THE STRATEGIC NEWS SERVICE©
# GLOBAL REPORT ON TECHNOLOGY AND THE ECONOMY™

# USEFUL FICTION:
## A CONVERSATION WITH PETER SINGER

## USEFUL FICTION:
## A Conversation with Peter Singer

*This transcript has been lightly edited.* – Ed.

Known for his adept blending of fiction and strategic and tactical insights, Peter W. (P.W.) Singer is one of the most prolific and most fascinating authors focused on national security. His books, from *Ghost Fleet* to *LikeWar* to *Burn-In* and more, have inspired a generation of forward-thinking officers, generals, intelligence analysts, and business leaders through their foresight of conflicts and technologies to come. His new organization, Useful Fiction, is focused on using those same skills to merge the power of storytelling with the critical "real" information an organization needs to succeed. His narratives are both entertaining and educational – and essential reading for anyone interested in future threats and opportunities, as well as how to motivate those around you to act on them.

It was my great honor to sit down with Peter recently to talk with him about both his earlier and more recent work and what he sees shifting in today's threat environment. Whether you're in government, business, or media, or are just a concerned citizen, Peter offers insights into how best to achieve your goals through the stories we use to relate to one another, and the patterns we see emerging in the near future. – *Evan Anderson*
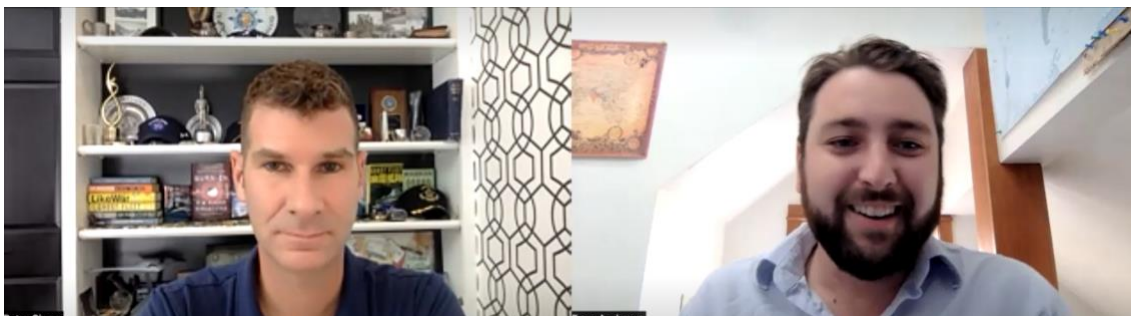


**Evan Anderson:** Hello, everyone. I'm Evan Anderson. I'm the CEO of INVNT/IP and a senior staff writer at Strategic News Service. I'm here with Peter – P.W. – Singer. He is a very renowned author. It's an honor to have you with us, Peter.

**Peter Singer:** Oh, thanks for having me.

**Anderson:** Among many other things, Peter is the author of a number of books on modern warfare, has spoken at pretty much every prestigious event I can think of, at this point – the last time I saw you, I think, was in Aspen – and is a senior fellow at the New America Foundation.

Peter, I think just to get into this right from the get-go, we'll talk about *Ghost Fleet* a little bit. I think probably the most interesting thing about it is how prescient it was. People have talked about that a lot, but I would love to hear it from your perspective a little bit.

You wrote that quite a while ago, and many of the things that you described have become dynamics now. Maybe if you want to walk us through your favorite ones, that you kind-of knew were going to happen that happened, and then *why* you knew that, I think that would be really interesting.

**Singer:** Thanks for having me. Maybe for folks that aren't familiar with me or *Ghost Fleet*, [I'll] give a little bit of background on how I ended up writing a novel, though a novel that was a smashup of nonfiction.

I work in the space of technology and national-security issues, and I'd written books on topics that ranged from robotics to cybersecurity and worked with a number of Fortune 500 companies and the like, and the US military, and along the way had become friends with the defense industry reporter for the *Wall Street Journal*, August Cole. And we decided to team up to write a book, but it was a different kind of book. We wanted to share what we were learning, what we had seen, what we worried about towards the future – but rather than packaging it within a white paper, a big strategy paper, a nonfiction book, we decided to try and recreate the experience that we had had as kids of reading Tom Clancy and loving it. And so we melded the two together.

For those who aren't familiar with it, *Ghost Fleet* was a book that told the story of what a war with China and Russia might look like, but it melded into it 27 pages of research endnotes. The rule of building that book we called "the rule of the real." Every single technology in it had to be drawn from the real world, either already operating or already being designed, in a prototype stage: the settings all had to be real, the types of attacks had to be real – so if there was a cyberattack, it couldn't just be "Clickity-clack, we're *in!!!*" which is what a lot of the books and TV shows . . . But no. It had to be, "Here's how this attack happened in the real world." Maybe it was utilized against someone else, or maybe it's been demonstrated at a hacker convention . . . Even some of the quotes that the characters say were actually quotes drawn from the real world. And again, not just, "Oh, we're *inspired* by the real world," like regular science fiction, but like in nonfiction: "Here's the endnote to document that it's real." And you can go research and find out more about it.

So, the book did well, it sold well; but we were also struck by the impact that it had. And I think part of the impact that it had – and we can talk further about it – but it really connects to the question that you asked, which is, it put its finger on a lot of the issues that were *starting* to play out, but have even grown, in an important sense.

One was the overall topic area. When you go back in time, when we started that project, in security most of the focus was on – it went by a lot of different phrases. "The small wars" is one phrase that's used. But basically, counterinsurgency, counterterrorism, operations in Iraq and Afghanistan . . . The group that we feared was Al Qaeda – this was even before ISIS. The discourse related to China – not just in security, but in foreign policy and business – was, "Well, how can we embrace China, persuade them to be a responsible actor? Okay, if there's something that comes after the communist regime, well, maybe it'll be a democracy." It was sort of that optimistic take. So, one was just the overall topic itself.

And by the way, it was the same thing on the fiction side, which is what the publishers only care about. Even the Tom Clancy books had become very terrorism-centric–focused. And so we wanted to write on that idea of, "Hold it . . . history tells us great powers often get into competition; they even get into conflict, sometimes deliberately – like the story of World War II – sometimes undeliberately, a crisis spinning out of control, like the story of World War I." So, we wanted to talk about that.

But we also wanted to show how the dynamics of China's – how to put this – China was a different kind of competitive superpower than the Soviet Union. It was integrated into the global economy, but it also was taking place in an era of very different technology, and that opened up really cool and exciting things to explore: operations in space, unmanned systems, cyber, etc. But oh, by the way, that meant very different challenges in competition and conflict. In particular, "Hey, there are these things called supply-chain vulnerabilities, there's cyber attacks," etc. *Ghost Fleet* also explored that. And I think because of that combination of being willing to tackle these emergent issues and technologies with the blinders off, but also being willing to document it – "Hey, we're not just making this crap up: here is an example" – that's why we've seen so much play out.

And August and I have had a lot of fun online. We basically use the hashtag #ghostfleet, and every so often, almost daily, it'll be something in the news that is something from the book that came true. It might be a supply-chain security hack, it might be a certain Chinese space system – you name it. And it's been kinda fun, but it's at times creepy to see things play out that way.

Then there are the parts that came true *because of* the book, the favorite being that the US Navy actually has a $3.6 billion ghost-fleet ship program. They gave us zero dollars for the naming rights, but you know . . . fun story to tell.

**Anderson:** Perhaps we'll just call it part of your national service.

That actually reminds me – there's a lot to get into here, but first I'd love to talk a little bit more about . . . I mean, one of the things that I think was so prescient about *Ghost Fleet* and a lot of the body of work that you've done is – you know, certain people in government probably understood this *always*, and you and I have talked to many of them. But a lot of the body of work that you've done is – I don't think the general public understood 10 years ago, 20 years ago, that concepts like hybrid warfare and gray-zone warfare were actually going to be relevant to them at all.

I don't know that anyone had even really heard of that stuff, in the general public. In 2005, people were just seeing in the news everything about the Middle East, like you were saying. It was, like, these forever wars in the Middle East, and that was kind of *it*, and these small, localized conflicts that were related to that. I don't think people knew that information warfare, for instance, was going to become such a commonly referred-to thing that was affecting their daily lives. And I'm not sure that they [yet] understand it. So, maybe you could talk a little bit about that; it's part of what you're known for. What is different about modern warfare, and what kinds of fields are we seeing warfare play out in, in ways that are completely unprecedented?
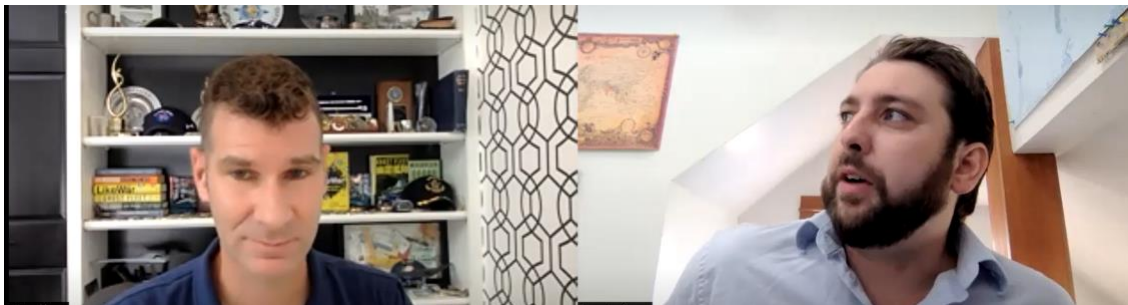


**Singer:** Well, there are a couple of things there. The first is, you put your finger on a challenge – and I don't think it's specific to warfare or security, even politics; I think it cuts across business and technology – just this dual challenge. One is, how do we understand, analyze, something that is new and complex? But then there's the second part of it, which we often don't pay enough attention to, which is, How do I communicate it to my key target audiences? And that's what you were really getting at, is that we're talking about these terms that – you know, let's be blunt – they're kind of wonky, right? There's *hybrid warfare*, there's *gray zone* . . . It's the same thing if you're in business: *quantum technology*, or whatever. And so the first part is, How do I visualize, how do I make real, that complex concept?

And then the second is, you talked about "How do I make it relevant to people?" It can't just be, "I'm explaining to you, okay, this is what 'gray zone' or 'hybrid' operations really look like; this is what information warfare really would play out

in a conflict." As opposed to [just using] the term, let's explore it, let's see how it would look. It also is, Why would it matter to you? Why would it matter to this target audience? There are very different target audiences, right? Sometimes it's senior leaders, in a government; or in a business, the board. Other times it might be the workforce. Other times it might be an audience outside the organization. The public, your corporate partners, your clients, your customers . . . And so it's this dual task of, one, How do I understand and analyze the complex; but two, How do I put it in a way that my target audience can visualize? That's really the crux of the challenge.

Now, relevant to warfare – I mean, gosh, I almost would ask you how do we boil down your question, right? Is it what we're seeing overall, is it what we're seeing out of Ukraine? It's almost like saying, "What are we seeing going on in business today," right? We could spend forever on it.

I think a couple issues, obviously, that we've touched on before. We've got threat actors, adversaries, [of which] there are some parts that are similar, there are some parts that are very different, and that leads to very different consequences.

I know you're very interested in the topic of China. So, we have, you know, the comparisons of China with past great-power competitors, like the Soviet Union, but then there are other ways that are very different. As we talked about, the recent area that I'm particularly interested in, with technology . . . The Soviet Union, they quite honestly were only a peer competitor in technology, in a limited set of areas for a limited set of times: the early part of the space race. But overall, it's not just on the military side. They never even invent stealth. It's also other areas: they never invent a personal computer. They never build a decent car.

By contrast, China – fundamentally different. One, because of the topic that we talked about and explored in *Ghost Fleet*, and a lot of people have been dealing with: cybersecurity, cyber threats. I've written nonfiction books on this as well. They can steal intellectual property on scale in a way that the Soviets couldn't, and reproduce it on a much more rapid timeline.

The second difference is they're integrated in the global economy, in a way that the Soviet Union never was. That's both what they can sell, but also what they can draw in. You didn't have debates in IBM headquarters back during the Cold War – you know, "Should we keep our Moscow office open? We're doing too much business in the Soviet Union to change our operations." It's very different than today.

And the third is, they're doing cutting-edge work in a *wide* variety of areas, whether it's quantum to hypersonics to robotics, you name it. And that leads to a very different kind of competition.

You've got another aspect of this, which is the locales of competition. In national security, we call this "multi-domain," and it's the idea that – if you look at the

Korean War, Vietnam War, Afghanistan . . . You had operations in the air, at sea, but *really* the competition, the conflict for control, was on the ground. The air and the sea were in supporting roles. We weren't fighting the Taliban for control of the air. We weren't fighting them for control of the sea.



Any kind of conflict moving forward is going to see multi-domain. You'll see competition not just on land, air, and sea, but you'll also see it in places we've never fought before: cyberspace, outer space. And that's true whether you're talking about a China, but it's also true [if] you're talking about a non-state actor. We could see this in, you know, conflicts in the Middle East recently. What's another example . . . Yemen. The Houthis are fighting against their opponents that are supported by the Saudi government. They're fighting on the land – there's a cyber side, but they also hit back at Saudi using drones and ballistic missiles. This is a non-state group, right? And the same things have played out, of course, in Ukraine, where we've had the state governments fighting, but you've also had non-state actors joining in on multiple levels.

**Anderson:** I think we'll get into a couple different interesting case studies of various types of conflict, whether it's kinetic or not. But also, what you were talking about just a minute ago, with the messaging and how you both analyze and then explain to people what's going on and what the future threats are. When I last saw you, in Aspen, you were speaking about a new effort that you have, called Useful Fiction. I think that's very interesting. At Future in Review, we have a lot of different folks who exist in that realm, whether they're sci-fi authors or whatever, but you're doing something just a little bit different, and I'd love to dive into it. So, what *are* you guys doing at Useful Fiction? Let's start there.

**Singer:** Useful Fiction is a deliberate combination of nonfiction and narrative. The way to think about it is, science fiction is like a milkshake – and I love milkshakes. It is designed to be entertaining for you. Now, there are ways that it could be good for you, in the way a strawberry milkshake has strawberries in it, but at the end of the day, it's designed for that entertainment framework. And it's the same thing for techno-thrillers. I love my *Star Trek* and I love my Clancy, but they can create their world, they can move it in distant futures, they can clickety-clack past, they can explain away things. It's, at the end of the day, designed for entertainment.

At the other end of the spectrum, you have your trend report, your briefing note for the board, your strategy paper, your white paper. That is a multivitamin. That is kale. It's good for you, but it's dry; it's hard to get your target audience to consume it.

Useful Fiction is the deliberate blend. It's like a smoothie. So, what you do is you start with the nonfiction content that you're trying to share, but then you frame it within a compelling narrative. And much like – we can talk further about the science of this, not just smoothies – but on the Useful Fiction side, it's not just more likely to be consumed by the target audience, whether the target audience is a board, is a four-star general, or no; it's members of your organization, a young lieutenant, a staffer, or maybe it's a partner – it's not only more likely to be consumed, but by putting it into that narrative framework, the science tells us it's more likely to be *understood*. It's more likely for the vitamins, so to speak, to get into the system; except in this case, we're talking about the concepts of it.

And so our business came out of what you were asking about earlier: the experience with *Ghost Fleet*. We had this remarkable experience where not only it sold well, but it had greater policy impact than anything that we had done. Myself, I'd had bestselling nonfiction books, August [had had] front-page stories in the *Wall Street Journal* . . . and yet, it was this deliberate blend of nonfiction and narrative that got us invited to share the real-world lessons from it, everywhere from the White House Situation Room to the Nobel Institute to Fortune 500 boardrooms.

What happened, then, is a number of organizations, from governments to businesses, came to us and said, "Can you do that, but can you do it on *our* topic? Not what *you* choose, but on our topic?" And we did a couple of these as one-offs – short stories that helped frame out the lessons of a board brief, short stories that helped frame out the lessons of a trend report. And then we did one training exercise for the military on *how* to do foresight and communications better, and it went so well, and then kind of – I know you do it with a lot of business books – we had this sort of moment where we were like, "Hold it – there's got to be something more here. This group isn't the only one that has reports that no one wants to read, or this group isn't the only one that needs to do foresight and communication better." And so we created a business, a little bit as an experiment, a side hustle so to speak, and it took off. As you and I are speaking, we just signed our 39th contract.

**Anderson:** Wow.

**Singer:** We've done it for everything from NATO to the British government, the Canadian government, the Australian government, and the US Special Operations Command [SOCOM], the Air Force – also a couple of Fortune 500s, a nonprofit . . . And it's been exciting. It's been really cool to take their topics, which have ranged from ones that are obviously compelling, like "What's the future of Special Operations?" to ones that are really complex: "How do you tell the story of quantum technology in a way that an audience can understand?" to ones that are ostensibly – let's be blunt – boring, but turn them into something compelling.

Like, we did one on "education enterprise reform." And yet, we turned it into a story that not only the head of the entire organization read, so they got this midlevel report up to the head of the whole organization, but – we've actually tracked it – the narrative explaining education enterprise reform has had 15,000 readers so far. And this was like – the "kale" of the starting point for it was this 21-page, very dry report. *Important* report – I mean I'm not not knocking it. Education enterprise reform is important, right? But it's hard to get your leader to wrestle with it, and that's been really cool.

And then the same thing on the training exercises. They're one- or two-day events. We've done them for everything from, as I mentioned, a nonprofit to, our last one was for Special Operations Command. We brought in a group that ranged from the former head of the US Navy to a news editor to the writer of HBO *Band of Brothers*, the movie *Deep Water Horizon*, and the stunt coordinator for the Marvel movies – all the work with SOCOM on how do you both identify what are the stories that you need to tell . . . not made-up stories, but what is it that you're trying to communicate but you're not communicating well? And then working with them on building out scenarios: "Let's build out stories that take that nonfiction challenge and wrap it into something that your target audience is going to find compelling." It's been a blast.

**Anderson:** It makes sense. I think one thing that often is missed – perhaps not missed, but just generally not touched on by the really immense reports that you see sometimes – is that you kind of have to meet people where they're at. I don't mean that in a flippant way; it's kind of a clichéd statement at some point, but what I mean is, it needs to matter to people *why* the thing matters, right? It has to be, like, "How does this affect *me*?" And in that way, you can actually finally convey messages, whereas the stuff that you and I might go through – you know, if you go through a 500-page congressional report, there are some really important things in those documents, but it's not the kind of thing that anyone would normally pick up and go: "Oh, I should read this, and I'll learn something that will matter to me." I don't think most average citizens are going to go through a congressional report.

So if you can convey the things that are being said in documents like that in a way that's more interesting to people, and tell them more of a story that kind of gives them an example of why it may matter to a human being *like them*, I think that's awesome. It translates, in other words.

**Singer:** It's really interesting when you say "meet people where they're at." You can utilize this approach in two different ways for that. One is the perspective, the point of view. I used that example of the congressional report, but it's the same thing as, say, a corporate report, because you can take the documentation but move it into a point of view of someone that your target reader either is or cares about.

We did one for corporate where they were trying to help the senior leadership understand issues around a cloud migration. Ooh, really exciting, right? But we put it in the framework of it's a story that's written from the perspective of a CEO riding in, like, Row 27 of a commercial flight in the wake of a *failed* cloud migration, and they have to go testify to Congress about the bad things that played out for it. And they're on a commercial flight, in coach class, because, if you'll recall, there was all that controversy around taking your private jet to testify to Congress. And it was a way of, like, making real, but in a personal manner, why they should care about this topic. So – one, you can change point of view. We've done others where it might be from the perspective of a young soldier or a customer entering your store.

But the other idea of – I love your phrase "meet people where they're at" – it's also about meeting your reader where they're at in terms of their regular day-to-day. So, the "ask" of a reader, of a general, of a senator, of a CEO – if it's during the week, you're wrestling with their inbox, right? It's everything else that they've got going on. You can't kid yourself and say, "Yeah, we can give them this 21-page report, or this 180-page report," whatever the length – I'm using examples of people we work with – and say, "Yeah, they're gonna read it during their week." No, they don't have the time for that.

So either you've got to do something short and compelling in that week *or* can you reach them, can you meet them where they're at, in other locales? The framework of a story allows you to reach them on the weekend, as they're having their coffee, or on a plane. They're excited, they're appreciative, to have a story – but to go back to that notion of the smoothie, they get some good out of it. So your ask of them is not, you know, "Hey, I need you to read this report on the flight to the conference." It's, "Hey, check out this story on the flight to the conference." But the story, again, is to convey the key ideas for it.

And then the other, last part of meeting them where they're at is that with story – this goes to the way that humans are wired – we connect with each other over story. We're not only more likely to read something, we're more likely to share it with other people. We like to talk about – you know, when you meet someone new, or you see someone you haven't seen in a while, invariably you'll talk about a book you've read, a TV show, a movie – no one will do that with a white paper: "Oh, man, I just read this white paper. It's so awesome, you'll enjoy it." No. But they will [say]: "Hi, I read this story. You might enjoy it. You might get something out of it." Again, all we're doing is we're leveraging the oldest communication

technology of all, just for a different kind of purpose. By "oldest communication technology," I mean "story."

**Anderson:** Yes. Storytelling.

**Singer:** We've been using it [since] we were sittin' around fires in a cave. So, let's utilize it now to convey complex ideas.

**Anderson:** Yeah, and I really like the "flowing downhill" aspect of it. To your point, people are busy; they're inundated with stuff all throughout their work week. Anyone in a leadership role, for instance – it's not just one report, right? You've got a stack of reports as high as your head, sitting on the back of your desk somewhere. You're never going to get through all of them, so you have to pick and choose, and so I think making it enjoyable, and making it – I mean, shareable – that kind of virality that comes with good storytelling.

I certainly have both things: I have great books that are about topics I'm interested in, that are half nonfiction, or sometimes even really compelling even though they're pure nonfiction. Those are the things I share. I'm not handing friends white papers that get deep into the weeds on some topic. I'll be handing them a book that explains that exact problem, but in a fun way. So, that totally makes sense. And I think it's very interesting that you can now do it as kind of a contract, in a bunch of different fields. I'll be very curious to see what comes out of it. Are those things public, by the way?

**Singer:** Some are public; some have been just for the client. People can check it out at Useful-fiction.com. And yeah, it's been – again, it's as much for an experiment as it is an enterprise, I guess is a way to put it.

**Anderson:** Yeah, and it reminds me of – I've done a few things that were sort of similar but different. One of them was, there were these threat-casting workshops, and one of the ones that I participated in was specifically designed to land essentially a cartoon on the desk of a new recruit in the army. And it was a similar concept – kind of like, "Here are some weird, creative threats that might come your way during your career as an army officer, but it's going to be easy read, you can do it in your off-time, and you'll enjoy it, right?" And it'll just kind of get your juices flowing about what might you be facing. I think it probably could be the biggest missing piece in the really large corporations that we see sort of start to stagnate, is that kind of weird, creative, off-the-cuff thinking that comes with thinking about future threats in ways that haven't been addressed previously by the organization. And these large, bureaucratic companies, and other organizations, they tend to kind of stagnate

into everything that has come before: "It's what we do, and that's what we'll deal with," right?

**Singer:** Yeah. Some part of it is, you may be going after a goal of creativity – as you put it, trying to understand something out of the box – and again, there are different approaches, right? To some, it's like, "Let's get creative and look at things that we haven't thought before." There's another, which is a different way of thinking outside of the box, which is: "I need to see it from different perspectives." So, it's not that I'm being creative off the wall, but rather, "This I need to look at from this lens, or that lens, or the lens of a partner, the lens of an adversary, a competitor." And so when you're thinking about the creativity value, it may be something new, it may be a different perspective. But with Useful Fiction, you're also trying to bring in the value of emotion. It may be something that's very much in the box, but we just couldn't get traction on it, for whatever reason. Sometimes it may be trying to provoke an emotion of fear: if we don't do *X*, bad things will happen. And so you create a scenario of a bad outcome so that the reader goes, "What are we going to do to prevent that from happening? That's why we need this reform, that's why we need to buy this system, that's why we can't keep doing things the same way," right?

*"As every used-car salesman knows, it's emotion that drives the sale, right? If you can induce emotion into the discussion, you're more likely to get action."*

Or there's the alternative, which is, you paint a positive scenario. Again, it might be a good outcome of a process, or it might be the outcome is less about the scenario as opposed to the characters in it. We did one where something happened, but it was really about seeing: "Here are the people in our organization, with a certain kind of background and skillset – isn't it awesome?" And then the idea being that the reader goes: "Hold it – I like that. I'd want to have a workforce that looks like that. What are we doing right now to give us that kind of workforce, you know, three, four, five years from now?" So it's a little bit like you're creating desire. And that's, again, because narrative – good narrative – brings in emotion. And let's be blunt about it: it's not just the science. As every used-car salesman knows, it's emotion that drives the sale, right? And so, as much as those bullet points persuade, if you can induce emotion into the discussion, you're more likely to get action.

So, again, just to go back to the value not being just *creativity* – it's that you can also provoke action sometimes in ways that wouldn't happen otherwise.

**Anderson:** Yes. We have a few minutes left here, and I want to make sure to get into some current events, too, because there's so much going on in the world today that is unprecedented. I think there are a lot of sea changes happening, from previous, existing sets of patterns to completely new things.

One of the things that you and I were talking about before we started here was the war in Ukraine, which has very obviously changed some kind of underlying assumptions about: a) modern warfare; and b) the level of power, and the power of balance between countries like Ukraine and Russia, for instance, the Russian Federation . . . One of the most interesting things to me that's emerged in the war in Ukraine is the asymmetric capabilities that the Ukrainians have been able to deploy, both physically and kinetically, in terms of, like, drones and creative solutions in the field for various problems that they're having, with relatively limited resources. With backing from some powerful countries, but still very, very limited resources. I've been very impressed by that; I think it's a very interesting dynamic that relates a lot about stuff that you've talked about and written about.

Then, also, information spheres are becoming so important. They always were, in some ways. For instance, right at the beginning of the outset of World War II, Churchill knew that one of the most important things that he needed to achieve over the next couple years was to bring the US into the war, and that without doing that, without US support, Britain could never stand alone – or even Britain and the Soviet Union could never stand together, and defeat Hitler.

I think that Ukraine is dealing with a similar problem. And so, I don't know, maybe we can just . . . there's a lot there, but how are you seeing, what things are you seeing in modern warfare that are big lightbulb moments, where that's a changed dynamic that you think is going to continue into the future, and why? Maybe walk us through some things that are new trends that you think are interesting.

**Singer:** Yeah, it's interesting, having a variety of conversations on it in this last week, with everything from a set of US military officers to someone just back from Ukraine themselves – and so this is my kind-of drawing out from their insights and Peter Singer's own personal opinions.

I think you could frame it out in two large categories, and then a geopolitical implication of them. Category 1 is: there are technologies that have been utilized in the war in Ukraine that are getting their first blood, their first taste. But they are not shaping the overall conflict itself, just yet. So, historically, they're sort of markers of "more to come." Historically, the parallel would be, when a pilot in his biplane – if I recall it correctly, it was 1911 – and he's flying over some Libyan tribesmen in a colonial war, back in the day, and he drops . . . if I recall, first it's darts, then bricks, and then grenades out of the side of the plane. Doesn't change the overall conflict, but it's like, "Okay – air power – something more to come here."

In Ukraine, in the Ukraine conflict, I'd put two in that category, of they haven't altered the overall war, but the taste of what's to come. One is the utilization of face-recognition technology. The Ukrainians have deployed it for everything from identifying Russian corpses to identifying Russian leaders out in the field for

targeting. Has it changed the overall war? No, but we're going to see a lot more use of face-recognition technology.

Second is cyber strikes on Internet of Things targets. The US pioneered this in espionage with the Stuxnet attacks back on Iranian nuclear research several years back. What we're talking about here is using cyber means not to steal something, like intellectual property theft, but rather using digital means to cause physical damage on a target.

And as we see the internet becoming more and more the Internet of Things, we're going to see more and more of this type of threat. It's actually what we explored in the followup to the *Ghost Fleet* book, a book called *Burn-In* – which, again, is one of these novel narrative nonfiction mashups. So, it's a novel that's [about] a hunt for a terrorist in Washington, DC, about 15 years from now; but it's really about explaining to you what are the uses of AI, and what are the ways that we'll see IoT play out, but also threats to it.

In the Ukraine conflict, we saw Russia at the start *try* to do this, not all that effectively, both because of – much like on the conventional military side, their cyber operations were really haphazard – to put it bluntly, Putin caught his own forces off-guard by keeping this plan so close-held. His military and his cyber operations were not ready for the invasion.

There was also some great work done by a coalition of cyber defenders – the Ukrainians, US Cyber Command, companies like Microsoft, etc. So, the Russian forays were not all that successful. But what caught my eye was actually Ukraine's volunteer IT army, which is this network of – it's Ukrainians, it's civilian hackers from around the world, that are just lashing back willy-nilly at Moscow, at Russia. And one of the episodes in it, they hit Moscow electric-car charging stations. It makes the news because they take them over and they post funny messages on them. They deface them. Very classic thing in cybersecurity. There are things like "Putin is a dickhead," "Glory to Ukraine" – that's why it makes the news. But the part that I marked as important was that they also, besides defacing the car-charging stations, they turned them off. They shut them down. So if you've got an electric car, *good luck*. It's this little example of something that a "bigger power," more organized, more planned, shows you: "*Hey*, IoT strikes? We can do more and more of this."

So, that's that category of "more to come" – but not impactful, so to speak, on the Ukrainian conflict.

You have this second category, which is technology: new uses that have been very, very impactful and, I think, one you put your finger on right at the start, which is information operations playing out over social media, what I called in a book "LikeWar." So you think of cyberwar as the hacking of networks – LikeWar is the hacking of people on the networks by driving ideas viral.

One of the key stories of the Ukraine war is how the supposed masters of Russian warfare actually had the tables turned on them, by Ukraine and Zelensky in particular. And Zelensky, and Ukraine overall, was able to skillfully utilize social media to both mobilize his population, but even more so, to drive viral Ukraine's story of the war, which created public support.

*"Ukraine literally became the most popular cause in the world, more popular than any other brand, than any other thing trending, that had* real *effect, and it altered the political calculations of leaders everywhere."*

Ukraine literally became the most popular cause in the world, more popular than any other brand, than any other thing trending, that had *real* effect, and it altered the political calculations of leaders everywhere from Australia to Japan to Germany, who all start providing political, military, economic aid to Ukraine. It also altered the calculations of boardrooms. Over 400 of the top 500 companies in the world decided to pull out of Russia. Not because they suddenly, you know, became goodhearted – let's be honest about it – they did it because they worried about the impact on their brand.

And so, like war, this information operations side had real effect.

The second category that relates to it is the open-source side. This massive swirl of date, some of it from social media – you know, Ukrainian civilians taking images, posting them online; Russian soldiers accidentally revealing things online – to small drones, civilian drones, to civilian satellite – basically has yielded a wealth of data about what's going on in the battlefield, like never before. It's allowed OSINT trackers, open-source intelligence trackers, all around to track what's going on. It's also allowed the Ukrainians to do pinpoint targeting within minutes for their artillery strikes, from this data. It's been a key issue in the conflict.

Next thing out of that, that relates? As I mentioned, drones. Drones – unmanned systems, more technically. Before this conflict, there was a debate: "Well, they're good for counter-insurgency, counter-terrorism, but when there's a big war, they're not going to matter." There was a back-and-forth. That debate's done. We've seen unmanned systems utilized with incredible effectiveness, initially by the Ukrainians but also now by the Russians. So they've operated – they've thrived, so to speak, in a major conventional conflict.

Two things that come out of it, though, that have been really notable, is – one is the civilian network side of it. So, for Ukraine it was not just they've got their Turkish versions of our Predator drones, called the TB2 – they're plane-sized systems. What really has helped them as well is this wider network of small, civilian-provided drones.

When I do speeches on this, I'll show images of, like, a 6-year-old boy donated his hobbyist drone to the Ukrainian army, and then that same-sized system was used

for not only targeting Russians – you know, finding where they're at – but that same-sized system, that same type of system, was used to drop a munition, a bomb, through the open, effectively the "hatch," the "sunroof," of a Russian military vehicle that . . . We're at that level of accuracy, right? The Russians have copycatted this – they've got their own civilian volunteer network of drone users. But then the *other* part of this is the small and ever more autonomous what we call "loitering munitions" – it's a drone, but it's small, it's armed. It's not firing a missile; it itself is armed. And we've seen the Ukrainians, and now the Russians, utilizing these.

And then that leads to the very last issue, which is the supply-chain importance in modern warfare. So, on one side, you've got . . . well, basically you had, because of this mobilized international effort, it's become increasingly difficult for the Russians to operate, because, to put it bluntly, they're running out of microchips; they're running out of spare parts. And they're doing everything from ripping chips out of refrigerators to put them inside their systems to the loitering drones that I talked about, loitering munitions – they had to get a supply of them from *Iran*. And that points to kind of increased importance in war, to the supply chain – you know, it's always been important, war and supply chain, but what about the components in a modern marketplace?

And I'll end on this, back to what I know is near and dear to you: What does this all mean – not for Russia, but for China?

There's one aspect vis-à-vis Russia, which is: Putin set out to Make Russia Great Again. He has ended up making them even more of a junior partner to China. Not even partner. They're being exploited – China saying, "Yeah, we'll supply you components that you need, energy that you need, but it's going to be at our prices." So, they've given aid, but they've leveraged that aid deeply, when you see, say, the energy prices side.

But second is Russia's status and its influence in its near abroad, what it has traditionally considered its empire . . . China is filling that, it is replacing that. We saw that very much in the [recent] meetings with the leaders of Central Asia, where they're making Putin wait around while China is the one that is signing deals with each of them, is pledging to provide security forces to each of them. China's very much in the catbird seat, relative to Russia.

But then the other part of this is China looking at everything that *happened* to Russia and saying not only "How are we going to exploit Russia? but "How do we make sure no one ever does this to *us*?"

**Anderson:** Right.

**Singer:** So *allll* the things that have played out . . . Beijing is studying supply-chain issues, information warfare, and saying, "Okay, we don't want what happened to Putin to happen to us. We'll *leverage* it on Putin, but let's avoid

that." And I think that's going to be at the center of Chinese planning for the years ahead.

**Anderson:** Yeah. There are so many different things that are new as just critical supply-chain items. I think chips is the most obvious one in any modern, really, economy, writ large – but also specifically, very specifically, in this case, it's become very obvious that Russia failed its own military just right off the bat by not having a secure supply chain for chips. Some diplomatic effort has been put toward making sure that they don't *get* a supply of those things. I think that's such a lesson learned for any modern military: that you have to have secure supplies of these things, because very quickly they become paramount in their importance to your ability to operate and to "build more missile," right? Having a limited supply of munitions because you can't get chips seems to me like a very 2022 war problem to have.

I think we're about out of time, but thank you so much. We've gone through so many different topics here, but they're all fascinating. It's always an honor to have you.

Useful Fiction is Peter's newest effort, so don't forget to check that out. It's essentially "*Ghost Fleet* for Hire," I think might be a good title for it, right?
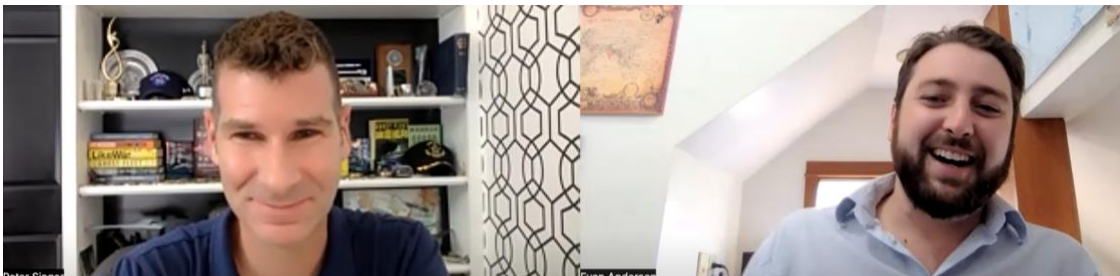


With that, we'll close, and I will see you soon, I hope. We have a conference coming up in 2023, and we would love to have you be there to talk more about what you've been working on.

**Singer:** Thanks for having me on.

*Watch the video of this interview [here](). Listen to the audio [here]().*

---

---

I would like to thank Sally Anderson for serving as transcriber, and for making this just right, as always.

Your comments are always welcome.

Sincerely,

Mark Anderson

mark@stratnews.com

**P.S.** *Get ready for Evan Anderson's new book,* Disengagement. *It will be the most important book of the decade.*

───

*Email sent to SNS may be reprinted unless you indicate that it is not to be.*

**DISCUSS THIS ISSUE ON FIRE HQ**

---

**To arrange for a speech or consultation** by Mark Anderson on subjects in technology and economics, or to schedule *a strategic review* of your company, email mark@stratnews.com.

For inquiries about **Partnership or Sponsorship Opportunities** and/or SNS Events, please contact Berit Anderson, SNS Programs Director, at berit@stratnews.com.

SNS Terms of Service

**MORE FROM SNS**

**FIRE EVENTS**

**FIRE HQ NETWORK**

**MEMBER iNEWS**

**FIRE FILMS**

**INVNT/IP**

**ORCA RELIEF**

# MEMBER SPOTLIGHT

**Nicola Fox |** Heliophysics Division Director, Science Mission
Directorate, NASA HQ

**Member Type: Creator**
**Member #: 21612**

Nicola Fox is the Heliophysics Division director in the Science Mission Directorate at NASA headquarters in Washington, DC. Heliophysics is not only vital to understanding Earth's most important and life-sustaining star, but it is also the study of key space phenomena and processes supporting situational awareness to better protect astronauts, satellites, and robotic missions exploring the solar system and beyond.

Until August 2018, Nicola worked at the Applied Physics Lab at Johns Hopkins University, where she was the chief scientist for Heliophysics and the project scientist for NASA's Parker Solar Probe – humanity's first mission to a star.

Nicola served as the deputy project scientist for the Van Allen Probes and the operations scientist for the International Solar Terrestrial Physics program. She has authored numerous scientific articles and papers, in addition to delivering science presentations worldwide. She is also keenly involved with science education and outreach activities.

Nicola was born in Hitchin, Hertfordshire, England. She graduated from the Imperial College of Science, Technology and Medicine in London with a BS in Physics and received an MS in Telematics and Satellite Communications from the University of Surrey. She then returned to Imperial College to complete a PhD in Space and Atmospheric Physics. She has also previously worked at NASA's Goddard Space Flight Center in Greenbelt, Maryland, receiving a number of agency awards for outstanding performance.

*SNS Connection:* Nicola was a first-time speaker at FiRe 2022, on the topic "Defending the Planet from Asteroids and Solar Flares" along with co-speaker Mario Juric and host John Wells – seven months before the whole world was in on DART's historic demolition of the asteroid Dimorphos. You can watch this fascinating conversation, with gobsmacking NASA optics, here. To whet your appetite even more, we offer the FiRe description of that panel:

> It's all about early detection (and rare footage & graphics): The sun both sustains and protects Earth, as well as putting off solar flares and storms that can have huge impacts on life as we know it. Learn about some of NASA's new projects for early detection in the field of heliophysics (literally, "everything under the sun"), including the interaction of Earth's and sun's atmospheres.
>
> And from the head of DiRAC, find out why: a) we shouldn't panic; and b) what's being done to accelerate our ability to observe – and so, to mitigate – asteroids and potential Earth-related "events," from amateur astronomers and software geeks to the LSST, or Rubin Observatory: the largest sky survey ever undertaken.

- Connect with Nicola on LinkedIn

*Email sally@stratnews.com to suggest an SNS member
or FiRe speaker as a Spotlight candidate.*

## Global Silver Partner

## Innovation Partners

## Silver Academic Partner

## FiRe Academic Partner

## FiRe Alliance Partners

## FiReStarter Companies