reflection different from the reflection off the ground is that the drone is moving toward the radar. The reflected signal, shown in green, is at a slightly higher frequency than the signal from the ground, which is a tremendous signal. The processed signal, shown in red here, is the one where I intentionally mix the signal I'm receiving with the low-flying signal from the target.

And what I get is a beat frequency, which is shown here. If I go to the next slide, I know the frequency of the signal. For a drone, the shift in frequency is going to be about 300 hertz. But the radar's frequency is in the gigahertz range—a billion hertz—so I need extremely stable frequency control. If the radar's frequency drifts by even a few hundred hertz, I won't be able to see that 300-hertz beat frequency. I'd still see a beat frequency, but it would just come from the radar's own oscillation. So you can see how precisely the radar's primary signal has to be controlled. In the next slide, I've shown the beat frequencies for one- and two-hertz changes in frequency.

So if I have a one-hertz change in the frequency, I get a beat frequency of, uh, one hertz—it would be a hundred hertz in this case. And if it's two hertz, you can see I get twice the beat frequency. In the next slide, I show that the beat frequencies are the same even if I use, in this case, twice the frequency. So no matter what the frequency of the radar is, I get the same beat frequency. The problem is, if I use a higher-frequency radar, like an X-band radar—which is a typical radar I'd want to use for high-precision tracking—then the frequency of the radar is ten times higher. That means I have to control the base frequency even ten times more precisely.

So the net result is, when I look at the problem of controlling the radar's frequency—and also the frequency changes because it's an airborne radar—there's a change in the frequency of the ground clutter from the aircraft's movement. I have methods for controlling that as well. But it turns out I just can't see these low-flying, very low-radar cross-section targets. So now I have the problem of drones that can home in. If we look at slide 21—yes, slide 21—this is actually an American drone

that uses the Iranian design, because the Iranian design is perfect. So Iran can take credit for designing the perfect drone that everybody uses. This is a Shahed; I had it incorrectly marked.

It's a, it's a gen—the Gen 2 version is a Russian drone, which, as an airframe, looks exactly like the original Iranian design. The Shahed drone is the original Iranian drone. And this is an American design that uses the same Iranian airframe. So Iran is the inventor of the kamikaze drone that's wreaking havoc on the United States and Israel now, and leading to Iran being the dominant military power in this current war. Iran's dominant military influence is now due to several factors. First of all, Iran controls the Strait of Hormuz, so it has a stranglehold on the world economy, including the American economy and those of other states around the world.

So Iran has been able to preferentially provide oil to countries it considers non-hostile—not necessarily supportive, but simply non-hostile. Iran has very cleverly thought through the idea: we're not going to stop it for everyone; if you're not hostile to us, we'll leave it open. And by the way, even the United States realizes that Iranian oil is critical to keeping the global economy from collapsing. So now Iran is selling oil, not at the reduced rate of \$45 per barrel—because Iranian oil was sanctioned by the United States—but at \$120 a barrel. Iran is raking in money. I mean, it's almost... it's almost a comedy that the Americans have now removed the sanctions on Iranian oil.

So all of a sudden, the Iranians are getting full price for their oil because of their control of the Strait of Hormuz. And, of course, they're able to provide oil to non-hostile states. That's a tremendously favorable situation for Iran in this war. The next issue they have is these ballistic missiles, which are doing far more damage per impact than they were doing earlier. And the next problem is that Iran has precision information on the targets. Some of this precision information could have come from other sources. Let's go back to slide 22. This is from the original attack in September 2019 that Iran carried out against the Abqaiq oil fields in Saudi Arabia. At the bottom of this drawing, I've shown a satellite photograph of one of these oil processing tanks.

And notice that what's shown in the satellite photograph are the holes in the oil processing tank that were produced by Iranian cruise missiles hitting those tanks. The precision of those holes is within meters. It's incredible how accurately the Iranian cruise missiles were able to hit these processing tanks. Well, I don't know exactly what specific technology the Iranians used, but I can give you a speculation. If you look at the next slide, what the Iranians could have done is taken a satellite photograph of those tanks. In other words, they didn't have to have help from China or Russia; all they needed was a commercial photograph of those tanks. And in the upper left corner here, what they did is a cross—so the—

#Ted

The cruise missiles have an image of what they're looking for. Here's the image—it's my hand. Now what I have is the image, and what I do is cross that image with the image of my hand. I do it electronically. So when I line them up correctly, all the light passes through; none of the light passes

through when they're not lined up properly. You see these three peaks—this is a simulation I actually did. It's my simulation, just a guess. If you look to the right, I show you the peaks of the cross-correlation, and in the bottom image, I show those peaks overlaid on the targets. So this could have been done with satellite imagery and cross-correlation, which we know the Iranians are fully capable of. Here's an example where it's not necessarily a drone being guided by what's called first-person guidance.

In other words, this isn't necessarily a drone operator sitting far away, receiving a television signal from the drone and guiding it into the target. This could simply be a drone that's a robot. It already knows where to go before it "opens its eyes," takes a photograph of what's in front of it, and cross-correlates that photograph with the target. So you can see how problematic these drones can become, because now I have the ability to do real-time homing. I'll talk about that—well, maybe in the next part, since we're coming to it. But the conceptually simplest idea is that I have a drone, and I'm looking through a television camera, which means the drone has to be sending a television image back to me.

I might be thousands of kilometers away, and then I have to send the drone signals. But I don't need to do that in this particular case. So now—so Iran... The indications are, at least to me, that Iran has drones that can do cross-correlation with images of the targets, as well as drones that can home directly on signals from television cameras inside the drones. That's a big innovation. Maybe I should stop here, and I can talk about how they do it some other time—how Iran is doing this. But the availability of the Starlink system is now making it possible for Iran to use drones to do real-time homing on targets. So what happens? They get an image of the real-time situation. Actually, let's go to slide 33 for a quick second. Go to slide 33. If you look at slide 33...

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Here's the before and after. I have an image showing where these radar domes are, so I can destroy them in two ways. I can use an image of the radar dome and cross-correlate it with the drone as it comes in, as I described earlier, or I can simply home in on the radar dome using a video camera. The video camera can get its information from a Starlink signal. Let me show you—let's go to slide 38, and I'll stop after this. You see this square on the right? That's a Starlink radio terminal. Let's go one more slide forward. One more slide.

And here you see this little dog—a cute little dog—next to the Starlink communication system. That Starlink system only weighs a pound or two. Let's go one more slide. There it is, in a box you can order. Notice the box has instructions for how to use it. You can go out—Nima can go out—and he can order one from Amazon for about \$250, and you'll get it in the mail in a few days. Then you can modify it and put it on your drone if you know how to use the signal. After that, you can send your drone out looking for a target, using the drone communications through your Starlink satellite connection.

Now, let's say I'm in the United States. I say, I don't want Nima out there using that drone. Well, how am I supposed to know Nima is out there using the drone? I've just sold him a terminal. The terminal has encrypted communications, because that's how you keep the signals secure for people who just want to communicate normally. So how do I know it's Nima with his drone flying around looking for something to hit? I have no way of selectively turning off the drone signal to Nima. All I can do is turn off all the Starlink satellites that are functioning over, let's say, the airbase.

But if I do that, then I turn off all the Starlink communications that the airbase is using. So I have a dilemma. The problem is very serious. Now we see how modern technologies—navigation technology, GPS, the Chinese Baidu system—are widely available. These are very high-technology systems, but they're universally accessible. You don't need to understand the system or be able to build it yourself; you just need access to its service. Once you have that service, plus high-precision, real-time satellite imagery from the Russian and Chinese satellites, you're in business.

And you have Russia, which has been attacked using American weapons—the Americans have attacked Russia via Ukraine by giving Ukraine missiles to strike Russian targets. And Russia told the United States, when the U.S. did this, "If you do this, we, at some future time, will give information to someone else to attack you." All right, you did this in Kursk, you did this inside Russia, and you gave the Ukrainians all this information. You gave them satellite surveillance data, you gave them communications and targeting information so the drones could attack our strategic bombers, for example. Okay, you want to play that game? That's fine, because we're going to attack your AWACS. We're going to make sure the Iranians know where those AWACS are parked.

We're going to make sure the Iranians know where the radars are, and we're going to give them that information. They're going to have the navigation resources they can just buy commercially—and good luck. Now Iran is benefiting from these services, and so, incidentally, are China and Russia, because those countries want Iran to prevail. And Iran, I think, will prevail in this. I think the war is going to get worse and worse for the Americans. My gravest concern is that as Israel gets into a more and more desperate situation, they might be foolish enough to use nuclear weapons. The American political decision-makers had better make sure Israel understands that they are on their own if they ever use nuclear weapons against anyone.

#Ted

You know...

#Ted

They are absolutely on their own—forever. Completely. Because I'm concerned that this crazy guy, Netanyahu, who definitely has the mentality that Adolf Hitler had, doesn't do something to bring down Israel along with everybody else. And Adolf Hitler would have brought down Germany. We have every reason to believe he would have done it if he'd had nuclear weapons, because he was

suicidal. It only took an intervention of the kind that Albert Speer made—Albert Speer was his architect. Hitler told Speer, who was running the German economy, to destroy Germany.

And Speer failed to follow his order because he didn't want Germany completely destroyed. Otherwise, Germany would have been wiped out if that order had been carried out. So you have to hope that either Netanyahu isn't as crazy as he looks, or that the people he would order to do the job will refuse to do it. And I sincerely hope that the kind of Israelis I know are in the loop, and that they would refuse to do it, because they're smart enough to know it would be the end of Israel along with a lot of other things. But I don't know how much control has been taken by this man—this lunatic. So, anyway.

#Nima

Thank you. Thank you, Ted. Thank you so much. You're in Germany—I hope you enjoy your trip. I always enjoy myself in Germany.

#Ted

You take care. Nice talking to you. I hope it's of some interest to your audience.

#Nima

It was amazing. Thank you, Ted. Bye-bye. You.