

The Kill Chain: Planning for the Conflicts of Tomorrow

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00:04: Thank you Nick. It's great to be here with you and with the security forum and with Chris. Just... We book writers like to display the merchandise, this is Chris' book. I want you, as soon as we're finished, to go get a copy, one way or another. I watched the gestation of this book. I remember a powerful lecture that Chris gave two years ago in Aspen, where we are virtually talking about the need for defense modernization. It was a startling wake-up call. I ended up writing a column about it and began a conversation with Chris that was part of his effort to develop this book and the arguments in it.

00:50: So I wanna ask Chris to take us all on the journey that he's been on and that he shared some with me over the years. The book starts, if you haven't read it yet, with a really chilling account of what would happen in the first hours and days of a war with China and our... Maybe that's a good place to start explaining to people why we have a problem when it comes to defense technology.

01:21: Yeah, thank you David. I appreciate you taking the time to do this and appreciate your friendship and guidance throughout this whole process, it's really been invaluable to me. The story begins for me, in the time that I spend on the Senate Arms Services Committee, better part of the decade, supporting the committee and Senator McCain, looking very closely at the US military, how we were investing money, how we weren't investing money and ultimately how we match up against emerging great power competitors, first and foremost, China.

01:51: And the reason I wrote the book was a growing concern that I had then and have now, that we are losing our military technological advantage. That as a result of that, our ability to deter conventional conflict is also eroding and that is increasingly putting us into a very dangerous and perilous position and as you said, I tried to make this visceral to people in spelling out what it might look like, God forbid, if the United States military had to fight China.

02:24: There are a lot of reasons why that might end up happening. It's not a war that the United States is looking for, obviously but for many reasons, we could end up finding ourselves in that type of a situation and basically, the problem that we have is that for 30 years, our adversaries have gone to school on how the United States builds and operates our military and they have China, in particular, have not sought to play the same game that we have played. They've sought to play a different game.

02:52: They have recognized that the US military is built around very small numbers of very large, exquisite, expensive, heavily manned, hard to replace military systems, vehicles, ships, aircraft, platforms and they have made a conscious effort, a deliberate effort, a very urgent effort to build up military capabilities to call into question how the US military operates and what it operates with.

03:18: So what I spell out in the beginning of the book is a concern that if we ended up in this conflict, our forward operating bases, our land bases in Asia, places like Guam, bases in Japan would come under an immediate and withering attack from very precise and very large quantities of precision guided weapons, cruise missiles, ballistic missiles, increasingly hypersonic weapons of all

different ranges and types. Our naval forces, our sea bases, our aircraft carriers would face a similar onslaught of very large quantities of relatively lower cost, very precise weapons, anti-ship ballistic missiles, cruise missiles, the so-called carrier killer DF 26 anti-ship cruise missile and ballistic missile.

04:04: Our air power would struggle to get close and struggle to be relevant because of the very dense integrated air defense systems that the Chinese had built and fielded. All of this with an idea toward pushing the US military farther away, making it harder for us to operate and then ultimately, engaging what the Chinese military refers to a systems destruction warfare, which is the fielding of capabilities to rip apart the critical enabling technologies and capabilities that the United States relies upon to operate our forces in combat from our satellite networks, our intelligence apparatus, our command and control enterprise, the ways in which we move information and commands around to our military systems and operate effectively.

04:54: Again here too, the Chinese military is fielding very advanced technologies from high power jammers and cyber effects and electronic warfare to very consciously go after the ways that the United States military operates and my bottom line on this is that they've made a lot more progress than I think most Americans realize and the situation for the United States is a lot more dire than most Americans realize.

05:19: So Chris, that's... As I said, it's showing account of a war in which our carriers are having to move east away from China to escape attack. Our beautiful F35 exquisite fighters can't get to their targets because they can't re-fuel, because the refueling plans will get shut down, just a series of really dreadful prospects. You said at one point that talking to Senator McCain about this some years ago, the two of you imagine the conversation in the situation room where the choice would be between surrender and lose or fight and lose. So the question obviously is, how did we get into this terrible situation of vulnerability into the scenario you just described, where the Chinese have weapon systems doctrine that will render our beautiful weapons, I don't wanna say useless but of much less value, how did that happen?

06:30: Yeah and as I say in the book, as you just said now and as I can't say enough, I'm not trying to suggest that China is 10 feet tall or that the United States has no effective means of responding. We do. It's just that the overarching story is a pretty bad one, that I think it's heading into a worst direction. How did we get here? There's a handful of things that I would point to. One obvious reason is that for the past two decades, we have been very focused on the events that followed 911, the wars we were fighting, global counter-terrorism operations and that shouldn't be minimized, that was an enormous strain on the US military, on our resources, on our time of senior decision makers.

07:09: But that's not the whole story and the reality is that during that period of time, over the past 20, 25 years, the lion share of our defense budget, upwards of three-quarters of a trillion dollars at this point, has been going toward military systems and modernization efforts that really didn't have anything to do with the wars we were fighting and I think that's where, to me, a lot of the failure resides. Ultimately, I think it's an intellectual failure, that we have misconceived of the nature of military power, what we are building a military to do, we have a, what we refer to in the defense world as a platform-centric view of the world. We have optimized our entire defense enterprise to produce military things, vehicles, ships, aircraft, tools of military power that we relied upon for

many decades and we have sought to make them incrementally better.

08:04: We've optimized our industrial base to produce those kinds of results and the reality is that, that's ultimately not what wins wars, it's not what deters conflict, it's not what keeps the peace. Ultimately, the outcomes we're trying to achieve, our better decision-making, better quality action, better understanding of the world and the ability to do that faster and at greater scale than our competitors, regardless of the tools that we use. So part of the problem, I think exists in how we conceive of military power and the fact that we build programs and budgets and an industrial base and a special interest support complex, all focused on producing more incrementally better versions of the old things we've relied upon for a very long period of time.

08:52: At the same time, we fail to recognize how far emerging technologies have advanced, particularly in the commercial world over the past 10 to 15 years. Nick mentioned a lot of those technologies up front but just by way of an example, the parking lot outside of the office building where I am now has commercial Tesla vehicles that have onboard them computer processors, graphic processing units that are literally hundreds of times more capable, more powerful than the super computer that is on the F-35 Joint Strike Fighter, which as you know, is referred to in defense circles as the Flying Super Computer. The defense world has simply fallen significantly behind the commercial world in a lot of respects with respect to artificial intelligence, emerging technologies like that.

09:41: And I think the underlying reason, if I could point to one, is Hubris. We came out of the cold war so far ahead of the next competitor and we enjoyed that period of military dominance for so long that we began to believe that the ways that we have always operated the military, the things we have relied upon to deliver our dominance, would forever be the things that would achieve that level of military primacy for us and we have failed to recognize that in that time, we have been disrupted by our competitors and we've been disrupted by the nature and evolution of advanced technology and if that mindset doesn't change, if we don't realize that we have to get out of the way that we have conceived of military power and operations for the past 30 years, we are not gonna be able to address this problem effectively.

10:32: So Chris, to dig a little deeper on this question of how did this happen to us, I wanna ask you to talk about something on which you have a unique advantage and that is the role of what your late boss Senator McCain liked to call the military industrial congressional complex, that iron trunk trying all that keeps our existing procurement systems ever greater refinement of existing systems, keeps that whole thing rolling forward and maybe you could talk about that obstacle to buying what we need, from the perspective that you had when you were staff director of the committee, the kinds of things you saw happen despite efforts by you, sometimes by Senator McCain to turn the course, it just didn't happen, year after year, why is that?

11:29: Yeah, it's a great question and I think you're right to hit upon the idea that this truly is an ecosystem. It definitely involves the Congress, it involves the Department of Defense and the military and it involves special interest groups outside of the government. Certainly, the industrial base but then also the many organizations that are involved in national defense.

11:55: The problem I see is not the nature of the system. I think the nature of the system is not

going to change. It is going to be what it is and I think we can wish away elements of it, we could wish that it was going to be otherwise than it is but I really don't think that it's realistic to assume or hold out hope that defense reform has to be predicated upon a fundamental transformation of our political system.

12:22: I think the reality is, and what you're pointing to, is that too often the incentives that govern that system are out of luck and they generate the same outcomes year over year, which is as we've been talking about, building more and more incrementally better versions of old things, at great cost, at great levels of technological sophistication but they're not necessarily the things that we need to prevail and the strategic competition that we're now involved in. I think the reason for that is that this is a defense establishment that is inherently conservative and there are good reasons for that.

13:06: Bureaucracy exists to slow the pace of change, less disruptive change cost people's lives and create calamity. I think the problem that we have here is that this system has become so optimized to producing the same types of things, to demanding the same types of things, to wanting to build the same types of things that it becomes extraordinarily difficult to change the incentives that govern that system and to do that, you truly have to affect it all levels. It's not enough to try to make change at the congressional level in the absence of having leadership at the department or different types of responses from defense industry.

13:46: This is something that is possible I think, to change and in my time in the Senate, I got to be part of and I certainly saw efforts where the Congress was involved in the right ways toward making hard choices, divestments of old systems, increasing investments in new technologies that the department was perhaps not fully aware of and this has happened before, the MQ9 reaper, the Predator aircraft, unmanned aviation as we think about it today, largely began through Congressional earmarks.

14:19: This is something that the incentives can be changed but too often what we have is a system where the pace of change is incredibly slow, there are very few incentives for people in all the different branches of government and parts of the ecosystem to make disruptive change, to fundamentally shift the way that we do things and again, it evolves or revolves around the systemic failure to truly understand and measure and seek to compete different ways of achieving the military outcomes that we're seeking, rather than simply producing better versions of the tools we've always relied upon.

14:56: May I remind our audience members that you can join this conversation in a few minutes and what you should do if you think you have a question for Chris is go to your participants tab on your screen and hit the raise hand button and then we'll see it and we'll know that you're interested in asking a question and that will facilitate our conversation with Chris.

15:23: So Chris, one interesting thing about what you've done is that with a strong belief in the need to modernize our defenses, that you've written about in the book, you also have actually gone out and try to do it yourself in your own career. Chris as Nick said, initially, is the Chief Strategy Officer for Anduril Industries and I thought it might be interesting for our viewers just to hear from you Chris, about what your doing that now, what are the new weapons and systems that you're

trying to build, what else do you hear about out in all the technology world and then we'll talk after that about why it's so difficult for companies like yours to really get in the door.

16:07: Yeah, I appreciate it. Anduril is a technology startup. We're three years old. We have been working since the day we were founded to try to provide more advanced technological capabilities to the National Defense enterprise so certainly the Department of Defense but also other national security agencies, US allies and partners overseas and our focus is very much that. It is taking these emerging technologies like artificial intelligence and autonomous systems and trying to build different kinds of solutions, different kinds of capabilities that address the problems that US military operators, national security professionals have. Not to meet requirements that were laid out 10 years ago but to try to solve the problems that they're trying to solve in new and different ways.

17:00: And I think a lot of the work that we focus on and I think... This is a broader statement about the nature of these technologies, it really goes back to what we were talking about earlier, that what we're really trying to do when we field military capabilities or bring new technologies into the force, is fundamentally enhance human decision making, human understanding the nature of action that humans can take and truly making it a human-centric process. I think there's a lot of confusion around what these technologies can do and can't do, there's a lot of misunderstandings and concerns about building Skynet or The Terminator and I think as we look at it and I think many people in the defense technology world look at it.

17:47: Yeah, there are certain things that these technologies are going to be very good at doing now and there are a lot of things that they're not good at doing now and they shouldn't be put in position of doing now and at the most basic level, I boil it down to the Department of Defense is a wash and data, much like the rest of the world collecting vast amounts of information and the tragedy is that all too often, we're actually not taking advantage of all of the information that we have. We're making it the job of vast numbers, tens of thousands of people to sift through this information and try to generate insights to try to prepare our military for the very dangerous jobs that they're going to have to perform and all too often, it's slow. It's manual, it's brittle. It's not very dynamic and that increases risk to our men and women in uniform, our professionals who do national defense work.

18:41: It wastes their time and I think where these technologies can really shine today is around making better use of the information that we have, generating insights and understandings that are going to protect our force, defend our force, save innocent lives, surface that faster, put humans in the position to make better, faster decisions about very important issues of war and peace and life and death and then ultimately ensure that whatever actions are being taken are originating from human agency and always have human accountability associated with them so you can trace that action back to someone who is accountable for initiating it.

19:24: I think that to me is really the crux of the issue. As long as we can to ensure that that process is taking place, these technologies I think are going to rapidly develop, rapidly add value but it has to occur in that operational, strategic and ethical framework.

19:42: If you read Chris' book, as I hope you will, you'll see a detailed discussion of all the different unmanned systems, air, sea, land, that for relatively little money can be brought to bear. Chris has some striking cost comparisons between the weapons that we have now and the ones that we could

have.

20:10: Chris, assuming that there are these great companies out there, they've got great ideas, they just know how they could be helping our defense in a cost-effective way. They confront a Pentagon procurement process that is, I'm just gonna say it, intimidating and overwhelming and a lot of companies just give up. Could you talk about that problem, that the people with good ideas just don't have the scale in terms of their ability to do the paperwork to get into this procurement loop.

20:42: Yeah so National Defense is, it's not a free market. It's very significantly defined and controlled by the government but it's still governed by incentives and I think that's the thing that is worth focusing on when we try to unpack this question of how new entrants can do better business with the Department of Defense and help the US military. What I've seen in my time when I was in the Senate, did a lot of work for Senator McCain and the committee to try to reform this acquisition process and then certainly in my life after government, is that the timelines are way too long for small companies. For larger companies, they can ride out the multi, multi-year process from generating requirements to programming acquisition programs, selecting a vendor, going through the competition process, ultimately then getting money appropriated for them. This is a, oftentimes, a multi-year, six to seven years; in the case of larger military systems, it's over 10 years long.

21:45: The problem that we have is that for small companies, for startups, they need to be able to return investment quickly. They need to be able to show that they are generating wins, that they're getting traction for the work that they're doing and I think all too often the problem in the National Defense world has been that we start a lot of new programs, we have a lot of new prototypes or science projects or small-scale efforts that get going and it's never been easier, right now as a result of a lot of the reforms that have occurred in recent years, the defense innovation unit and other innovation-focused organizations that are seeking to bring these companies in to do work, the problem historically has been that none of it scales. So that hundreds of companies may come in and have the opportunity to get a very small contract and build a very small prototype but then there's not a mechanism that takes those companies or those programs, the best performers across what is known as the Valley of Death from a small scale prototyping effort to a large-scale military program.

22:53: And I think the thing that the defense establishment needs to focus on, the next administration, whichever stripe it is, needs to focus on is creating those mechanisms and processes to identify who the true performers are among all of those new entrants that are now coming in and doing very small amounts of work for the Department of Defense and identifying who are gonna be the next SpaceXs, who are going to be the next star companies that are capable of fielding critical national security and national defense technologies at scale. That's ultimately how you then begin to change the defense industrial base. Is that as small companies become larger companies, as they hire more people, it looks like a viable business model for engineers and for new founders and for investors, that it is a place where engineers want to go work and investors want to invest.

23:49: And the problem that we've had for 30 years is that as startups in every other sector of our economy, from financial technology to consumer electronics have gone from being small start-ups to billion dollar unicorns, there have only been two examples of that in the defense world in 30 years. It is a very small group of companies that have actually been able to cross that threshold and

all too often it's because they've had the prowess or the resourcing behind them to just play out these incredibly long timelines. That's gotta change to level the playing field, reduce the barriers to entry so more of these companies and more of these innovators can come in, not just do work and then go nowhere but do work and then scale it to build more successful companies, more successful products and ultimately help the US military regain it's competitive advantage.

24:43: I invite our viewers again, if you'd like to ask a question of Chris to go to the participant tab at the bottom of your screen and then hit the little raise hand button and your hand will be magically raised and we'll be able to see it and call on you for a question.

25:03: Chris, I wanna just veer away from the subjects of your book for a minute to just ask you a general question, as somebody who follows our military carefully and thoughtfully, this is a period where a lot of people in our professional agencies, our military, our intelligence community, spend some time looking over their shoulders towards political authorities, whether they're on the Hill or in the White House in a way that is worrisome sometimes and I'd be interested in your evaluation of how the military is doing in protecting its independence. We had a moment where we had the chairman of the joint chiefs of staff out in his camis in Lafayette Park that I think was worrisome for a lot of people, including him. I think General Milley would be the first to say that was not a good moment. Where do you think things are now and what would be your thoughts going forward about the right balance for the military in terms of politics?

26:05: Yeah, it's a great question and it's something that I think has become increasingly alarming to a lot of us. I think the national security professionals far beyond the military, certainly when I was on the Hill, there was always kind of broad bipartisan support for these institutions. There was a degree of trust and deference shown to them from the standpoint of... Not sort of believing that there are conspiracies afoot to undermine the functioning of the US government or it's elected leaders and that to me, the sort of erosion of trust has been deeply worrisome. I think the US military is hanging on. I think they've actually weathered this pretty well in light of how, the many different ways that this could have played out.

26:55: I think the instance that you cite with General Milley, I think he recognized that he had put himself or ended up in a compromising position and was very quick to come out and correct the record and admit that that should not have happened and I think those are the kinds of things that... That the military leadership that kind of keeps the institution on the right track and I think it's been very difficult for them to maintain that straight line and I think that's ultimately where civilian leadership is just essential. We don't want a society where we are treating the military like a priesthood. We do want strong civilian leadership and part of that civilian leadership is sheltering the military from these kinds of political winds, political interests and that's something that I think is becoming harder to do as more and more of this process becomes politicized.

27:53: I truly hope that that's something that we can turn the page and move away from and recognize that if we keep going down that path, it's gonna lead us to some pretty dark places but my hope here is that all things considered, the US Military I think has done an admirable job of trying to keep itself out of politics, constantly making it clear that their loyalty is to the Constitution and the oath that they took when they joined the ranks of the US military and I think that's something that is gonna have to continue to guide them moving forward but I think at the same time, civilian

policymakers are going to have to recognize what are the ways that we wanna rely upon our military and what are the things that we just need to keep them away from and my hope is that on a bipartisan basis, Congress can continue to try to play a role in helping that process of giving the military cover, sheltering them from political winds or interests or involvement in politics that could be deleterious, rather than playing into the process of wanting to take opposite sides and use the military as a cudgel to beat up the administration regardless of which party's in power.

29:12: So we have some wonderful questions that are teed up here and I'm gonna start with two people who are special members of our Aspen family and ask each of them in turn to put their questions to Chris, then we may bundle some questions as we go further but I wanna begin with Jane Harman, who was a member of Congress for many years, took an intense interest in national security issues, was an effective overseer and critic and then for the last 10 years, running the Woodrow Wilson Center has made a special contribution to understanding foreign policy and national security. So Jane Harman.

29:56: Thank you Chris and David. It's nice to see you both. I just have to say that Congress is less without John McCain and Congress is also less without you Chris. I thought you were a highly creative and very skilled staff director of the Senate Armed Services Committee. I have a two-part question related to everything we have been discussing and first I have to confess, I was part of the military industrial congressional caucus because my district made most of the country's defense and intelligence satellites and it was a huge deal to the economy. It was the economic driver to have aerospace firms doing that. That doesn't excuse the fact that they could evolve and do better with small suppliers and all that but just so I've put that out there.

30:47: My two-part question is this, it first relates to the capacity of Congress. Yes, we need defense reform. Yes, we need to think about new systems in new ways but most members of Congress are pretty analog or at least they were in my day and these are digital systems. At the Wilson Center, we're educating staff to understand AI and cyber but can members of Congress wrap their heads around, if they even had time for this, the concepts and the systems that we need for the future? That's the first part.

31:25: The second part is, David raised the issue of intelligence and it's not just leaving the leaders of the military alone and making sure that they exercise their capacity to put the country first but it's also that the, what I would call, a pretty substantial purge of our intelligence community recently has left us, it seems to me or left disable to speak truth to power and as we think about what systems to field Chris, against future threats, we have to think about how capable are our adversaries and what are their intentions and if we don't understand their intentions, we could easily miscalculate. So it's capacity of Congress and capacity of our IC.

32:15: Great questions and thank you for your kind words Jane. With respect to the capacity of Congress, I definitely think both at the member level as well as the staff level, that the institution would be well served by the kinds of efforts that you're engaging in to up-level the understanding of these technologies, what they can do and what they can't do. That's important. What I would say though is, I think we also have to recognize that, ultimately what these technologies are being brought to do is solve operational problems and we can demystify a lot of the technology and sort of what it's doing. You shouldn't have to be a data scientist to understand the value that machine

learning can provide to the US military. Nor should you have to be a 20-year military operator.

33:08: What I sought to do in the book was try to unpack this in a way that I felt would make it more accessible to an informed general audience, my colleagues, former colleagues in the Congress and I think a lot of that has to do with really kind of boiling the problem down to what it is we're ultimately building military systems to do, which is to improve understanding and decision-making and action and I think at that level, you can begin to contextualize what these technologies can do and can't do. There are ways that you can actually demonstrate to people so that it's visceral and tangible. How these technologies are contributing to improving understanding, improving human decision making, making us better, faster at the types of things that we have to do operationally.

33:56: I think that's where people really come to see the value of the underlying technologies and what they can do to enhance our competitiveness without having to get into the nature of the algorithms and the false positives and other things that I think engineers are going to focus on. So I do think it's possible, it has to just be framed the right way and we have to focus on the right problems.

34:19: With respect to the IC, I couldn't agree more and I think that's... I think ultimately what we were just talking about, which is the erosion of trust in our professionals, whether it's our foreign service officers, our uniformed military, our law enforcement officials, our professionals in the intelligence community. We have an admirable tradition in this country of people who serve in our government who are certainly individuals but who answer a calling higher than themselves, that render service to the country regardless of which administration's in power, regardless of which party's in power and then to see the erosion of that trust in our institutions and the belief that these are just yet another political actor on the field, to me, is deeply, deeply worrisome and that's something that we're going to have to rebuild in this country and I think that it's going to have to start sooner than later because if that erosion continues, if we can no longer trust that we have professionals in our national security ranks who are there to serve the nation and call balls and strikes, I think then we devolve into a real state of political chaos and we're at risk of that now and we've got to correct in the future, we're going to take a pretty dark path, I think.

35:51: I wanna turn to a question from another giant in national security, Senator Sam Nunn.

[pause]

36:06: Is Senator Nunn still with us?

[pause]

36:14: Can you hear me David?

36:16: Yes. I hear you, Senator. Speak up and Chris is waiting.

36:20: Okay. I was thanking Chris for his great service when he was on Capitol Hill working for Senator McCain and continued service now. I look forward to reading the book. Procurement

system has always been extremely difficult and I guess now it's even more difficult. I wonder, number one, about Ash Carter's initiative with Silicon Valley and whether that plays any role here and whether that should be continued and addresses some of these problems that you point out.

36:51: My second question deals with the constitutional responsibilities of Congress. My guess is that the founding fathers would have said the two most important responsibilities of Congress under the Constitution, Article One, is appropriating money and number two, declaring war and of course, the War Powers Act has not worked, it is not working and no one seems to be overly concerned about it, although we've been in wars in the Middle East where everybody thinks we ought to get out but we don't, we can't find a way for almost 20 years now.

37:26: So does Congress really need to reorganize in order to fulfill it's role under the Constitution on War Powers, which is pretty darn important but it seems to me it's almost in total default so two separate questions. Thank you again Chris. Look forward to reading the book.

37:45: Thank you very much Senator. It's great to be with you. I think on your first question, the initiatives that have been launched in recent years, you mentioned the Defense Innovation Unit, these are good and there are a number of organizations like that that have now proliferated, these are good things. I think they're playing an important role in trying to build bridges to the technology community, to try to create pathways for startups or new entrants or companies that have not traditionally done national defense work to get started.

38:17: I think the critical thing, as I was saying earlier, that is still lacking is how do we scale the best performers? 'Cause that's ultimately what's going to revitalize and help to remake our defense industrial base, make it a more competitive and dynamic ecosystem of technology where you have lots of viable performers who can operate at scale, rather than just a very small number of very large companies, as we have today.

38:47: I think, with respect to the War Powers Act and the general question of war powers and authorization for use of force, this is something that I could not agree with you more, is a problem that people recognize on a bipartisan basis. Is a problem that Congress has delegated a lot to the executive branch, with respect to the conduct of war, the authorization for war, how these conflicts are governed. I think the big flag that I would offer is that, in the attempt to reframe this, which I think is important, the Congress needs to resist the temptation to try to be an organization of 535 Commanders in Chief.

39:32: The proper role of the Congress in the authorization for use of force is identifying and defining the mission that we want our military to accomplish. We have to be able then, as a Congress, to defer the execution of that kind of military operation to the President and I think the reason we've had an inability to get this system right, to modernize it, as you said, is the lack of trust that has existed between the Congress and the President on that basis.

40:04: I saw it when I was in the Senate, where you had a Republican-controlled Congress and a Democratic president. I think the same is true now where you have a division of power in the Congress and a Republican President. Ultimately, the Congress has to be in the position of defining

the mission but then comfortable delegating the execution of that mission to the President, while still having oversight, control of the funding, mechanisms at it's disposal to correct things that it sees going in the wrong direction. I think... But if the Congress tries to micromanage our military operations and the conduct of military operations, we're gonna end up creating more problems than I think we are gonna solve.

40:48: So I regret we only have two minutes left. I'm gonna take the top two names on my list of questions, please keep your questions, if you can, 20 seconds or so. Nancy Bova and then Vigan Joti. We'll ask the questions, then we'll come back to Chris for a final comment. Nancy?

[pause]

41:18: Is Nancy there? 'Cause I'm not hearing her question. So let's go to Vigan, if Vigan Joti is there, we'll ask you to give your question.

[pause]

41:38: Good afternoon. Thank you so much for taking my question. I'm really grateful for this session and thank you so much for organizing it. Thank you Mr. Christian for your book and thank you Mr. David, for coordinating and interacting with it. My question is about this current pandemic. As you have noticed that this is a zoonotic disease and there are several zoonotic diseases which we have dealt with in the past, HIV, ebola and they all come from viruses jumping from animals to humans because of animal slaughter. Could this pandemic, this model of pandemic could be used as a warfare technique and what can we do to prevent future such viruses or future such pandemics since we have live market, not only in China but also, there are several wet markets in US also?

42:33: Good question. Chris, that's a chilling way to end it but that's a good question for you.

42:38: Yeah. Well, I guess a chilling answer is, as I worked on this book and spent a lot of time looking closely at a lot of these emerging technologies and advanced technologies, the one that I am most concerned about is actually not artificial intelligence, as much as people are concerned about that, it's biotechnology and specifically around this question of biological warfare.

43:03: Historically, biological warfare has been the classic example of an indiscriminate weapon, once it's released into the environment, it moves around, person to person, in an uncontrolled and an undirected way by human beings. The concern around biological weaponry in the future is that, for the same reasons that we can tailor-make medicines that are unique to an individual or to... Unique to a group of individuals, you can do the exact same thing on the dark side, with respect to biological warfare agents, specific strains of disease and it's something that I think we need to be very cognizant of as a country, very focused on as to what our competitors might be doing in this regard. That to me, is a huge area of concern and yes, the recent pandemic I think brings that into focus to a certain extent. It's something that I think we're gonna have to all pay a lot more attention to as a country moving forward.

44:05: So my thanks to Chris for the usual superb account of these issues and let me turn this over

now to Nick Burns, our leader, who will introduce the next session.

44:17: Actually David and Chris, since it's baseball season, let's go into extra innings. I wanna ask you both one more question before we turn to John Bolton.

44:26: Chris, I've been so impressed over the last two or three years as you and David and I and members of the Aspen strategy group have been debating this big issue but how do we reform the US military? How do we take advantage of these digital technologies and to militarize them so we don't lose our competitive edge? Here is the question for both of you and David, you're a great student of this. Do we risk losing our military advantage to China? Can either... Both of you or either of you, foresee a scenario where the United States becomes effectively, the number two military power in the world? Because China's been more focused on AI, on biotech, on quantum, in reformulating those technologies for military purposes. I don't think any of us wanna see that but is it in the realm of the possible if we don't act, Chris and David?

45:22: So I'll take a stab first and would love to have David answer as well. I think it's absolutely a possibility. I think that the course that we are on is a course that will take us there and it's not because we are not spending enough money, it's not because we don't have access to fantastic technology in America or that somehow, we have less human capital or our people are less focused. Actually, we have all of that going for us. The problem that we have is an inability to recognize that if we don't change course, we're gonna end up in exactly the future that you just described where we will have lost our military advantage and all of the attendant consequences that come with that, the things that we take for granted in terms of diplomatic influence, economic influence, the ability to stand behind the things that we care about with some weight behind us.

46:19: These are all things that are going to erode as we lose that military competitive edge, which is something that is playing out. I think that for us to fundamentally change that, it starts with the recognition that we have to make significant changes and we have to do it with a sense of urgency. China, as you said, is moving out with that sense of urgency in a sort of nationally mobilized way and again, we shouldn't think... We shouldn't treat them as if they're 10 feet tall. We also shouldn't minimize the challenge either, we shouldn't build ourselves up and pat ourselves on the back too much because I think at the end of the day, the types of changes that we're talking about are going to be significant, they're going to have to play out for a very long period of time and I think the thing that I would end on is, even if we are successful, I don't think that we're going to get back the military primacy that we've enjoyed for the past 30 years.

47:14: I think we are moving into a new competitive environment where we can hope to deny China military primacy, which they seek or military dominance in their region, which they seek but I think that we also have to recognize that it's not... We're not gonna turn the clock back to 1997 or 2002, we are gonna be in a fundamentally different and competitive environment where we're going to have to rethink about national defense as increasingly, how we achieve defense in the absence of dominance but I think that's something that we can do. I think that we can achieve our national security interests, even in the absence of the kind of military primacy that we've enjoyed for the recent decades.

47:58: Thank you. David?

48:00: Nick, I'm flattered to be asked. I'll just give two brief thoughts. First, on the 10-foot tall question, I've recently been looking as carefully as I can, at the evidence about Huawei's capabilities as a provider of telecommunications gear, of 5G gear, as assessed by the British and by their best experts at GCHQ, their communications intelligence arm which has a public National Cyber Security Center. What's fascinating, as they looked carefully, is some of the weakness in Huawei's products, the software is quite spotty, it's easily... A lot of holes in it that leave it vulnerable to entry or manipulation, their inability to build their own chips mean that our enemy list as designation of Huawei, really cutting them off from US chip-making technology, means that within, the British think, within 3 to 12 months, they will be unable to supply their customers so that's well short of 10 feet tall. I could give other examples. So I think that's important to bear that in mind.

49:18: I wanna just close with a brief point that I think is one of the most powerful ones that's in Chris' book that we haven't talked about. Chris, I think quite courageously, engages the underlying strategy question. As he thinks about getting the right weapons, he thinks about using those weapons to foster the right strategy. We've had a strategy, really since our victory in World War II, magnified, you could say by our victory in the Cold War, of projecting power. Fight two wars at the same time, project power wherever we need to, this global superpower, intervening, projecting and as Chris says, the Chinese have a very different view. They wanna prevent other people, us, from infringing on their interests and Chris, if I read you right, you're saying we need to think a little bit more the way the Chinese do, about having a strategy that seeks to prevent them from doing something that would harm us or our allies but isn't really so much about trying to project power everywhere and having these grandiose ambitions that lend themselves well to the suite of weapons that we historically have.

50:32: I think that's a really creative part of what Chris presents in the book and I'd urge people to take a look at those chapters.

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