Demetri Kofinas: 00:00:00   Today's episode of Hidden Forces is made possible by listeners like you. For more information about this week's episode or for easy access to related programming, visit our website at hiddenforces.io and subscribe to our free email list. If you listen to the show on your Apple Podcast app, remember you can give us a review. Each review helps more people find the show and join our amazing community. And with that, please enjoy this week's episode.

Demetri Kofinas: 00:00:48   What's up everybody. My guest on this episode of Hidden Forces is Chris Brose. Chris has ... Well, all of our guests have interesting and impressive backgrounds, but there's something about the choices and responsibilities that Chris has made and taken on in his career that I think are reflective of someone who is motivated by something greater than himself. And that comes across pretty convincingly, not only in our conversation today, but also in reading Chris's book, "The Kill Chain," And in conversations that I've heard with other members of his company, including the company's founder Palmer Luckey, who some of you may know as the creator of the Oculus Rift.

Demetri Kofinas: 00:01:32   And we talk about the company. Chris is Head of Strategy at Anduril. And we discussed some of the initiatives and projects that he's most excited about and how Anduril, which is a defense product company is part of what is hopefully a revolution. In not only the way we think about the relationship between commercial technologies and military technologies, but also battle networks versus platforms, and the overall budgetary procurement and acquisition process, which Chris and others argue is not only dysfunctional in terms of waste, the type of waste that we're all familiar with, but also in terms of priorities.

Demetri Kofinas: 00:02:08   And that's really what the first part of our conversation today is about. It's a conversation about the story that the American public tells itself, that we tell ourselves, about the strength and primacy of American military power and how that story has increasingly fallen out of step with the underlying reality of how our military operates, the technologies it has at its disposal and the threat that countries like Russia and China specifically pose to America's battle networks, it's systems and platforms, and how to navigate all of those challenges while still trying to maintain peace and security, not only abroad, but also here at home, so that foreign threats don't become yet another excuse to weaken our civil and political institutions.

Demetri Kofinas: 00:02:57   It's a fascinating and sobering conversation, but it's important. I really put a lot of thought and attention into building the rundown for this episode. And we only got through a handful of my questions. So, you can expect me to revisit this topic in the not too distant future. If you want access to the rundown, as well as to the overtime and transcript of today's conversation, you can find all of that at patreon.com/hiddenforces.

Demetri Kofinas: 00:03:26   And with all of that out of the way, please enjoy this timely and important conversation with my guests, Chris Brose.

Demetri Kofinas: 00:03:39   Chris Brose, welcome to Hidden Forces.

Chris Brose: 00:03:41   Thanks for having me. It's great to be here.

Demetri Kofinas:	00:03:43	It's great having you on. I really enjoyed reading your book. I've been actually reading a lot of either foreign policy books lately or books dealing with the military. And it's been a really educational experience for me.
Demetri Kofinas:	00:03:55	For those who aren't familiar with you, because you have such an interesting, and I would say formidable, and impressive background, what's been your career and personal development? What led you up to this point? How did you get to where you are today?
Chris Brose:	00:04:08	Yeah. So, when you kind of look back at all the things I've done over the past two decades, it looks like the product of a very well thought out strategic plan and very much the opposite was true. So, for me, this all kind of started at rewinding the clock to September 11th actually, that was my senior year in high school, or I'm sorry, senior year in college. And at the time, I was studying political philosophy, I was not paying attention largely to current events, definitely not paying attention to foreign policy, international affairs. And that event for me was a wakeup call like it was for many other Americans. And I was asking myself many of the same questions that most Americans were asking, why did this happen? Who did this? What do we do about it?
Chris Brose:	00:04:50	And that very much kind of led me on a different path than the one that I had been on. And I started to change my course plan for the remainder of my senior year. I dropped into a lot of kind of foreign affairs classes, international relations classes. I became more interested. I read more. And basically my plan after I graduated was I was largely thinking of going back to do graduate school focused on political philosophy. And I decided that in little of doing that immediately, I would decide to go to Washington and spend a couple of years, maybe one, maybe two, and just kind of see what the world of Washington was like. So, I was very fortunate to land a job at probably one of the only places that was willing to hire me.
Chris Brose:	00:05:36	So, I was a junior editor at a magazine called The National Interest where I had the opportunity to do everything from kind of fetch lunch and coffee for the office to have an opportunity to provide edits to articles that we were publishing by people like Henry Kissinger and Frank Fukuyama and very, very accomplished foreign policy authors. And I did that for a couple of years and then very fortuitously ended up in a position where I had an opportunity to apply to be a junior speech writer at the state department. And this was 2004. It was the coming up to an election and Condoleezza needed a junior speech writer. I happened to be in a position to have my resume considered, and they were looking for someone who would come in with about four months of job security and write very low level speeches for the secretary of state. And I was all about that.
Chris Brose:	00:06:28	I was able to do that. I was able to sort of bridge the transition when Condoleezza Rice became secretary of state, she saw something in me and was willing to invest in me. And ultimately I became her chief speech writer. And I did that for the entirety of her tenure. Left the state department in 2008, very burned out, very tired. Went back to journalism, thinking that this was what I wanted to do, very quickly I realized that it wasn't. And then very fortuitously, a friend of mine who'd worked for Senator John McCain, who'd been with him for

five or six years, was about to have his third child had been through the campaign was just as exhausted as I was leaving the state department and looking to do his next thing and asked if I wanted to interview for his job as national security advisor to the Senator.

Chris Brose: 00:07:16 My immediate reaction was, "I don't think so." I wasn't too enamored of Congress in the four and a half years that I spent at the state department, but I really missed the mission. I missed the government. I missed working in government. And as I thought about it and talked to some friends about it, it seemed like an interesting thing where one way or the other, I would learn something and I would come away better off for the experience. So, I thought I'll do this for two or three years, and then I'll figure out what I want to do with my life. I ended up spending nine years in the Senate working for Senator McCain for that entire better part of the decade. I did about three different jobs. One of which for the last four years was a staff director of the Senate Armed Services Committee, which never in a million years would I have thought I would have had a chance to end up doing when I started in the Senate.

Chris Brose: 00:08:05 It's just one of these things where you kind of follow the twists and turns that the path presents. And I was very fortunate really across my career in terms of the people I've had the opportunity to work with, the sort of very good fortune, very candidly that I've had in terms of opportunities that have been around and available for me. And like I said from the beginning, this wasn't the product of a well thought out strategy. It was a lot of hard work, a lot of perhaps being in the right place at the right time and a fair amount of good luck.

Demetri Kofinas: 00:08:36 Wow. What a fascinating career path. I feel like this is worth an episode on its own, just to sort of pick your brain about your process and what internal compass you use to choose your direction. I had a similar reaction with 9/11. 9/11 was also for me a turning point. It caused me to focus on foreign affairs and international relations, I was a sophomore in school. And it's so interesting you talk about working at The National Interest because I loved reading The National Interest. And I used to watch all of those meetings at the Nixon Center on CSPAN. And that was when Ian Bremmer was like a PhD student and Dimitri Simes was there and a lot of other people. And I just found that stuff so fascinating. I would read foreign affairs, national interest, spectator, all sorts of stuff.

Demetri Kofinas: 00:09:25 And it's interesting because after the 2008 financial crisis, so much of the focus became Wall Street and a lot of what was the sort of foreign affairs superstar commentator kind of dropped off, but we're seeing a resurgence of that. So, I want to ask you a few more questions about this before we proceed to the subject of the book. You said that journalism didn't do it for you and that you actually missed working in government. I'm curious why? What was it about journalism that was insufficient for you? And what was it that you missed about working in the government?

Chris Brose: 00:10:01 Yeah, so for me journalism was not ... Yeah, I wasn't a reporter. And I think a lot of people who are drawn to journalism are drawn to the reporting element of it. That's really not what I wanted to do. I was in magazine journalism. I was senior editor at a magazine. I was drawn to it because The Washington Post had just

bought foreign policy magazine. They had a lot of ambition for building out the online platform that is now the online platform that we all kind of know and love and take for granted. But at the time, it was something that we wanted to build, really wanted to kind of re-imagine the magazine. So, that was very appealing to me.

Chris Brose: 00:10:36   But what I think I very quickly began to realize was it wasn't so much what journalism wasn't, it was what I missed about my time in government. I guess, the way to put it was I missed kind of being in the arena rather than commenting on what was happening in the arena, which was very much kind of how I spent my time outside of government where you're trying to figure out what's going on. You're kind of editorializing on decisions that are being made applauding or criticizing is warranted, offering ideas for ways to think about the problems that people in government are wrestling with. And personally for me, I found it a bit insufficient. I missed actually being in there, working on the problems with the people who were trying to decide, trying to make decisions and kind of work and address these problems in real time under all of the complexity and constraints that they have to work with.

Chris Brose: 00:11:30   And for me, that was just something that I missed. And I was eager to go back. For me, there was not a path to go into the executive branch at that time. I wasn't really looking And sort of eager to go back into the executive branch. And that's why the idea of working in Congress was interesting. It wasn't the immediate thing that I thought would be a good idea just because, like I said, four and a half years of working at the state department didn't bring me away with a more positive view of the Congress. But ultimately, I thought there was a lot of value that I could gain from the experience. I might have something to contribute. Obviously the opportunity to work for an American hero and icon like Senator McCain was incredibly appealing. And I thought it would be, again, something that would be valuable for me one way or the other, whether I liked it or whether I hated it turned out that I loved it, that I really came to better understand what Congress can do and should do in the sort of development of American foreign policy, national defense policy. And really just sort of loved the institution and what's great about it.

Chris Brose: 00:12:35   And it was very much for me, just the desire to be kind of back in that world working on these problems, working on legislation, running foreign trips, dealing with to the extent that Congress gets involved in sort of international affairs or diplomacy, being involved in those types of things. That's what I missed about government and that's what I wasn't getting from journalism.

Demetri Kofinas: 00:12:57   Fascinating. Well, maybe we can delve into some of those things in more detail in the overtime, though we might touch on them during this conversation. And I definitely want to ask you about your experience as a speech writer. I find that so interesting, but let's actually move to The Kill Chain, which is the name of your book, which I read. And I really enjoyed maybe the wrong term, I don't want to make light of it and laugh because it is a serious subject and the seriousness of the subject isn't lost on the reader while reading the book. So, maybe you can describe for our listeners what the book is about? What led you to writing it? And what your aim was in writing the book?

Chris Brose: 00:13:39 So the whole project began not with the idea of writing a book. It began with a paper that I was asked to write in the summer of 2018 for the Aspen Strategy Group. And it's a group that I'm a member of. And every year they kind of focus on a different topic and that year was technology. And there was a panel discussion and I was asked to contribute a paper, "How technology was going to change national defense or international security?" So what surrounded this whole thing was really trying to grapple with something that in my time on the Senate Armed Services Committee, I spent a lot of time on the Senator McCain and the committee, which are the emergence of new technologies, like artificial intelligence, autonomous systems, new space capabilities, these kinds of things and how they were really going to impact national defense.

Chris Brose: 00:14:29 So the basic kind of thrust of this was at the time I had become increasingly frustrated that it was a conversation where it felt to me like both sides were talking past one another. You had people in the national defense world who understood deeply and viscerally the national defense problems that they had to solve, but they did not deeply understand the types of emerging technologies that were increasingly becoming the focus of a lot of our conversation in Washington. Let alone how to really think through? How are these technologies are going to add value or change the way the U.S. military solves problems?

Chris Brose: 00:15:07 On the other side of that you had people particularly in the commercial world who were leading the development of these technologies, but were largely disconnected either intentionally or unintentionally from National Defense problems. They weren't working for The Department of Defense. They weren't working on National Security issues. And as a result, they had a deep knowledge of the technologies, what they could do, what they couldn't do, capabilities, limitations, brutalness, etc. But they didn't really have a connection to national defense and then the ability to think through what an application of these technologies for national security would look like.

Chris Brose: 00:15:40 So what I was trying to do is neither a technologist nor someone who would consider himself to be kind of a deep expert in military affairs, but who's spent a lot of time working with both sides of this was to really try to think through in a bit level or a deeper level of specificity, how I thought these kinds of technologies were going to impact national defense. And again, in a more specific level, how are we going to build military forces differently? How are we going to operate them differently? What types of challenges are they going to be presented with in the future that they aren't necessarily presented with today? How is this going to change the character of warfare? And that paper kind of led to a conversation with a number of folks that this should be expanded into a book.

Chris Brose: 00:16:27 And it turned out that there was interest in having me do that. And I kind of dove into a very quick term book project where I had about a year from start to finish, to think through how this would become kind of a fuller treatment of the issue. And what I had to do as I thought about scaling this up was answer some different questions that were outside the scope of that original paper. And that had to do with kind of the beginning chapters of the book, which is how have we found ourselves in the position that we currently now find ourselves in from the standpoint of seeing a steady erosion of America's military technological

advantage, partly because of the emergence of new technologies and partly because of the emergence of peer competitors, especially in the form of China who have applied a consistent and methodical strategy to building up their militaries, to counter the ways that we build military forces and project power.

Chris Brose: 00:17:26 So ultimately there's this question that I wrestle within the book of the United States being disrupted and our national defense being disrupted. So, part of the book was really trying to think through the basic question that I think your average American would ask, which is, how did this happen? Why did this happen? And then trying to think through how do we change this? And what I tried to do in the book, which was somewhat, again, outside the scope of the paper was to make clear that yes, there's elements where new technology is going to be a part of the solution. But ultimately this is a much bigger problem than simply technology can solve. This is a problem of how we're structured in terms of the business model of national defense in the United States. What my boss used to, John McCain used to refer to as the military industrial congressional complex, sort of how our defense establishment operates, the incentives that govern it, it is a challenge of how we think about the assumptions we make about the character of warfare. And ultimately it's a question of national defense strategy, ends ways and means, and really needing to systematically rethink each element of that strategy.

Chris Brose: 00:18:36 And that's what I tried to do in the book. But again, what I wanted to do was do all of this for a general audience, not for a specific insider audience in Washington, not for sort of the inside the Beltway defense crowd. But really write a book that would be serious for those people, that they would be able to recognize that this was a serious treatment of the issues that they live with every day, but really write a book that was more focused on presenting this information and this case and this argument and this problem to a general audience. And for me, the kind of archetypical, more archetypal general audience was like my mom and dad, informed general readers but not people who are coming to this with years of experience and arcane expertise. So, I'm trying to make all of this kind of complex subject matter, both military and technological kind of understandable, and digestible to a general audience, do it all in a year. It was a challenge. That's not something I'd recommend doing again, but I'm glad that it's over.

Demetri Kofinas: 00:19:40 I think one of the main themes of the book is this gap, this disconnect between what the public tells itself or what we tell ourselves about the power, strength and primacy of American military power and what the actual reality is. And I wonder maybe it would be appropriate to ask you, what do you feel the prevailing story we tell ourselves is> And what is the reality? And when, and how did those stories begin to diverge?

Chris Brose: 00:20:12 So I think the prevailing story that we tell ourselves is backed up by a lot of evidence over the past three decades. It's not a fairy tale. It's something that I think we actually have enjoyed, which is this period of American military primacy, where the way that we have built the United States military, the ways that we have operated it in military operations overseas, we have had a degree of primacy in the military domain that's been unrivaled and unchallenged. And when we have gone to war in the military element of that we have largely won,

we've won big. We have been able to operate from positions of sanctuary. We have had technological overmatch against any competitor that we've faced. And we've largely controlled the timing of military operations.

Chris Brose: 00:21:03 So that even in the event of an active aggression whether it's Saddam Hussein invading Kuwait, or the terrorist attacks of 9/11, we were able to control the timing of that response. We were able to respond at a time and in a place of our choosing and the adversary didn't really get much of a vote in that. And that was the world that we lived in, for the better part of three decades. And I think what we've realized, what's been playing out over that period of time are two disruptions. One disruption is what's happened at the strategic level as China in particular, but to a lesser extent Russia has methodically focused on building up a different kind of military, modernizing its military to call into question the sources of American military power and to undermine the assumptions on which we build and operate our military. And that is something that they have made a significant amount of progress over a very rapid period of time.

Chris Brose: 00:22:06 And it has largely played out, it's not something the thing that your average American is paying attention to, but it's not something that's always played out in secret either. It's been there to see. It isn't like a hurricane or an earthquake that sort of hit us by surprise one day. This has been a methodical effort year over year over year, to build what are referred to in the defense world is Anti Access/Area Denial capabilities to prevent the American military from projecting power in the ways that we have traditionally done and to call into question those core assumptions that we've made, that we've really enjoyed and been able to make over the past three decades, the sources of our strength. And that's something that has made, that our competitors have made a significant amount of progress on. And then I think simultaneously with that, you've seen an explosion of new technologies, information related technologies that are starting to come into a more mature state that I think are going to be fundamentally transformational when you look at the character of warfare. And that they themselves begin to call into question, many of the assumptions we've made about the sources of our military advantage, how we would build military forces and operate them in conflict.

Chris Brose: 00:23:19 So you have this dual disruption that's been playing out while I think what has been visible for most Americans is this sense of overwhelming military dominance, primacy, which has been real. Again, it's not a figment of our imagination. It's something that we truly have enjoyed and to some extent still do enjoy, but at the same time, you've had this concurrent developments that have largely been disrupting that model, somewhat in slow motion, but over a very kind of short period of time historically, two to three decades. And I think that we have been in that sense, the United States has been the proverbial frog in the pot where we have a defense establishment that is very slow to change, very reluctant to change in many respects, very antagonistic to change. That's become very insular, very consolidated, almost impervious to disruption.

Chris Brose: 00:24:14 And at the same time, we've had these dual sort of external factors or forces that have been playing out. That we have been very slow, I would argue way too slow to really address and factor into our decision-making and force us to change. And I think that's the position that we now find ourselves in, which is

kind of my point of departure from the book, which is here we are very late in the game with a business model and a set of assumptions about military power that are largely being overtaken by events and call into question by the emergence of new technologies and the emergence of peer competitors who have been systematically working to undermine everything that we have built our military primacy around. And they've made a significant amount of progress that I think most Americans are just not aware of. And I would argue even many members of Congress aren't sufficiently aware of.

Chris Brose: 00:25:07 So for me, a lot of the motivation of the book was to try to tell the story, try to frame this problem for a much broader audience than I think typically pays attention to this. Because again, at that surface level for the general reader, the sense is there may be a lot of things about our government that are dysfunctional and problematic, but at least in the military domain we've got it all figured out, we're laps ahead of the competition. And we have a degree of primacy that really is unrivaled. And what I became increasingly concerned about in my time in the Senate was that that is just increasingly not true anymore.

Demetri Kofinas: 00:25:47 Well I mean, you've explicitly stated in the book that you believe our military is unprepared for the type of high-tech 21st century warfare that you believe is coming or in some sense is already here. And I think you pin that primarily on a mindset around defense acquisition, which is focused primarily on specific platforms and also an overall acquisition system, the 'military congressional industrial complex' that we know of that Dwight D. Eisenhower warned the country about back in 1960. And also something that I don't know that you say it explicitly in the book, but it certainly comes across in my sense at least is this idea of conceptualizing the battle space. And that the American military and American military planners and leaders have perhaps a somewhat antiquated view of that battle space. And in many ways it's expanded, it's expanded remarkably and cyber is just one example of that. Do I have that right? And can you elaborate on it?

Chris Brose: 00:26:55 So I think with respect to kind of the limitations of the battlespace, we have assumed for a very long time that, and we've built our military under the assumption that we would have a fair amount of sanctuary from which to kind of plan, stage, conduct and sustain military operations. That we would have sanctuary in the form of forward basis where we could build up military forces and prepare to use them in conflict. We would have sanctuary in terms of the space domain, the cyber domain, the electromagnetic spectrum, where for a very long period of time, we've not had adversaries that were capable and equipped to contest us in those areas.

Chris Brose: 00:27:40 So space was a largely permissive environment where we could move information, gather intelligence without really anybody checking on our ability to do so. Similarly in terms of how we use the electromagnetic spectrum, the signals that we emit when we're conducting operations. We haven't been going up against competitors that have an ability to monitor that, to use that for detecting where our forces are for targeting those forces, for delivering very precise weapons to the places that they find those forces to be. That's just not something that we've been kind of building our military and planning to operate

it under the assumption of similarly, in terms of how we sustain military operations. There's the old adage or quip that amateurs talk tactics and professionals talk logistics. American military power projection is built on the back of a massive logistics operation that moves people and things from the United States across the world to where they are needed to build up for military operations. And then keep that flow of people and things moving during conflict, so that all of the things and all of the people that need to get onto the battlefield arrive just when they need to be there. Nobody is ever lacking for the things that they require to conduct military operations.

Chris Brose: 00:29:03   All of that for us has been done largely under the assumption that we would not be going up against an adversary that could contest our ability to resupply our forces all the way back from the ports where we would be pushing off from in the United States or the supply chain that would be part of mobilizing those forces or the ships and aircraft that would be moving them into position. We've assumed that all of that would be a place where we would be largely free from attack to say nothing of the long journey across the world, that those forces would have to kind of go through in order to get where they needed to get.

Chris Brose: 00:29:41   So we've built this force under these assumptions that increasingly are being called into question and overtaken by events, both the emergence of new technologies that make these things harder, as well as the emergence of new competitors who are more technologically capable, have been investing in new types of military forces and have specifically been building their military forces with the knowledge that these things that I just described are sort of the soft underbelly of American military power projection. They're the foundation on which all of the other things, the exquisite things that we do are built. So, if you can begin to undermine those things or call those assumptions into question, you can accomplish what the Chinese referred to as systems destruction warfare, where you really rip apart the ability of the American battle network to cohere. And to move information and command and control forces and get people and things to where they need to be, to be effective militarily.

Chris Brose: 00:30:40   Part of the additional problem is the way we conceive of military power. What I write in the book is that we conceive a military power in the form of what we refer to as military platforms. So, in defense parlance, a platform is a weapon system, it is a ship, it's an aircraft, it's a fighting vehicle, it's a satellite, it's something on which we build capability, sensing capability, or weapons, or other types of things that we sort of use that platform to deliver to the battlefield. The reason we think about platforms in this way is that that's how we've always conceived of military power. We've thought of what our military needs to do in terms of the power that those platforms bring onto the battlefield. And we've conceived of measuring military power largely by counting the number of platforms we have.

Chris Brose: 00:31:32   And all of that is reinforced through the types of processes, bureaucratic political processes in Washington, that are how we generate military power. So, aspiring to a 355 ship Navy as the Navy does, or a 386 squadron air force as the air force does, or a million man army as the army does is a very effective way to compete for money in the budget process to build that Navy or build that army. These are tangible things. People can understand them, they can see them, they

can put their hands on them, they can employ people to build them. They look good in parades, but it's all of those underlying technologies that are ultimately to me, the more important thing, it's what takes a disconnected group of military platforms and actually makes them cohere as an effective fighting force or a battle network that adds up to something greater than the sum of its parts.

Chris Brose: 00:32:27   And those are things that I think we have systematically undervalued, not invested in. They've largely been afterthoughts in how we've conceived military power. And those are all of the things that are now most vulnerable. When you go back to that threat and how they're conceiving to really break apart the ways that the United States military would conduct operations. So, for me, the sort of big takeaway for this and why I decided to organize the book around this concept of The Kill Chain is that's actually what we need to build and conceive of military power to be. The Kill Chain is the actual process that the military goes through as it seeks to understand what's happening on the battlefield, make decisions and take actions. It is a process that you have to do sequentially, each step is indispensable. And it ultimately really has nothing to do with the individual platforms that are involved in those actions.

Chris Brose: 00:33:24   It's more a question of how do I move information from a place that it is to a person or a thing that is needed to take action with it. And I think the thing that we've gotten away from is we've become so kind of spoiled by our own dominance. And we've come to take for granted that the platforms that have delivered it, the stable platforms on which we have built military power for a very long time that have largely not changed much will be the thing that will deliver military advantage for us in the future. To some extent, we've fallen in love with our own pets, and that's not really the question that I think is most relevant here. It's not how do we make better versions of old things or modestly improve old platforms? The question is how do we think differently about technologies and operational concepts that will allow us to build entirely different kinds of forces and operate them entirely different ways to solve the types of problems that are now being presented to us operationally by these changes in technology as well and I think more so by the choices that our peer competitors have made.

Demetri Kofinas: 00:34:33   So I want to pull a few things out of what you said to see if I can summarize and maybe focus in on what I think are some of the key elements. One is this idea of full spectrum dominance or near full spectrum dominance, which is to say that the U.S. military has had the luxury to operate in an environment largely unencumbered by defensive imperatives or the need to think defensively. I mean, the ultimate example of this is maybe the first Gulf War where the military was able to, as you say, attack at a time and place of our choosing. But the scale of the success that the American military experienced in the Persian Gulf was a direct result of what we think of today as networked warfare, where instead of each platform operating independently, the entire battle network operates as a whole. So, The Kill Chain goes from being closed at the platform level, to being closed at the network level. And while this has proven to be remarkably efficient and effective, it has also opened up a new set of vulnerabilities in a world where there are hostile actors like China and Russia with the means and the initiative to attack the network as a whole.

Demetri Kofinas: 00:36:03 So that's number one. And number two is an observation having to do with the overall procurement system for the department of defense, which is dysfunctional and where many military planners, rather than thinking in terms of advancing the operational effectiveness of the network, think about things very much at the node or platform level, and that this is ultimately bad for evolving the military to where it needs to be, to fight the types of battles that are arguably already here. Do I have that more or less correct?

Chris Brose: 00:36:47 No, I think you're right. I think if you go back to the first Gulf War and how we wage that war, I mean, it was largely as you just described and as I described a moment ago, in terms of the assumptions that we operated under, the timelines that we operated under. But I would argue that it wasn't just how we conducted Gulf War I in 1991, it's how we conducted the Balkans Campaigns in the mid to late 90s. It's how we conducted the war in Afghanistan for the most part. It's the same assumptions that we brought back to the war in Iraq in 2003. So, for all of the talk after 9/11, that everything has changed, all of the talk in the early days of those campaigns about how this was demonstrating kind of a new transformational way of warfare, we were still fighting largely the same exact way. We were perhaps fighting with slightly more networked systems or slightly more precise weapons. But a lot of that was, I think we came away with a somewhat of a skewed view of our own performance because of the kind of inferior quality of the competitors that we were actually going up against.

Chris Brose: 00:37:55 And that was the conclusion of the sort of after action report from Gulf War I. And I think it holds true for the campaigns that we've conducted subsequently. So, I think that the question then becomes well, how would we reconceive this differently? Particularly when you look at the operational problems that these kinds of peer competitors are now presenting us with, sanctuary, timelines or timing and military overmatch, things that we have assumed that we would have in the future are now much more questionable. There are things that these competitors are building military forces to take away from us. So, how are we going to conceive of military operations differently when we're not going to have sanctuary, we're not going to be able to control the timelines of operations, and we're not going to have the overmatch that we have traditionally assumed that we would, that we would be meeting forces on the battlefield, wherever, physical or digital, that in some cases are equal. In some cases may actually be superior to us. In other areas we may be superior to them, but there's going to be a degree of parody that we just simply haven't assumed would be true.

Chris Brose: 00:39:08 So I think this gets to the question of how would we solve this problem differently? And that's the thing that I really try to wrestle with in the book. And I don't believe it's simply a question of technology. Technology is a necessary component to the right solution, but it's not going to be the entire solution. We need to think differently. To me, the position that we have been put in, both the position that we have enabled ourselves to be put in by our own inability or unwillingness to change, but also the position that our competitors have put us in through the choices that they have made is that we're playing a losing game. And the surest way to lose a losing game is by continuing to play it the same way and with the same things that you've been playing it.

Chris Brose: 00:39:52 So to me, this is a fundamental point where we need to think differently in terms of how we would operate the force in the future? How we would build the force for the future? And then more broadly, what problems we're actually trying to solve? Because those are going to be very different problems than the ones that we you have faced before. And this gets to the question of how do you actually build the network to do that? And the problem is in sort of the construction of military power in the United States, there really isn't anybody looking at the level of how do I build a battle network? You have individual services or components or agencies that are focused on how they build specific things. And those things are oftentimes military platforms that sort of have pride of place in those individual services or agencies, it's Legacy Ships or it's fighter aircraft or bombers, or ground fighting vehicles or things of that sort.

Chris Brose: 00:40:48 The broader question of how this all adds up to actually provide kind of a networked capability where things can collaborate, share information, and all of those individual platforms are really just nodes of the network. That's not something that we have traditionally focused on building. It's not something that we actually evaluate military power on the basis of, we are evaluating military power based on the specific requirements of military platforms, rather than the attributes that you would want a battle network to have, and the performance that you would want that network to be able to provide. Which I would argue are very different performance criteria than the ones that we would use to measure whether a new fighter jet is better than an old fighter jet. And this, again, I think it gets into how we have just misconceived military power for a long time. And the kinds of things that I think we need to do to ask the questions differently, to go back almost to first principles, which is something that we've largely gotten away from because we have taken for granted that the things that have delivered us military dominance for so long would continue to be the things that would deliver us military dominance into the future. And that to me, is the key questionable assumption in all of this.

Demetri Kofinas: 00:42:00 Okay. So, how do we do that? Because I mean, what you're talking about is leveraging network connectivity and also preventing an adaptive adversary from seeking to disrupt the network and turning it to its advantage, which is another, I think, emerging issue. What does that require in terms of theory? What does it require in terms of organization? Not just from the procurement level, in terms of the process of getting the weapons and platforms that the military needs, but also within the actual operational chains, how does all that come together?

Chris Brose: 00:42:35 Yeah, so it's a lot of things that I think we need to rethink. So, I'm kind of just ticking through them. And I think first and foremost, we need to change our assumptions about the future operating environment that we are going to be building military forces to operate within-

Demetri Kofinas: 00:42:49 Well, actually let me ask you about that directly, because I think that might actually help. Because what you're really talking about is future warfare, or maybe even more immediate warfare, maybe we can separate out now from the next 10 years to going out 10, 20 years, what does the future of warfare look like to you?

Chris Brose: 00:43:09 Yeah, so I would say at a broader level, the future of warfare looks increasingly, significantly larger quantities of military systems that are going to be operating at speeds and at scales that we previously have not really contemplated. Our military today is built around relatively small numbers of large, expensive, exquisite, heavily manned and hard to replace military systems or platforms. And I think that future is going to be built in almost the opposite way. It's going to be extremely large quantities of smaller, cheaper, more treatable, much more autonomous military systems that can be replaced a lot faster because the information technologies that are going to allow those types of systems to cohere, move information around, operate together are going to make it possible to put a lot larger quantities of systems onto the battlefield.

Chris Brose: 00:44:12 The introduction of artificial intelligence and machine learning will make each of those systems capable of operating and conducting operations much more autonomously than the highly manual systems that we have relied upon in the past. Such that rather than having a battle network that's built around many human beings operating a single platform or a single weapon system, which has traditionally heretofore been the reality. You're now going to be able to build military forces where a single human operator can command and control large quantities of much more autonomous military systems, whether those systems are aircraft or ships or ground vehicles, systems that are operating in the digital domain, in terms of cyber tools or capabilities. But because they're all operating with a higher level of machine intelligence, they'll be able to be more capable of doing things on their own.

Demetri Kofinas: 00:45:08 So I think when people hear machine intelligence or and autonomous weapons systems, they think about kind of the apocalyptic scenarios that we've seen in dystopian movies like Terminator. How do we navigate this line? Because it's one of the, I think scariest parts of the book, and it's not independent of the fact that America has adversaries who are investing in these same technologies. And so there are competitive pressures that could drive individual actors i.e. the U.S. military, China's, the PLA, Russia to make investments and put into operation systems that are not really safe for humanity. So, how do you think about that? How does the military think about that? And how do we navigate what could be the most dangerous period in military technological development?

Chris Brose: 00:46:02 I think it's important to sort of get down to the reality of things that are actually there and how these things are actually working. I think to your point, a lot of this conversation is skewed by movies like The Terminator or The Matrix or things that people have watched and they assume that this is immediately the road to perdition and kind of machines taking over the world. And what we need to do is start unpacking things a bit more specifically, and really understanding where things are. No one is talking about artificial general intelligence, what we are talking about ... Because it's just a thing that is decades off, if it's even something that is achievable. I think what we're looking at today and what people are talking about today are the applications of narrow artificial intelligence, the ability to automate things like looking through lots of images to figure out the ones that have interesting bits of information in them, so that a human being doesn't have to go pouring through all of that, those terabytes of data manually.

Chris Brose: 00:47:03 So I think the state of the technology is still nascent. It's still something that we need to be very realistic and sort of hyper aware of what its capabilities and limitations are. It's also something where I think we have to realize that the way that that technology is going to be built, the way it is being built is bounded all over the place by human choices and human preferences and human values. These are parameters that are being set, limitations that are being set by humans, training of the systems that are being conducted by humans, the decision to employ it or not to employ it is a human decision.

Demetri Kofinas: 00:47:39 So you're saying that the human being is in charge of closing The Kill Chain?

Chris Brose: 00:47:43 I'm saying that as of right now, these are technologies that are being built by humans, that are being architected by humans. And the choices that are being architected or engineered into these technologies are human preferences and human values. And that's something that we can't lose sight of. We tend to think that an unmanned aircraft, like a Reaper is just up there doing its thing by itself. And in reality, every one of those tasks is being manually controlled by a human operator.

Chris Brose: 00:48:11 The question of how you would begin to delegate those tasks to a machine is going to be made through the same processes by which we determine in a military, whether to send a human being or a machine onto the battlefield or into a position where they would be involved in military operations, it's going to come down to a significant amount of training. You don't just send an 18 year old fresh off the bus into war. There's a significant amount of training that has to happen for that individual to understand what tasks they're being asked to perform. There's a significant amount of testing that has to be done. Both of humans and of weapons systems before a human being makes the decision that these are people or systems that are safe and reliable to send into a position where they are going to be involved in military operations and the conduct of warfare.

Chris Brose: 00:49:07 And then ultimately through that process of training and testing, we're going to begin to build trust is to the capabilities and limitations of these technologies in the same way that we begin to build trust in military subordinates or weapons systems that are trained and tested to then sent into combat. I think these are the same kinds of processes that the United States Military is going to work through to determine whether these new technologies, as they develop and become more capable, are safe to employ, are reliable to employ, are effective to employ. And the criticism that I make in the book is that oftentimes in defense circles, we talk about human machine teaming as the way to understand how human beings and kind of artificial intelligence enabled technologies are going to relate in the conduct of warfare. And I reject that term because it to me has a connotation that the human and the machine are equal, that they're somehow equal members of the team.

Chris Brose: 00:50:07 And I think the reality is that the way that we are going to have to think about this is the way that the United States Military thinks about most things, which is through the lens of what's called command and control, where you have a superior actor and you have a subordinate actor. And the superior actor is delegating tasks to a subordinate. And those are tasks that that superior actor

owns the responsibility for conducting. And they're only going to delegate those tasks, whether to a human or to a machine that might be capable of performing tasks that previously only a human could perform. They're only going to delegate those tasks through that process of training, testing, and trust building. And I think that process has been in place. And I think that process will serve us well for how we're going to determine how we adopt and how we use these technologies and what we decide we shouldn't use these technologies for.

Chris Brose: 00:51:01 So I think we have to break the problem down rather than sort of looking at it in the abstract and get scared away by the newness of the technologies or the science fiction movies that we've watched. We actually have to better understand how the technologies are developed. How the United States Military uses technology. How command and control actually works. The rigor with which we go through training and testing human beings or machines to be safe, to use in the conduct of war. And I think that begins to make the problem a little more bounded and a little more understandable as far as a process in place that will allow us to evolve over time and determine how we're going to bring these technologies into the United States Military.

Chris Brose: 00:51:45 And the final point that I'd make goes back to the comment you made at the beginning. This is not happening in a vacuum. This is happening in a competitive environment where we have competitors, especially the Chinese Communist Party who do not share our values and are developing these technologies with a degree of urgency and rapidity that should be concerning to us. And are using these technologies right now for specific purposes that cut against the values that we have and the values we want to govern the use of these technologies in the future. They're using these technologies for wide scale, very specific social surveillance for the execution of crony capitalism, for the oppression of minority rights and exporting these technologies to other authoritarian governments that want to use them to similarly control their own populations. That's not a world that we want to live in. That's not the values or lack of values that we want to govern the use of these technologies in the future.

Chris Brose: 00:52:48 So we have to recognize that there's a sense of competitive urgency in how we develop these technologies. And if we want our values to ultimately win out in the end, as far as how these technologies are going to be governed and employed, we have to lead the world in the building of these technologies. And we have to create the leverage over our competitors to be able to actually have a say over how the future is going to play out rather than essentially argue against ourselves and end up in a position where we are not equipped to actually participate in the governance and the sort of value creation and the norms creation for what the future is going to look like because we have essentially abdicated their responsibility to lead the world in the building of these technologies, specifically for national security purposes.

Demetri Kofinas: 00:53:39 One of the things that you discuss in the book is the gap between the technology deployed by the American military and that which is deployed in the commercial sector. And it's interesting because if you grew up in the 1980s, like I did, I was born in the early 80s, you get a lot of those movies where the most cutting edge technology was the U.S. military. And in some ways that's no longer the case. And part of the reason for that, actually it's multifaceted.

Actually, one of the aspects that I do want to discuss with you may be in the overtime is do we need to go back to a type of collaboration between DOD and the private sector and academia that we had in the middle of the century after the end of World War II. But one of the reasons for it is because the commercial sector can take risks with the deployment of such technologies that you just simply cannot take, or at least with a society like ours cannot take with technologies capable of massive destruction. And so I wonder, does it concern you that America's chief competitors may not share those same types of liberal restraints and so may engage in risk-taking both in development and early deployment of these technologies that could lead to really catastrophic consequences?

Chris Brose: 00:55:03   It absolutely concerns me. And I think more broadly putting aside the actual conduct of war, it's the application of these technologies for the things that we were just talking about in terms of social control and political exploitation and oppression of minority rights, things like that aren't considered to be kind of in the domain of actual kinetic warfare, but are going to be far more prevalent and happening far more regularly. And I think are of equal and perhaps even of greater concern. And I think it goes back to ... The thrust of your question really has to do with how the United States Department of Defense or our sort of defense establishment found ourselves in the position of not actually having leading technology that is available in this country inside of national defense, inside of the United States Military, which is something that is absolutely true.

Chris Brose: 00:56:01   And I think a lot of that has to do with the ways the commercial technology world has simply grown apart from U.S. National Defense. And that hasn't been by accident. That's been the result of incentives that have been created over time that have made it incredibly difficult for new entrance, new companies, new technologies to break in, to disrupt old ways and old systems, old ways of doing business and old systems that we've used to do them. And then to scale quickly, and to being actually lucrative lines of business for companies. These companies are not running charities, they're running businesses. And engineers and founders and businesses and investors are making business decisions about where they should place their level of effort. And traditionally over the past few decades, it's become increasingly harder to do work with the Department of Defense or to do national defense work, to scale it to a level that would provide reasonable returns, maybe not commercial economy level returns, but reasonable returns for new businesses that will allow them to grow and hire and succeed at scale.

Chris Brose: 00:57:14   These things simply haven't been happening. And as a result, you've had a generation of founders and investors and engineers who have largely turned their back on national defense to go work on what I would consider to be less compelling problems like advertising optimization algorithms, because that's where the returns have been. That's where the challenging problems have been. And that's where the greatest opportunity for success has been. So, these are incentives largely of our own making that if we want to start bringing the kinds of technologies that we almost take for granted in the commercial world, having data at our fingertips constantly, having informed recommendations being pushed to us by machines constantly, all day long. The ability to sort of order rides and move around at will. The kinds of capabilities that come with

the internet of things, with the sort of networked world that we live in, where everything talks to one another, everything can move information around and I can switch platforms, applications, networks, and I don't lose my connectivity. I don't lose my information. I just keep on going.

Chris Brose: 00:58:24 That's not the world that the United States Department of Defense inhabits. And our failure to bring what is the best of our society, our technological base into national defense goes back to your comment about the closeness that used to exist between these communities has just broken down. And where we find ourselves today is what was originally the purpose of the military industrial complex, which was to make sure that the best technologies that America had to offer were getting into national defense applications, that simply hasn't happened. We have remarkable technologies in the national defense world, but they're not all of these technologies that are now increasingly available and I would argue increasingly central to the kind of networked way that we are going to need to think about and build military forces for the future.

Demetri Kofinas: 00:59:14 Well, there's actually a great story in your book that reminded me of a similar story in David Kilcullen's book, because we had David Kilcullen on the show as well. And it had to do with the use of Google Maps. In your book, it actually referenced the conversation you had with someone who described how often the U.S. military has actually relied on literally dropping pins in Google Maps in order to direct their shooters where to fire weapons. And there was an interestingly similar story in Kilcullen's book about how insurgents in Iraq, I think were actually using iPads or in Aleppo, using iPads to head like mortar teams and would drop pins using Google Maps similarly. So, it's really illustrative. I want to start to delve into ... It's a great opportunity to talk about Anduril, your company, and also to delve into a deeper conversation about practical solutions, how to reform the system. But I'm going to move that second part of the conversation into the overtime Chris.

Demetri Kofinas: 01:00:12 For anyone who is new to the program Hidden Forces is listener supported. We don't accept advertisers or commercial sponsors. The entire show is funded from top to bottom by listeners like you. If you want access to the second part of my conversation with Chris, as well as the transcripts and rundowns to this episode and every other episode we've ever done, head over to patreon.com/hiddenforces. There's also a link in the summary page to this episode with instructions on how to connect the overtime fee to your phone so you can listen to these extra discussions just like you listen to the regular podcast. Chris, stick around, we're going to move the second part of our conversation into the overtime.

Chris Brose: 01:00:53 sounds great.

Demetri Kofinas: 01:00:55 Today's episode of Hidden Forces was recorded in New York City. For more information about this week's episode, or if you want easy access to related programming, visit our website hiddenforces.io and subscribe to our free email list. If you want access to overtime segments, episode transcripts, and show rundowns full of links and detailed information related to each and every episode, check out our premium subscription available through the Hidden Forces website or through our Patreon page at patreon.com/hiddenforces.

Today's episode was produced by me and edited by Stylianos Nicolaou. For more episodes, you can check out our website at hiddenforces.io. Join the conversation at Facebook, Twitter, and Instagram at hiddenforcespod, or send me an email. As always, thanks for listening. We'll see you next week.