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**DEPARTMENT OF DEFENSE'S ROLE IN
COMPETING WITH CHINA**

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DEPARTMENT OF DEFENSE'S ROLE IN COMPETING WITH CHINA

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
Washington, DC, Wednesday, January 15, 2020.

The committee met, pursuant to call, at 10:00 a.m., in room 2118, Rayburn House Office Building, Hon. Adam Smith (chairman of the committee) presiding.

OPENING STATEMENT OF HON. ADAM SMITH, A REPRESENTATIVE FROM WASHINGTON, CHAIRMAN, COMMITTEE ON ARMED SERVICES

The CHAIRMAN. I call the meeting to order. I thank you all for being here for our first public hearing of the new year. Welcome the committee back. I look forward to a productive year.

And to kick it off, we are going to have a hearing talking about the threat that China poses and, most specifically, how we can best counter that threat and deter what China is trying to do and what—you know, what should the Department of Defense's plan be for meeting the threats that China poses.

And to discuss that question we have three excellent witnesses with us this morning. I want to welcome back Michèle Flournoy, who is the former Under Secretary of Defense for Policy; Andrew Philip Hunter, who is the Director of Defense-Industrial Initiatives Group for CSIS [Center for Strategic and International Studies]; and Rear Admiral Michael McDevitt, U.S. Navy retired, a senior fellow at CNA—all eminently qualified for this discussion.

And the bottom line is China is a threat to the basic international order. They don't play by the rules and they attempt to set their own rules.

They really threaten international institutions and international norms, and we need to figure out how best to contain that threat and help, you know, get back onto the rules that we think that the world should be following.

China's approach is autocratic to begin with. They don't believe in democracy. They do not, obviously, protect intellectual property and they have a very detailed plan for expanding their influence in the world.

And there is nothing per se wrong with that. They are a rising power. They are going to have greater influence in the world. But the way they are doing it is a fundamental threat to global stability.

Just take the businesses example. They steal intellectual property. They do all manner of different things to try to undermine any sort of rules-based trade or business system.

Then, of course, most notably, they are claiming territory that is not theirs throughout the Asian region and coming into conflict with, you know, more than a half dozen countries in their neighborhood and resisting any sort of international sort of normal system of resolving those differences.

Now, for the purposes of this committee, obviously, we have jurisdiction over the Department of Defense and the military, and what role does the military play in containing that threat.

And one of my concerns as we look at this is we war-game a lot of things out for how we would be able to win a war with China if it came to that, and I understand the utility from a deterrent standpoint.

But in all likelihood we are not going to be going to war with China. It is going to be more a battle on other planes, and if we are spending all of this money and all of this time and effort focused on that, what are we missing?

You know, what are we missing in terms of being able to build the alliances to stop the land grabs that they are doing down there; to, you know, protect intellectual property.

And also there is the simple matter of, you know, we have scarce resources and I know I talk about that a lot on this committee. I think it is a mistake to look at a problem and say we can't be constrained by resources, we have to address the problem in any way we can.

Everybody is always constrained by resources, and if we get into a very expensive arms race with Russia and China while we are also trying to contain very real threats from Iran and North Korea and transnational terrorist groups, can we do that or does that undermine our ability to actually be an effective power in setting a different example than China has.

So there is a lot of difficult questions here and I have a lot to learn—I can't speak for other members of the committee—and I am very pleased that we have three knowledgeable witnesses that will help lead that discussion and help educate us on what the best way for the Department of Defense to operate, what we should fund and how we should go forward in terms of deterring Chinese aggression and dealing with the challenge and the competition that China poses to us.

And with that, I will yield to the ranking member, Mr. Thornberry, for any opening statement that he has.

STATEMENT OF HON. WILLIAM M. "MAC" THORNBERRY, A REPRESENTATIVE FROM TEXAS, RANKING MEMBER, COMMITTEE ON ARMED SERVICES

Mr. THORNBERRY. Thank you, Mr. Chairman.

I agree with you that this is an excellent panel and I appreciate all our witnesses being here today. I have learned from them and from the organizations they—with which they are affiliated or have been affiliated for a number of years.

I also agree that a hearing on China is a good way to start the year. We have a National Security Strategy, a National Defense Strategy, National Military Strategy that places greater emphasis on great power competition.

And I think what that means is we have to pay more attention to countries like Russia and China. Not that they are the only thing that we have to pay attention to, as events of the past week or two remind us. But if China is indeed the pacing threat, then part of the responsibility of this committee is think about the personnel and equipment and training that is needed to deal with that pacing threat, and the assumption I guess would be if we can deal with that we can deal with other lesser threats as well.

So I think this is a good way to start. And one other point. I have read all the witnesses' testimony. I think they have a number of specific items that this committee and this Congress can act upon this year that will help put us in better position to deal with the challenges coming from China.

And so I hope that we can follow up on a number of the suggestions that they have. It is not just a theoretical thing. It is work for us in fulfilling our job under the Constitution this year.

So, again, I appreciate them being here and look forward to their testimony.

The CHAIRMAN. Thank you.

Ms. Flournoy, we will start with you.

**STATEMENT OF MICHÈLE A. FLOURNOY, CO-FOUNDER AND
MANAGING PARTNER, WESTEXEC ADVISORS, FORMER
UNDER SECRETARY OF DEFENSE FOR POLICY**

Ms. FLOURNOY. Great. Thank you so much, Chairman Smith and Ranking Member Thornberry, distinguished members of the committee. It is really an honor to be here, particularly to talk about this topic.

I can't think of a more—an issue that is more important to U.S. economic prosperity and national security over the coming decades than the question of the competition with China.

As you all know, the strategic competition with China has many dimensions. I think primarily it is economic, technological, but there are also political, ideological, and military dimensions and any successful strategy has to address all of those dimensions in an integrated way. We need a whole-of-government approach, a whole-of-nation approach, not just a defense approach, to China.

As we craft that strategy, we also have to remember that China will remain an important partner for us in key areas where we are trying to achieve our objectives, whether it is nonproliferation or climate change or North Korea.

So we have to think about how do we compete while also maintaining possible areas of cooperation in areas of mutual interest.

So I want to start by just highlighting three principles that I think should guide how we approach the strategic competition with China.

The first and most important is that I think the number one thing we can do as a nation is to invest in the drivers of our own domestic competitiveness: research and development, science and technology, incentives to get private sector—the private sector to increase their investment in key technology areas, higher education, STEM [science, technology, engineering, and math] education—broader access to that—21st century infrastructure like 5G, smart immigration policy.

So my point is there is a lot we can do here at home that, frankly, I think the American people would welcome, that would do the most to position us well to compete against China.

I think this is a moonshot moment. I think we need the national leadership, the call to action, and smart investment plans by this body to enable America to compete and win.

Second, I think we have a huge strategic advantage in the network of allies we have around the world, not only in Asia but in Europe and elsewhere. The best way to deal with the challenges posed by China is to do that—do so by making common cause with our allies and partners wherever possible. We are infinitely stronger when we confront China together when they violate the rules-based order or norms, et cetera.

Third, I think we should still maintain our leadership role in protecting and adapting the rules-based international order that has served us and so many so well for so long, adapting that for the 21st century.

We need to be at the forefront of upholding norms like freedom of navigation and peaceful resolution of disputes in order to ensure that a might-makes-right approach does not take hold in the Indo-Pacific.

Turning to the military, though, because I think that's where this—obviously, this committee is focused, I think the challenge for the military is that we have to rethink fundamentally how we deter and, if necessary, fight and prevail in a conflict with China.

America's military advantage is rapidly eroding vis-a-vis China in light of their modernization efforts. In fact, if we just stay the current course, a rising China will likely achieve overmatch in a number of key capability areas, undermining or at least calling into question our ability to deter effectively, to defend our interest, to protect our allies and partners, and, ultimately, to prevail at acceptable levels of cost and risk.

So the number one military objective, in my view, is figuring out how to reestablish credible deterrence and, as Representative Smith said—Chairman Smith said—also figure out how we are going to compete below the level of conflict.

So in doing this, DOD [Department of Defense] faces several key challenges. I have laid them out in much more detail in the testimony but I will just highlight them here.

China's substantial investment in anti-access/area denial capabilities, which means that the United States can no longer expect to achieve airspace or maritime superiority early in a conflict. We will have to fight our way to gain it and maintain it as we have faced constant efforts to disrupt and degrade our battle management networks.

Second, China's policy of civil-military fusion. They don't have something comparable to the gap between Washington and Silicon Valley in their system. They have civil-military fusion, which mean any technology development of interest to the PLA [People's Liberation Army] goes to the PLA.

We have to figure out what our answer to that is. It is not going to look like their answer but we need to do a better job bridging that gap.

And then finally, doctrinal innovations. They have come up with this idea of system destruction warfare, which means they will be looking to cripple our battle management networks, to use cyberspace attacks to keep us from ever leaving port, projecting power, basically, keep us from ever reaching the theater, and so forth.

So in the face of these challenges, we have to do a better job of really prioritizing what do we need to develop, acquire, and demonstrate and we need to think in two timeframes. In the near term, how do we think creatively about what we already have and use it in new ways, new concepts, to reestablish deterrence in the next 5-year timeframe.

Over the long term, we have to think more about how do we transform the force for a very different type of challenge in the future to dramatically increase the cost that any aggression would have. So investing in fundamentally transformational technologies.

In terms of how we are doing, I think we are underinvesting still even though—you know, hats off to this committee for getting your bill passed, for really starting to move the needle towards the future, but still we are underinvesting in the new technologies that will ultimately determine our success in deterrence and we are still overinvesting in legacy platforms and weapon systems that we will not need or will not be as relevant.

While we have made substantial progress in tech scouting and bringing some of those cutting-edge technologies in from Silicon Valley and elsewhere, there is still what I call the valley of death between the successful prototype and getting to be in the program of record for some of these new technologies.

We are still lacking the technology—the technological talent that we need to be smart buyers and developers and fielders of new technologies, nor have we—you've given the acquisition workforce tremendous new flexibilities in procurement authorities, but the Department has not yet adequately trained that workforce or incented them to actually use those authorities fully and at scale.

Mr. Chairman, I see the flashing light flashing at me. I have made seven very concrete recommendations to Ranking Member Thornberry's point. I would urge you to look at those. I am happy to walk through those if there is a question along those lines in the future.

The CHAIRMAN. Actually, it would be helpful, actually.

Ms. FLOURNOY. Okay. Let me just do—

The CHAIRMAN. If you could do the Reader's Digest condensed version I think that is—

Ms. FLOURNOY. Two—a few minutes on recommendations.

The CHAIRMAN. Yes.

Ms. FLOURNOY. What do we actually do? So the first is I do think the Department needs to implement a series of reforms in terms of acquisition, investment, and workforce development to really create the innovation ecosystem that we need to maintain the military's technological edge.

Huge focus on training the acquisition cadre and incenting them differently. Huge effort needs to be taken to actually attract the technical talent that we need to do that. Lots of things that are already in place like scholarships and debt relief for—to attract cyber talent. We need to broaden that to cover a much broader range of

emerging technologies. Reforming the security clearance process is also a key part of that. I know that is a big windmill to tilt at. But we've got to do that if we are going to get tech talent in the door to help.

Second, ramping up our efforts to develop and test service-specific operational concepts to drive the rapid fielding of game-changing technologies.

We have the concept of multi-domain operations. The services are starting to put meat on those bones. But this will require a continuous cycle of war gaming, prototyping, experimentation. Congress could help by providing the services with more robust funding to be able to field small numbers of emerging capabilities prototypes to develop early-stage concepts and to actually do robust fleet and field experimentation.

Third, the Department needs to be pushed to adopt best practices and lessons learned from the commercial technology sector in terms of how to do agile development.

This is a new thing for the Department of Defense and they need to get much better at doing that. There are ways to incent that.

Fourth, budget realities, as you noted, are going to require some hard choices, both from the Department and this body, to make the urgent tradeoffs we need. One way I like to think about it, and I would offer it for you, is we need to be thinking about in every major platform area where is the knee in the curve.

Where does it make sense to forgo the next fill in the blank—aircraft carrier, tank battalion, you know, whatever—amphibious ship—and instead take that money for that major investment in legacy system and plow it into the emerging technologies that will make the legacy systems we have that are going to stay in the force for 20, 30, 40 years, that will make them survivable again, relevant again, effective again.

The knee in the curve is where I think those tradeoffs need to be made and we need the analytic work to do that and the political courage to do that.

Fifth, we need to continue to adapt and enhance our overseas posture to shore up ally and partner capability in a more contested environment. We can talk about what that might look like.

Sixth, we need to shore up our near-term vulnerabilities. This is, again, not just focus on the emerging technologies that will help us in 10 years but what are we going to do today and tomorrow with what we have in creative new asymmetric concepts to deter better today.

Finally, the Department needs to be much more active in setting norms and standards for emerging technologies and participating in security dialogues that set the new rules of the road.

So let me stop there and again thank you for the extra time and look forward to the discussion.

[The prepared statement of Ms. Flournoy can be found in the Appendix on page 55.]

The CHAIRMAN. Thank you.
Mr. Hunter.

STATEMENT OF ANDREW PHILIP HUNTER, DIRECTOR, DEFENSE-INDUSTRIAL INITIATIVES GROUP, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES

Mr. HUNTER. Well, thank you very much, Chairman Smith and Ranking Member Thornberry, for the opportunity to testify today. It is nice to come home to the House Armed Services Committee.

I applaud your decision to approach the topic of this hearing, what my colleagues at CSIS have called meeting the China challenge, broadly.

China is challenging the world and the United States militarily and economically, and while DOD's role is most significant in military domains, it has a significant role to play in the broader competition, especially in the key technologies that will form the commanding heights of future global markets.

I am going to focus my remarks on the ways in which the defense acquisition system can support success in competition with China. We very much agree with the remarks that both the chairman and the ranking member made and Ms. Flournoy made about many other aspects of the competition with China that are incredibly significant, and I would be happy to get into those in the questions.

For the acquisition system, a lot of the roles that are going to be critical are very familiar. So the system will still need to be able to develop systems that meet exacting specifications that are required to operate in the most challenging conditions, and by that I mean examples such as nuclear weapons systems and long endurance undersea systems, large submarines and unmanned systems, among others, where the defense requirements are so challenging that an off-the-shelf solution is not going to get the job done and we need to develop systems unique to the military.

That is a very traditional role for the acquisition system. The system also needs to be able to pioneer breakthroughs in fields such as artificial intelligence, quantum computing, directed energy, and hypersonic systems where fundamental challenges that relate directly to defense requirements remain.

DOD can play a critical role not just on defense requirements, though, but also in support of the broader economy that is advancing these technologies, particularly in the art of testing and evaluation where there are some fundamental limitations right now with these technologies.

But in addition to these familiar roles, the acquisition system is going to need to be able to perform new roles in this competition. It must allow the U.S. to follow fast, understanding and catching up to breakthroughs achieved by the Chinese in key areas. The scale of their effort on their investment means they will get ahead of us in certain areas if they continue on course.

But perhaps the most critical role for the defense acquisition system is building a strong connection to commercial technology providers so that DOD remains in touch with the cutting edge of technology.

The competition with China features a struggle to shape and master global supply chains across a range of today's key industrial sectors such as semiconductors; networking technologies, including 5G; advanced materials; data analytics; big data; as well as key in-

dustrial sectors of tomorrow such as quantum-based systems, intelligence systems, and synthetic biology.

The defense acquisition system will need the ability to manage supply chains in a more complex business and security environment than ever before and it will need to do so in a manner that does not divorce DOD from commercial suppliers.

Now, China has developed structures for providing all of the defense acquisition capabilities I have described. China's progress in defense technology, however, is not supernatural.

The U.S. and Chinese timelines for developing new purpose-built defense systems appear to be quite similar. China's advantages in growing defense resources, lower costs, access to technology shortcuts is offset by weaknesses in corporate structure, manufacturing quality and sophistication, and experience.

But the size and growth of the overall Chinese markets serves as a key reinforcement function for its efforts, allowing China to progress despite sometimes deep flaws in the design and implementation of its programs and to capture market power over key supply chains.

This is why DOD's role must go beyond the purely military dimensions of the competition.

As to what we are doing, DOD's acquisition—Adaptive Acquisition Framework appropriately creates multiple pathways to achieve the many objectives for the acquisition system I have described. But a key test would be DOD's ability to field and deploy capabilities developed through alternative pathways, something which has not yet been demonstrated at scale, especially for software acquisition.

Something that I call an adaptable systems approach, which I can describe in more detail later, within the current Adaptive Acquisition Framework would especially help DOD accelerate the deployment of new capabilities to fielded systems.

Another key is the national security innovation base identified in the National Security Strategy. While the overall situation with commercial technology firms is one of increasing engagement, workforce issues are a challenge, as has been demonstrated multiple times, and the research university component of the national security innovation base is deeply engaged with DOD but has many challenges with foreign students and foreign researchers.

This shows that management of human capital is one of the key issues in the strategic competition with China. The U.S. and DOD and our competition for talent and industry as well—are in a competition for talent and must protect access to the best technical talent as a core asset.

The clarity on key technologies provided in the National Defense Strategy [NDS] is great. But while DOD's investments accounts have grown, this growth has been concentrated in existing production lines and prototypes of military systems.

Investments in the NDS technologies have been modest by comparison, particularly given the fundamental science and engineering challenges that confront both DOD and the commercial sector.

And China's aggressive use of cyber theft, counterfeit parts, has led to defense supply chain efforts that are valuable but, if poorly

implemented, could unintentionally cut DOD off from access to commercial markets.

A close and continuing dialogue with industry is required to build effective supply chain awareness and enable sound supply chain management.

Finally, I recommend that the committee establish performance metrics for meeting the China challenge. At a minimum, such metrics should include the level of DOD investment in key NDS technologies and success in leveraging commercial research and development; measuring performance in developing and fielding purpose-built military systems, as we sometimes do or have done in the past; measuring DOD's engagement with different elements in the national security innovation base; and measuring risk in DOD's supply chain.

[The prepared statement of Mr. Hunter can be found in the Appendix on page 68.]

The CHAIRMAN. Thank you.
Admiral McDevitt.

**STATEMENT OF RADM MICHAEL McDEVITT, USN (RET.),
SENIOR FELLOW, CNA**

Admiral McDEVITT. Thank you, Chairman Smith and Ranking Member Thornberry. It is my pleasure to appear before you today.

I am appearing in my personal capacity and my comments reflect my personal views, not those of the CNA, certainly not the U.S. Navy.

Both the National Security Strategy and, more recently, the Indo-Pacific Strategy Report from DOD say that China seeks to Indo-Pacific regional hegemony in the near term and, ultimately, global preeminence.

Let me make a word or two about regional hegemony. China already militarily overshadows and intimidates its neighbors, especially if its army can walk or drive to their frontier.

In every case, China is their largest trading partner. Economically, China's neighbors need China much more than China needs them. China has the ability to wreck their economies.

These realities provide Beijing with tremendous regional political, diplomatic, and economic leverage. It is important that the U.S. be comprehensively engaged in the region to reassure our allies and our friends, those that live in the shadow of China, that they have not been written off. That includes our military posture.

Peacetime military presence is very important as is continuing to demonstrate that we will fly, sail, or operate wherever international law permits.

But we cannot forget that our friends and allies can also count. They understand that China is, after all, the home team and its entire military is right there.

Our regional first responders, like the U.S. 7th Fleet or the 5th or 7th Air Force or 3d Marine Corps Expeditionary Force are numerically outnumbered. But—and we can't match them number for number.

What we can do is try to improve our qualitative posture, especially in areas where we have a clear advantage such as with our forward-deployed submarine force.

Submarines are our greatest operational advantage and we should do everything we can to capitalize on that by increasing their day in and day out presence in the region.

We should also take a look at capitalizing on the opportunity created by our post-INF [Intermediate-Range Nuclear Forces Treaty] environment to help offset the strategic rocket force unchallenged advantage that they currently enjoy.

That means getting on with the planned deployments of Army land-based conventionally armed ballistic and cruise missiles in the Western Pacific.

Importantly, China's ability to be militarily preeminent globally, beyond East Asia, becomes much more problematic once its forces move away from China and are forced to operate beyond the umbrella provided by its land-based air cover or its ballistic missile forces.

China is certainly not preeminent in the Eastern Pacific, the Indian Ocean, the Mediterranean Sea, or the Atlantic Ocean. But it is working on it.

China is beginning to field a capable expeditionary force that could be used throughout the Indo-Pacific and along Africa's littoral—marines, large amphibs, carrier air, logistics ships, et cetera, et cetera. Some of them are already in place and they are growing.

In response, DOD might offer assistance and encourage friends and allies to adopt a concept from the PLA and adopt their—develop their own local anti-access/area denial concepts to protect their own maritime approaches.

Australia provides a good example today.

General Secretary Xi's official goal for the entire PLA is he wants it to become world class by 2049. Significantly, he wants China's ongoing modernization to be completed by 2035, which is just 15 years from now.

He is in a hurry, and the military-civil fusion policy that China has implemented will ensure that the PLA has the benefit of any innovations—the technical breakthroughs that China makes will be able to contribute to the PLA.

Neither Xi nor other senior officials have defined what world class means. But world class carries a connotation of second to none or being top tier or being the best in the world, and a global foundation to support a world-class military is already being laid.

We know about the base in Djibouti and that is probably the first along the Indian Ocean littoral. As of today, as part of China's naval buildup, it has commissioned or launched over 130 modern blue-water—I am just talking about blue-water—warships that are capable of operating throughout Indian Ocean or, for that matter, anywhere in the world and remain on station for months at a time. Today, this is far and away the second largest and most modern blue-water navy in the world.

DOD should become encouraged to become more outspoken about China's world-class military ambition and specifically address what does that mean for U.S. security. A section in its annual report to Congress that addresses the world-class military would be a good place to start.

In conclusion, the long-term challenge to important U.S. national interests come from China and we must adopt a long-term plan to

address this challenge. It should be a whole-of-government approach, as Ms. Flournoy mentioned.

Central to this, DOD must be able to count on a predictable level of funding, whatever you decide it is. I am not sure what that number is but it should be predictable that the Department can count on day in—year in and year out.

In this regard, the Indo-Pacific Security Initiative that has been authorized but not funded needs to—awaits a DOD input as to how that money would be spent and I encourage you to encourage DOD to get on with providing the requested plan—funding plan so that this initiative can move forward.

DOD also needs a China strategy for the long term. I think a reasonable starting point is the aforementioned 2019 Indo-Pacific Strategy Report.

Now, trust me, this is a far from perfect document. It is too glossy. It is too long. It seems to be more about public relations than strategy. But it does lay out some sensible strategic concepts.

I suggest that it be recast, shortened to not more than 10 pages, vetted on Capitol Hill, and approved by the White House, not the Acting Secretary of Defense, as this one was.

In the interests of time, I have not mentioned China's ambitions in space, its concept of military-civil fusion only in passing, or its military modernization and global influence ops, and I can address those in your questions.

Thank you.

[The prepared statement of Admiral McDevitt can be found in the Appendix on page 76.]

The CHAIRMAN. Thank you.

We will now move into questions. For the witnesses' information, we try to keep everyone 5 minutes and that means that the whole time should be 5 minutes—you know, the whole—you know, ask the question for 4 minutes and 59 seconds and then get a 5-minute answer.

It is inconvenient because I don't want to cut you off in mid-sentence. But the people down in the bottom row start sending me texts if I don't because they want to get a chance to ask a question.

So if you see the 5 minutes go off, if you could wrap up quickly so I don't have to, like, interrupt you that would be greatly appreciated.

Admiral McDevitt, just a quick example. What are we spending money on at DOD? If you look at it from a perspective of what you all just said about the threat from China and having that China-centric focus, can you give us an example of something that we are spending money on at DOD that we shouldn't be and then something that we should be?

Okay. You look at this problem. Okay, we are not addressing it here. Clearly, shouldn't be doing that; we should be doing this instead. Do you have a concrete example of that that would help guide us, basically?

Admiral MCDEVITT. Actually, I am probably not the person to ask what we should or should not be spending money on. But what I would suggest to you is looking at the future I have been struck by the fascination with hypersonic weapons and I think we need to be sensible about that.

At the technical level, hypersonic makes a heck of a lot of sense. You can shoot somebody very quickly before they can shoot back.

At the strategic level, we have hypersonic weapons. They are called ICBMs [intercontinental ballistic missiles]. And we don't need any more hypersonic. And so if we are going to focus on hypersonic we ought to focus on what is tactically useable.

The second thing I think I would suggest is keep in mind if you want to establish or reestablish deterrence, China is becoming as dependent as we are on space, cyber, networks. And so without their ability to surveil the open ocean they can't use their anti-ship ballistic missiles. They don't know where to vector their—the diesel submarine. They don't know where to launch their land-based aircraft in what direction.

So we should not wring our hands and say that it is too hard. All we have to do is make that system not work.

The CHAIRMAN. I think you actually are a very good person to answer that question. That was very helpful. Thank you.

And building off of that last point is just something that Ms. Flournoy pointed out—that the command and control issue, I think, is one of the biggest issues facing us, going forward. When we talk about, you know, investing in new technologies versus investing in legacy systems a lot of times that can get blurred and not actually mean anything.

But I think the biggest thing that it means is in this area because everything we have now is dependent upon that command and control system, and as the admiral just pointed out, same goes for China.

If we can take down their command and control system that is an enormous advantage. If we can protect our own, same thing.

What are the keys, and you mentioned a lot of different reforms and different pieces, but if you had to mention, any one of you, one or two things that is the absolute key to winning that command and control back, what do we need to invest in to be able to defend our own systems and to invest in to take down an adversary system?

I don't know—Mr. Hunter, why don't you go ahead and start and then Ms. Flournoy can—

Mr. HUNTER. Yes. So we are—I naturally first go when you ask that question is the idea of really doing software acquisition well, being able to build robust resilient networks because both in the offense and the defense it's about taking down the networks that both sides have developed to pass information to do command and control.

So it's about the cybersecurity of those networks and it's about the ability to rapidly adapt those networks as technology evolves and as we see the kinds of attacks that are likely to be posed on our C2 [command and control] systems.

And this is an area where we really struggle, and we struggle because, as Ms. Flournoy mentioned in her testimony, we are struggling to adapt some of the agile development techniques—DevOp techniques—that have been successful in the private sector and, in some cases, it is our bureaucratic structures that make that so hard, for example the budget structure.

The way that we do building of budgets makes it very hard to say we have got this budget for—you know, for doing upgrades and new features on our software system but we don't know yet which features we are going to select.

We may have a menu of 20, but at the end of the day 5 are going to be the critical ones and we won't decide that as we are building the budget. We are going to decide it when we start to write code and are trying to write that code very quickly in weeks, not in years.

So that would be something I would highlight.

The CHAIRMAN. Okay. Ms. Flournoy.

Ms. FLOURNOY. I would agree that building the, you know, Advanced Battle Management System that the Air Force and the Department are talking about is really the long pole in the tent for the vision of multi-domain operations.

It will require rapid advancements in sensor integration, data processing, artificial intelligence, network connectivity to all the different shooters and actors, and cloud computing.

These are all areas where the Department has to let itself learn from the private sector companies and entities that have really pioneered these technologies. We have to get much better at spiral development, creating, you know, prototypes that enable substantial feedback and interaction from operators before we move forward to further specify requirements.

This is not something where you can architect it from the top down perfectly, take 5 years to define requirements, and then build to that the way we do. This has to be a spiral development process where you are going to learn and adapt along the way.

But it means that the Department has to change, but also how defense industry works has to change. We have to move towards much more open architectures and much more iterative agile development.

So that is the long pole in the tent. The thing that you all can do I think, most importantly, the services are asking to shift money to these efforts whether it is, you know, the Air Force moving \$9 billion towards this, whether it is requesting your help for spiral development and experimentation. These are things that it is tough because it is taking money away from legacy programs. But these—we have got to move serious money into this area if we are going to make progress on the time and scale that we need to.

The CHAIRMAN. Yes, and just the challenge there, of course, is, you know, shift it from where because that is when everyone is, like, you got to take—no, not from there, not from here, not from there. You know, that is the tougher part of the choice that I think we need to focus on. But I just want to emphasize and appreciate your testimony emphasizing it. It is crucial that we do that—that that shift has to happen.

Mr. Thornberry.

Mr. THORNBERRY. Thank you, Mr. Chairman.

I just want to get a little bit more specific on three ideas, one from each of you kind of, that I just plucked out.

Admiral, one of the points you made in your written and your oral testimony was funding the Indo-Pacific Security Initiative.

We authorized that several years ago under kind of a thought that, well, it is working pretty well in Europe—why not look at doing it in the Pacific. And yet it has never been funded and I don't think the Department has taken it particularly seriously.

But can you elaborate just a little bit? Is this worth fighting with them over? What are the benefits?

Admiral MCDEVITT. I personally think that there are great benefits for the Indo-Pacific commander and if I am not mistaken I came across an article or something that showed up on the press anyway from INDOPACOM [U.S. Indo-Pacific Command] in which there were a whole list of initiatives that they were talking about wanting to have funded.

Why they have not turned that into a budgetary request is beyond me. I don't know. My recommendation would be to rattle their cage, quite frankly, and say, tell me why you are—why you are dragging your feet on preparing.

Take a look at what EUCOM [U.S. European Command] has done and copy it, for goodness sake, and give me a plan on how you intend to use these dollars.

Mr. THORNBERRY. I think the answer is what the chairman said. Everybody is afraid they are going to rob their piggy bank in order to fund this. But sometimes—

Admiral MCDEVITT. That goes on every day in the building.

Mr. THORNBERRY. Yes. Yes. We just have to fund it.

Mr. Hunter, I was going to ask you about something else. But I want to follow up on software, because we hear that a lot and both you and Ms. Flournoy have talked about the people part of software—attracting the right people. And maybe that is the only answer. But is there some other concrete step we can do this year that would push the Department forward on having its own software capability?

Mr. HUNTER. I think there are and, again, I didn't want to harp too much on the budgetary piece but I really think it is critical because, as was mentioned and as this committee well knows, there have been a huge number of flexible authorities provided to the Department for things like contracting, doing contracting quick, removing bureaucracy from the acquisition process.

Where we haven't done really almost any of that is on how to use money to actually support those approaches. So it is still the typical programming, budgeting, planning, appropriating cycle.

And ways we get around that we have reprogramming authority that allows us to move money. A huge piece of that is chewed up and churn on just recoloring money from procurement to R&D [research and development], from R&D to procurement, from O&M [operation and maintenance] to one of the other colors, because the thing you need to do is not the thing you thought you needed to do 2 years ago when you built the budget is not the thing you need to do in the year of execution.

And I think a lot of that churn can be minimized by simply opening the aperture a little bit on these fuzzy lines between what is R&D, what is procurement.

Mr. THORNBERRY. Okay. So you are not talking about a fund for software development. You are talking about program by program, a little more flexibility so that it is available—

Mr. HUNTER. Exactly, and to be clear, I like the idea of a fund for software development. But I know it can be—it could be a real challenge and I think we can do something very concrete with clarifying some of the reprogramming needs, eliminating some of them with color of money and then, secondly, on new starts. It is a—I am trying to think of a polite way to say it—no one knows what is going on with new starts. There are 15 different definitions of what they are and people tend to take the most conservative approach, which means that they are constantly holding and waiting for approval on things that should be moving out.

Mr. THORBERRY. Yes. No, and CRs [continuing resolutions] emphasize that because, you know, no new starts.

Ms. Flournoy, I want you to talk to us a little bit more about bridge funding, because you had talked about we are doing better on experimentation, you know, some of these areas. But, still, there's a valley of death going between an experiment and making it real, having somebody—some service to pick up the ball and run with it. So could you elaborate on that?

Ms. FLOURNOY. Yes. I think the first thing is to try to get services directly engaged as sponsors early in the game. This is working through SBIRs [Small Business Innovation Research] contracts. That is actually working. DIU [Defense Innovation Unit] is doing a better job of having service sponsors alongside them. So there is a sense of ownership from the start.

But in terms of bridge funding, you know, what I am finding, talking to a lot of tech companies who actually want to work in the national security space, they want to help DOD, is they have a great experience through SOFWERX or DIU or whatever getting to the demonstration phase.

They win the prototype competition. Great, we love you, and that is in, like, fiscal year 2019. And then they are told, okay, we are going to submit—we are going to have an RFP [request for proposal] for you in 2021 and they are, like, okay, but what do I do in 2020.

I have got a 10-year hold in my business plan and my investors are pressuring me to drop the work on DOD because it is too slow, it is too small dollars. You can make more money in the commercial sector, just to drop it.

And so we have got to figure out—there has got to be some areas where we know we have got to attract commercial industry, whether it is, you know, AI [artificial intelligence] or cybersecurity or quantum computing or 5G or whatever, to have some bridge funding where you can take the winners and continue to invest in them, developing things until you get to the big RFP where they can compete at scale, because what is happening is a lot of companies who try, they get stuck and their investors pressure them to pull away. So that is the concept.

If I could just say I also endorse putting some software development moneys into each of the services and then requiring them to report on how they are implementing agile development processes.

If you couple that with some smart tech talent, efforts to bring in mid-career people from the tech field for tours of duty, people who have experience in software project and program management, and you couple that with, you know, educating national security

leaders how to manage that tech talent, you know, create more viable career paths for them in the public sector and, oh, by the way, again, reforming the security clearance process.

Right now, you have, again, tech talent who wants to serve and they are told they got to wait a year and they end up saying, hey, I've got to—I've got to have a job. I can't wait. And the biggest barrier for them right now is security clearance process.

Mr. THORNBERRY. Yes, ma'am. We hear—we hear that all the time, too. Thank you.

The CHAIRMAN. Mrs. Davis.

Mrs. DAVIS. Thank you, Mr. Chairman. Thank you all for being here. I want to commend your really very strong attempt at a comprehensive look here. I think we just feel like, you know, trying to—trying to really pick from that where we can be the most effective is really a key.

Ms. Flournoy, I wanted to ask you a little bit about the civil-military fusion issue, which we are very well aware of and, you know, I think the question really is, you know, so what should our civil-military fusion look like and maybe the other question is what should it not look like, which may be pretty much what we have been doing all along.

We have a different system, obviously. We are not going to be China in this at all. We don't want to be.

So where do we go from here with that?

Ms. FLOURNOY. So the Chinese approach would not work for us, which is fine. But what we—I think the DOD has to do a better job of appealing to our tech community in terms that they understand and respond to.

So one of the best ways to get tech talent and military folks or DOD folks working alongside is through challenges, through—to say we have a problem and we want the best talent from across the board to come and work this problem set together.

And at the end, there is either prize money or there is a contract or there is a way forward to take this solution into further development.

That is a language that universities understand, tech community understands. So we need to do a better job of reaching out and engaging that.

Mrs. DAVIS. I guess part of my question would be why haven't we done that? What is it? Is it cultural? Is it—

Ms. FLOURNOY. We have done it at a very small scale but we are not doing it at scale and across the board. Systematically removing some of the barriers for tech talent to serve that we have talked a little bit about.

I am actually working on a study on this right now and will be happy to come brief you all informally when we are done. But I also think, you know, using a scalpel and not a sledgehammer with our own industry. So I am all about protecting our crown jewels—national security technologies. I am all about making sure we are very careful about the kind of Chinese investment we allow in our tech community.

But right now there is an environment of extreme risk aversion such that I fear we are actually cutting off things like completely passive investment that gets no access to IP [intellectual property],

no controlling interest, no board seat, no ability. It is just money flowing through the bloodstream.

There are some CFIUS [Committee on Foreign Investment in the United States] calls that I think are being made badly that are going to hurt us by cutting off money for our industry. There are some export control examples where old technology licenses that have been, you know, granted for 20 years suddenly they are being disapproved because—not because, you know, the technology is relevant to the Chinese military or because it can be reverse engineered or because there is any real IP theft threat. It is because someone in the bureaucracy is afraid to approve anything going to China.

And so I worry we are creating an environment where we are going to hurt our own industry if we are not careful. So I just sound that as a cautionary note.

Mrs. DAVIS. How do you think we can best oversee that to sort of catch it in process?

Ms. FLOURNOY. You know, I think—I think making sure we are highlighting Andrew's point that yes, there is a military dimension of this competition but, fundamentally, this is an economic and technological competition and we need to consistently be asking—looking at any tradeoffs we are imposing for our own industry in their ability to compete.

And so I think having—digging into this, you know, what are the right ways to protect the supply chain versus the heavy-handed stupid ways to do it—

Mrs. DAVIS. Sledgehammer ways. Right.

Ms. FLOURNOY [continuing]. You know, and get people—get people into the details, and to hear from you that you are not going to haul them up here and—you know, and punish them if they make more nuanced thoughtful judgment calls.

Mrs. DAVIS. Anybody else? Yes, Admiral.

Admiral MCDEVITT. Just wanted to make a quick—when you asked your question, Congresswoman Davis, you talked about civil-military fusion. In China, it is military-civil fusion and that order of words is very important because in China the companies that are doing the technology and the innovation, they don't have a vote. They must cooperate.

Mrs. DAVIS. Yes. Big difference.

Yes, thank you. Mr. Hunter.

Mr. HUNTER. I just wanted to say we should also understand that China's push towards military-civil fusion, they are actually seeking to replicate what they see as the U.S. model.

You know, they look at Boeing and they say, we want something like that. We want a leading aviation company that is also our military aircraft supplier.

So we aren't so terrible at this, right. There is a background here where we do know how to do this. We have been effective at it. I think where we are really challenged to do it is with companies that haven't worked closely with the Department of Defense.

The CHAIRMAN. I am sorry. Excuse me for a moment.

Mrs. DAVIS. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. The gentlelady's time has expired.

Mr. Wilson.

Mr. WILSON. Thank you, Chairman Smith, and thank you for calling this very important hearing, and we look forward on Friday to providing a very warm welcome to Chairman Smith to South Carolina.

And I appreciate each of the witnesses today and, Secretary Flournoy, I appreciate you pointing out that we can be partners.

America and China have been partners in the past. My dad served in the Flying Tigers in World War II in Sian, Chengdu, Kunming, and I am really grateful that it was Chinese and American forces together to resist aggression at that time and still today there are monuments across China recognizing the U.S. Army Air Corps, what they did to save millions of Chinese lives.

And so this is appreciated and we, hopefully, can build on that.

And, Admiral McDevitt, I want to thank you for your 34 years of service for the Navy. We are also thankful for President Donald Trump's leadership and the bipartisan support of Congress to pass the NDAA [National Defense Authorization Act], the signing on December the 20th for the 58th consecutive year to protect our country.

And a question, Admiral. This week Admiral Michael Gilday, the Chief of Naval Operations, said the Navy needs more funding to compete with China's growing navy.

This is at a time where the goals are presented in coordination with the National Defense Strategy as we transition to a great power competition.

What ways should the Department of Defense offset China's growing naval fleet in the anti-access/area denial strategy?

Admiral MCDEVITT. Well, I have addressed some of the anti-access already about figuring out a way to make sure their anti-access surveillance piece of it doesn't work and in an open environment probably that is about as far as I want to go.

The other part of it is numbers do matter and so I think the Navy is enthusiastic about the administration's 355-ship goal.

Now, the reality is whether we ever get there or not. I think the Acting Secretary of the Navy has been clear that he is worried about efforts to rush the 355 to get to it before—I think the original year was 2034, which, coincidentally, by the way, is when China, in 2035, is saying that their military modernization will be completed.

We don't know how big their navy is going to be. It's a state secret, and so—and they won't tell us. At least, they haven't told me and a lot of other people who have asked. We are trying to find out. They may not even know.

But it is going to be big. I did a back-of-the-envelope calculation. You know, that has become a parlor game, I think. But about—in 2035 about 420 ships.

That is not all blue water but I mean, that is about—so it will be the largest navy in the world. There is no way we are going to have a bigger navy, period, full stop.

So we have to have a better navy and part of that is readiness improvements and part of that is continuing along with the plans, for example, on the—I know the LCS [littoral combat ship] is not the greatest ship in the world.

I guess I can speak candidly there. There is a lot of critics of the littoral combat ship. But we own 25 or 35 of those things now and we ought to do the best we can for making them effective as opposed to just writing them off and saying, well, we will get something better.

And so, because otherwise we can't even count them in terms of being a credible combat warship.

So those are the things that strike me as—I don't—I am not in a position to comment on what type of ship this—ship Y, ship X.

Whatever we build, though, it ought to be able to survive and it ought to be able to have an offensive punch that we can actually fight and win successfully.

Mr. WILSON. Thank you very much.

And Mr. Hunter, since 2004, China has established Confucius Institutes at American universities, at over a hundred, some close to the proximity of our technology centers.

Do you see this as a problem for our country?

Mr. HUNTER. Well, I think anytime that you have a situation where academic freedom is being constrained, that has real implications for national security because fundamentally open research is what provides that foundation for the technological advances that we are depending upon both economically and for the military.

So Confucius Institutes tend to be, you know, focused more on, you know, IR [international relations] and political science type issues. But I do think that injecting that sort of element into the academic environment does have risks.

There was just a JASON's report that came out last couple of days where they have been evaluating how do we—how do we have the right kind of research for collaboration.

The CHAIRMAN. Thank you. I apologize for the interjection.

Mr. WILSON. Thank you, Mr. Chairman.

The CHAIRMAN. The gentleman's time has expired.

Mr. Courtney.

Mr. COURTNEY. Thank you, Mr. Chairman, and to the witnesses for being here this morning.

Ms. Flournoy, when you started out—again, I was pleased you were framing the question of that region of the world that our mission should be to create common cause to stand up for rules-based order and norms.

I think one of the biggest glaring shortfalls we have as a country is, again, that we still have not ratified the Law of the Sea Treaty, which, again, every commander serving in the Indo-Pacific region and Admiral Davidson, who is there now, at his confirmation hearing called on Congress to move forward to do that.

His predecessor, Admiral Harris, now Ambassador Harris, was almost militant on the question of the need to do that. He was quoted as saying, "I think that by not signing onto it we lose the credibility for the very same thing we are arguing for, accepting rules and norms in the international arena."

And the biggest court case or maritime ruling against China, the Philippines case, the U.S. was actually denied not only party status but observer status.

We had to rely on Australia to be our proxy during that proceeding, and China definitely sort of throws it back in our face any-

time that ruling is cited, certainly by us, that, well, you know, you are not part of this.

So, you know, there is now new issues like rare earth mineral seabed mining, which is now a gold rush out there in the Pacific region which, again, we are shooting ourselves in the foot in terms of not being able to be part of a legal framework so that we cannot allow China to overreach in that area.

Again, just sort of—we have House Resolution, by the way, calling on the Senate to move forward on this, H.R. 454, which is bipartisan. I was just wondering if you could comment.

Ms. FLOURNOY. No, I agree, it is not only ironic but damaging that the primary rules that we use our ships and our forces and our diplomatic clout every day to enforce, come from a treaty that we haven't ratified and that—and that I do think it undercuts our standing on this issue somewhat.

I think it would be very powerful to get that treaty ratified. We are already spending lots of mindshare and resources to enforce it. We should have the benefits of being a full part of the treaty. There are absolutely no downsides that I see to that whatsoever.

Mr. COURTNEY. I just wonder if the other witnesses could just sort of comment on that point.

Admiral MCDEVITT. A topic near and dear to my heart. Absolutely we should—we should ratify it. It is important to keep in mind that at some point in the future—I don't know when—there is probably going to be another U.N. [United Nations]-sponsored commission to look at revisions and updates to the Law of the Sea Treaty and we are not going to have a seat at the table.

We had a—we played a huge role in the first law—the extant Law of the Sea Treaty in terms of helping shape the debate and getting concerns of the maritime powers on the table and what have you.

If we are not there the next time around it will be the Russians and the Chinese who will essentially be in charge or be the leading voice in those negotiations.

Mr. HUNTER. I also agree, and I think your point about seabed mining raises the fact that these kinds of international agreements help to shape where global markets go and technologies that are developing and resource extraction technologies that are coming online.

And so I would point—if we can't do Law of the Sea, I think it presents challenges for us in areas like space where there are inevitably new international agreements coming with the explosion of commercial space and if we don't make ourselves an active party in that we will disadvantage ourselves in this competition with China.

Mr. COURTNEY. Thank you.

I just wanted to follow up on Mr. Thornberry's question on the Asia Reassurance Initiative which, again, passed unanimously last year, was signed into law actually right around New Year's Day last year, so it is about a year old.

I mean, in the meantime, we have seen this administration getting into a food fight with South Korea about wanting a fivefold increase from Korea.

I mean, there was such a disconnect in terms of, you know, what Congress called for, which was to boost, you know, investment in that part of the world and then what—you know, what policies we are seeing play out publicly by the administration, I just wondered if you could comment on that sort of contradiction.

Ms. FLOURNOY. Yes. No, I do see the contradiction and I think we are—South Korea actually makes one of the largest contributions relative to other allies—it also hosts U.S. troops—than any other country.

I mean, they are a very good partner in terms of financial support as well as military and operational cooperation. So we should not be beating them about the head and shoulders on this issue.

On the—

The CHAIRMAN. I am sorry. You can—maybe that is for the record.

Ms. FLOURNOY. I am sorry. Okay.

[The information referred to can be found in the Appendix on page 91.]

The CHAIRMAN. But the gentleman's time has expired and I want to try to get to everybody.

Mr. Turner.

Mr. TURNER. Thank you, Mr. Chairman.

Ms. Flournoy, thank you for being here. Good to see you again. Appreciate your continued contributions to policy and the discussions of our national security.

In reading your testimony, one of the most important themes throughout it is the issue of deterrence—what does the United States need to do to continue to deter China.

You raised the issue of the technology. Obviously, their surveillance society represents a threat with Five Eyes and our allies and backdoor opportunities for China to freely access our data, our information.

And, certainly, they have been very forward leaning in their hacking activities with even the OPM [Office of Personnel Management] records that were being taken of Federal employees attributed to China.

And then we look at technologies and on page 2 you said, you know, China is investing tens of billions of dollars from hypersonics and robotics to quantum computing and, for example, hypersonics is not really modernization.

That is new technology, and we have fallen short in that. In fact, they have stolen a lot of what has allowed them to advance.

I would like you to talk for a minute about deterrence and what we need to do. You know, as they have hypersonics, most of our Chinese strategy has been basing in the area.

As you point out in your testimony, their ability to hold us at bay or threaten our troops in the area, land- or sea-based, is based upon the new technologies.

What do you see in our opportunity for hypersonics that may also hold them at bay? Do you think that they see as we fall behind technologically that they have an edge that could give them the ability to be adventuresome in the area?

Ms. FLOURNOY. Yes, I think that that is what they are hoping for, and I guess this connects to this. I think that numerical targets

like 355-ship Navy, X number of Air Force squadrons, you know, those are the metrics of the past and if we—you know, if we hold to those we will get this wrong.

That is not the right measure. The right things that we should be measuring are the time and scale of outcomes we can achieve that contribute to deterrence.

So can we hold the Chinese fleet at risk at scale in a 72-hour period. That is a pretty strong deterrent. You know, so what does that look like? In the near term, it may be cobbling together—it may be putting a Navy munition like LRASM [Long Range Anti-Ship Missile] on a bunch of Air Force B-2 bombers.

It may be—you know, in the longer term it may be the Army playing a totally new role, or the Marine Corps, of fielding distributed, you know, long-range artillery missiles, perhaps some of them hypersonic, across the Asia-Pacific that are outside the Chinese threat ring but can hold those ships at risk.

I am not suggesting we sink, you know, the Chinese fleet in one day. What I am suggesting is that if we could say to them, if you undertake this act of aggression you are putting your entire fleet at risk immediately—do you understand that. That might be pretty good for deterrence.

So we really have to rethink our metrics to look at what are the outcomes that we can achieve that would really meaningfully help deterrence. That is what we should be measuring ourselves against, not the number—the size of different parts of the force structure.

Mr. TURNER. Two quick things. Russia is, again, not modernizing their nuclear forces. They are actually deploying new capabilities—hypersonics, Skyfall, Poseidon.

China is looking, obviously, for a nuclear option for their new hypersonics capability, which are all first strikes capability.

One, do you see an opportunity for us as we see Russia breaking out from our nuclear limitations agreements to be able to include China and try to lessen the arms race that we are obviously well behind in?

And, secondly, with—there wouldn't be a nuclear North Korea but for China; what should we be doing to encourage China more on North Korea?

Ms. FLOURNOY. Okay. On traditional arms control with Russia, I actually think we want to extend START [Strategic Arms Reduction Treaty], keep that cap in place because it does constrain a lot of things. It does give us, you know, verification, intelligence, et cetera, and we don't want to reopen those areas of competition.

But in these other areas, new technologies like hypersonics, like cyber, like space, where they will have an impact on the domain of strategic stability, we absolutely should be having bilateral and multilateral discussions with the Russians and the Chinese to get—can we take certain really catastrophic scenarios off the table.

Like, we do not want to go there because it would be very bad for you and it would be very bad for us, so can we just put that aside.

Now, we won't succeed in everything. But I think exploring that area of how new technologies affect strategic stability is really, really critical.

The CHAIRMAN. And, again, I am sorry.

Ms. FLOURNOY. Yes. Sorry. Sorry we can't get to North Korea.

[The information referred to can be found in the Appendix on page 91.]

The CHAIRMAN. The gentleman's time has expired.

Mr. Carbajal.

Mr. CARBAJAL. Thank you, Mr. Chair.

Secretary Flournoy, in your prepared testimony you mentioned that the U.S. should leverage the unique strategic advance of having many allies and partners around the world but that this administration has departed from that approach.

I agree with you and believe that the departure from previous administrations' focus on a multilateral approach to China is undermining our long-term success.

How else do you see or would you say that this administration has diverged from the approach of the previous two Presidents?

Ms. FLOURNOY. Well, I think that the administration has paid a lot of attention to one metric, which is what allies contribute financially, and they have sort of embedded the military contribution inside a discussion of trade deficits.

I think that is way too narrow a view. We have to consider that, you know, an organization like NATO [North Atlantic Treaty Organization] declared Article 5 for us after 9/11. They came to our aid.

We would not have had the troops we needed in Afghanistan if not—if NATO didn't pony up 40,000 troops. We have allies and partners who have fought and died alongside us. That sacrifice, that willingness to be there—look at Australia, who has come no questions asked. You are going. You are asking. We are coming with you. I mean, that should count for something, not just the financial dimension of the relationship.

And the problem is, you know, there is no national security problem that the United States can solve, no matter how powerful we are, alone. We need allies and partners. And so I would really endorse your committee's efforts to say how do we really leverage a more strategic approach to security cooperation and investing in allies and building their capacity, their ability to defend their own sovereignty throughout Asia. I think that is a really important project for the future.

Mr. CARBAJAL. Thank you.

Mr. Hunter, how much of the U.S. reemphasis towards hypersonic development comes from meeting a warfighter requirement or peer competition with China and their development allegedly being ahead of the United States?

Mr. HUNTER. Well, you know, the U.S. has been pursuing hypersonic systems for quite a while. But it's been a very slow pursuit. And so what happened is the Chinese made a very quick effort and so they have been able to demonstrate some things that we had not as yet demonstrated. But the core of the technology was really developed in the United States, and if we choose to commit significant investment dollars, I think we can make equally rapid progress to them, going forward.

I think you ask a really good question, which is what commander need does that capability fulfil and it could vary differently across different regions.

To my eye, it does look attractive in the Indo-Pacific because of the ranges that are involved there. Other systems have a hard time reaching the fight from secure areas. And so hypersonic systems do seem pretty promising there. But I wouldn't want to get out ahead of the PACOM commander—INDOPACOM commander—in making that judgment.

It was referenced in an earlier point with the security fund about how do we meet—how do we help spur on meeting the INDOPACOM's requirements. A big piece of what that has been over the last several years has been the Strategic Capabilities Office [SCO].

A lot of their initiatives came out of INDOPACOM combatant commander requirements. So I am concerned that there has been an effort to kind of divorce what SCO is doing from combatant commander requirements.

I think that tie is really important to us delivering a set of capabilities in the hypersonics systems area that actually have utility for the warfighter. I think you really need that connection.

And let me just say on your question about the alliances, we have a very robust set of industrial—defense industrial cooperation alliances with the—with the Republic of Korea, with NATO allies, with Australia, and it is key to a lot of these technologies that we are talking about.

Samsung is a world leader in microchips and 5G. You know, the Australians are world leaders in quantum computing.

Mr. CARBAJAL. Let me get another question in before my time is up. What drives the U.S. need for hypersonic weapons and how is this driver different or the same for China in developing hypersonics?

Mr. HUNTER. I think part of the answer is that we need a diversity of approaches to solve the operational problems that we have in the Indo-Pacific.

So I do think hypersonic systems give us options in the case of a high-intensity fight that we wouldn't currently have. So I don't know that they are going to be necessarily critical to victory or failure.

But they definitely open up a space that do—can operate, you know, with a deterrence function to make the Chinese doubt that they might be able to succeed in some of their more aggressive plans that their military writers have written about that they could engage in in those island chains.

Mr. CARBAJAL. Thank you. Mr. Chair, I yield back.

The CHAIRMAN. The gentleman's time has expired.

Mr. Lamborn.

Mr. LAMBORN. Thank you, Mr. Chairman, and I certainly agree with you, Mr. Chairman, when you talked earlier about our resources are not infinite.

With that in mind, I am so glad that we have a strong economy, record low unemployment. There is a direct correlation, in my opinion, between a strong economy and a strong defense.

The stronger the economy, the stronger the defense, and that is why we can have these well-funded budgets of last year and next year.

So let me follow up on the great questions and the great answers already on hypersonics, and Ms. Flournoy, let me ask you. We tend

to concentrate on the offensive capability of developing our own hypersonic fleet.

But what about the defensive capability of using missile defense type technologies to cast doubt in the minds of the Chinese if they ever consider a potential first strike and to show that those plans would not be something they could rely on?

Ms. FLOURNOY. Right. So I do think we have to, as we develop these technologies and as the Chinese do, we do have to think about how we would also defend against them. And here, again, I think there's ample room for innovation. You know, I think there is a lot of interesting research and development going on in the area of directed energy and electric weapons.

If some of the electric—if some of the particularly electric weapons for ship defense, if these are borne out—and it's going to take some time, these are not around the corner—but, you know, if these are borne out over the coming years, it could fundamentally change the basic cost calculus of offense and defense and give the defense a real advantage in terms of much lower cost, high magazine, you know, ability to defend our ships at sea who would otherwise be vulnerable.

Mr. LAMBORN. Okay. Thank you so—thank you so much.

Now, you have all referenced the military-civil fusion between the PRC [People's Republic of China] and Chinese businesses. So for any one of you, the Chinese are paying close attention to the DOD's outreach to innovative agile companies in the private sector, which sometimes rely on venture capital.

And last month, Michael Brown, director of the Pentagon's Defense Innovation Unit, said he discovered that the Chinese were tied up in 15 percent of all venture capital deals.

So how should the Department of Defense handle relationships with private sector companies that are using venture capital, with this as a possible source of influence by the Chinese or subterfuge by the Chinese?

Any one of you.

Mr. HUNTER. Okay. Yes. I mean, this gets to the issue I have focused on for a while, which is the opacity of a lot of the financial arrangements that go on in some of these mergers and acquisitions and investments because private equity funds may be based in one country but fundamentally the money is coming from somewhere else and in many cases we don't know that information.

It is knowable. We can require them to report it. And so if a transaction comes into the CFIUS process, the government usually as probably I would expect them to be successful in obtaining that information.

But because there is a lot of voluntary compliance in the CFIUS system, the concern is there could be transactions going on that we simply don't know about that don't come into the process and don't get that level of scrutiny.

So I do think that is a core issue with the increase in a lot of these big hedge funds and private equity and sovereign wealth funds is we don't have good understanding of where the money is coming from and I don't have enough expertise on the financial side to know exactly what the right solutions there are. But the problem is very clear.

Mr. LAMBORN. Ms. Flournoy.

Ms. FLOURNOY. If I could just add. I absolutely agree we have to know where the money is really coming from. But we also have to make distinctions between entirely passive investment that is just interested in a good return on investment.

The vast majority of Chinese funding in Silicon Valley through venture capital is passive return on—it is a good way to make a return on, you know, investment. Better than the stock market, right.

But we need to be able to find are there cases where it is something else. They are getting a board seat. They are getting a controlling interest. They are getting a decision-making right—set of decision-making rights. They are getting access to nonpublic intellectual property.

Those are the cases that we absolutely want to use CFIUS to restrict. But if we don't make that distinction, you know, you are going to cut off a huge amount of blood flow in our own innovation ecosystem that does no damage because it's completely passive.

So I just—we have to—this is where we have to be—use the scalpel, not the sledgehammer. Be nuanced in our understanding.

Mr. LAMBORN. I thank you all and thank you, Mr. Chairman. I yield back my 3 seconds.

The CHAIRMAN. Thank you. And Doug, you get the gold star for the day. You got it done on time.

Mr. Moulton.

Mr. MOULTON. Thank you, Mr. Chairman.

Ms. Flournoy, I thank you very much for being here. It is great to see you, and I want to talk a little bit about reestablishing credible deterrence, which you said is the number one priority that we have with China.

Now, I was just refreshing my memory as to how many nuclear warheads our countries possess. America has 6,184 according to armscontrol.org. China has 290. That is a big difference. We have about 21 times as many warheads as China.

It is also a huge investment and it is an investment that we are reinvesting in to the tune of trillions of dollars, which is something that to some degree we have to do.

But I am curious, how effective is this deterrence against China?

Ms. FLOURNOY. You know, I think—I think nuclear deterrence for both sides puts the specter of escalation to nuclear conflict on the table and that is useful.

But, unfortunately, I think China has been consistently testing us as to what level of coercion, aggression, provocation can I get away with without the U.S. responding militarily, and they have been pushing the bar higher and higher and higher.

And so my worry is they might miscalculate and think, I can take Taiwan back by force and the U.S. isn't going to respond because, you know, they have shown—you know, because—so I am talking about conventional deterrence. I think we have strong deterrence at the nuclear level—

Mr. MOULTON. So just to—

Ms. FLOURNOY [continuing]. We may have overkill at the nuclear level. We probably do.

Mr. MOULTON. Well, just to put this in concrete terms, has this—has 29 times as many nuclear warheads as China stopped them from building islands in the South China Sea?

Ms. FLOURNOY. No. No, it hasn't.

Mr. MOULTON. Has it stopped them from doing—

Ms. FLOURNOY. It is really—it is a question of whether it would stop us from going to all-out conflict and put each other's homelands at risk.

Mr. MOULTON. Right, and I understand. Has it stopped them from stealing—

Ms. FLOURNOY. Yeah. No.

Mr. MOULTON [continuing]. Our intellectual property?

Ms. FLOURNOY. No. Nuclear deterrence is—I think nuclear weapons are for deterring other nuclear weapons—

Mr. MOULTON. So if I look at this chart that Russia has—

Ms. FLOURNOY [continuing]. And to make us hesitate to get on the escalation ladder to war.

Mr. MOULTON. Right. So Russia has 6,490 nuclear warheads. I happen to be a Member of Congress who thinks that Russia is an enemy of the United States—

Ms. FLOURNOY. Mm-hmm. Right. Right.

Mr. MOULTON [continuing]. And they are doing things to try to undermine our democracy. We need to have those weapons to deter Russia. I get that. But if—

Ms. FLOURNOY. Yes. Yes. And they also add a deterrent benefit for others—other nuclear powers that might consider using nuclear weapons. But I don't—but I don't think it is the way—

Mr. MOULTON. But I don't see how we are making the mark with the—

Ms. FLOURNOY. I don't think China is the sizing mechanism for our nuclear arsenal.

Mr. MOULTON. Right. But this is the problem. This is the problem. If China is our number one adversary and our number one investment in deterrence is nuclear weapons, then I just don't see how we are making the mark. So what kinds of investments do we need to make to deter China, not just to deter Russia?

Ms. FLOURNOY. Well, I think we have to try to keep nuclear weapons deterrence in the background and we need to make the—only the investments that are necessary to keep a safe, secure, and effective deterrent and no more.

We need to use arms control to try to keep the constraints on or drive them lower because we don't—any dollar that we spend more on nuclear—

Mr. MOULTON. Right.

Ms. FLOURNOY [continuing]. Capabilities we don't need is taking away from the investments we should be making in the conventional deterrents and the emerging technologies that will really make the difference in terms of preventing war.

Mr. MOULTON. So what kinds of other transformative deterrence structures or technologies can we make to actually be effective at deterring China, not just Russia?

Ms. FLOURNOY. No, I think—and this is where I think in the near term it is looking at concepts of operations and tweaks in thinking asymmetrically to say how do we impose costs on China

that will prevent them from launching an act of aggression. I gave the one example of holding their fleet at risk.

But this is—we went to school on the Soviet Union. We have all read the books of—that were written about how to deter the Soviet leadership.

We have not gotten inside the Chinese leadership, their strategic calculus, with enough precision and understanding—depth of understanding to know how do we really affect their cost calculus in the near term with what we have and in the long term with what we are investing in. That is the work, and most—in my mind, most of that if not all of that is nonnuclear in nature.

Mr. MOULTON. I mean, it is extraordinary to me, for example, how much money, effort, time, and government resources they are putting into controlling their population.

Ms. FLOURNOY. Yes.

Mr. MOULTON. The Uighurs, for example.

Ms. FLOURNOY. Right.

Mr. MOULTON. What is our—what is our deterrence strategy vis-a-vis that clear critical vulnerability?

Ms. FLOURNOY. Right. Well, it also—deterrence is not just military. You have to think about how are we using our political influence, our ability to compete economically.

We haven't even talked about One Belt One Road and how we respond to that, how we use human rights violations and their record on that to constrain their influence, more broadly. Those are all really important questions.

Mr. MOULTON. Thank you very much, Mr. Chairman.

Mrs. DAVIS [presiding]. Thank you. The gentleman's time was up.

Mrs. Hartzler.

Mrs. HARTZLER. Sure. Well, it is great to have you all here and to see you again. Appreciate your expertise. Very important discussion.

I would like to talk a little bit about the Chinese theft of sensitive U.S. military technology. Obviously, this is a very real concern, maintaining our competitive edge.

China, as you know, has developed two fifth-generation fighter aircraft, the J-20 and the J-31, which draw amazing comparisons to our F-35.

So, in your opinion, is DOD doing enough to protect our fifth-generation capabilities from theft and, if not, what more should the Department be doing?

Mr. HUNTER. Yes. So there is no doubt that the protections were inadequate in the past. I would not venture to say that we have solved the problem yet.

But you are right. I mean, there were massive thefts of intellectual property and other information from U.S. defense industry and other parts of U.S. industry more broadly, that the Chinese have taken advantage of.

In my testimony, I mentioned shortcuts and that was what I was alluding to. Have we tackled this problem?

We have not, and it is a tough one because, you know, we often focus on the cyber threat and how this stuff can be stolen electronically and that has absolutely occurred.

But that is not the only way. You know, the Chinese have obtained information by going into bankruptcy proceedings and getting access to—as evaluating—you know, being an acquirer they can look at information about a company and then don't even have to acquire it.

There is many, many avenues by which they have the ability to gain information about U.S. industry. But, certainly, cyber stands out as a critical one and the Department has this cyber maturity—cybersecurity maturity certification that they are setting up, which is the right thing to do to make sure that industry focus on that.

I do have some concerns about how that will be implemented, especially getting it stood up, that we don't end up forcing commercial companies out of our supply chain because they don't—can't go through the hassle of getting the certification on the front end and then end up, you know, declining to participate in our weapons systems programs because the certifications is not something that makes sense for them from a business perspective.

I think some of those issues will settle out over time. But there is a real issue on the initial implementation that we need to pay attention to.

Mrs. HARTZLER. Anybody else want to share a little bit?

Ms. FLOURNOY. I would just add there is the human capital dimension as well, the Thousand Talents program, which has sought to kind of recruit people recently retiring from industry to come over and lecture and spend time in China.

There have been efforts to use academic research collaborations to get at sensitive technologies. And, again, the scalpel, not the sledgehammer. There is a lot of flow—there is a lot of academic research collaboration in many fields that is actually—like health that is actually beneficial to both countries. But in areas where there is a national security application we want to be really careful and look at the human capital dimensions of the problem as well.

Mrs. HARTZLER. And I am so glad you brought that up because that was my next question. I have real concerns with some of the Chinese students that are coming into our country and doing high-level research at our universities and the potential threat that we have there. So you would suggest—what would you suggest?

Ms. FLOURNOY. Yes. I mean, I think we have to do—I mean, I think the vast majority of Chinese students coming are honestly not there for espionage. They are there because we have the best education system on the planet.

In the past, we have done a really good job of recruiting the best and brightest to stay and become Americans and bring their talents here.

Right now, our immigration policy is working against that and that is, you know—you know, shooting ourselves in the foot. But I think we do have to do a better job of vetting and we have to be very careful in terms of what kinds of work they are allowed to do and whether truly sensitive research that is going on we want to make sure that we know exactly who is allowed into those labs.

Mrs. HARTZLER. Is that a State Department—just to follow up a little bit, is that a State Department on vetting?

Ms. FLOURNOY. No, I think—I think that it has got to happen more—providing—helping universities have the tools to better un-

derstand the backgrounds of their students. But you may have ideas on this as well.

Mrs. HARTZLER. Yes, Admiral.

Admiral MCDEVITT. This past year—2 years—

Mrs. HARTZLER. Could you—I can't hear you.

Admiral MCDEVITT. I am sorry. This past year, the U.S.-China Security Economic Review Commission looked at this problem and in their annual—I am no longer on the commission but in the annual report it recommends two things: one, that the National Security Education Board that was—Higher Education Board that had been established in 2005 but was disestablished in 2018 by the director of the FBI be reinstated to take a look at this issue, broadly, to talk to university presidents and what have you. And the other recommendation is that the GAO [Government Accountability Office] take—somebody needs to gather the data, quite frankly.

Mrs. HARTZLER. Somebody needs to be what?

Admiral MCDEVITT. Somebody needs to gather the data—

Mrs. HARTZLER. Oh.

Admiral MCDEVITT [continuing]. On how many students there are, how many are in STEM courses.

The CHAIRMAN [presiding]. I am sorry. Again, we are going to have to leave that there. The gentlelady is out of time.

Admiral MCDEVITT. Anyway, it is in the report.

The CHAIRMAN. And we will go to Mr. Golden.

Mr. GOLDEN. Thank you.

I wanted to quote the 2018 National Defense Strategy Commission in saying that because gray-zone challenges combine military and paramilitary measures with economic statecraft, political warfare, information operations, and other tools, they often occur in the seams between DOD and other U.S. departments and agencies, making them all the more difficult to address.

Similarly, in February of 2019 in testimony before the Senate Armed Services Committee, the INDOPACOM commander, Admiral Davidson, testified that, quote, “Our adversaries are pursuing their objectives in the space between peace and war, using fear and coercive actions across the instruments of national power to revise the rules-based international order without resorting to armed conflict.”

Alongside like-minded allies and partners, U.S. INDOPACOM and the whole of U.S. Government must compete in a gray zone between peace and war to win before fighting, I think the point being that it would better to win this competition without a fight.

China's gray-zone activities such as the Belt and Road Initiative, information ops, and broader and more involved military exercises pose risks not only to us but I think just as importantly to our regional partners—perhaps more so to our regional partners.

So I wanted to ask the panel, in your assessment what is the Department doing well and what else should it be doing, working with the whole of the U.S. Government to better empower our regional allies not only to compete but to push back against these coercive efforts that they are facing from China? What do they need from us in order to make this an easier competition for them?

Ms. FLOURNOY. I will just say I don't think it's a Department of Defense lead, actually. I think that this requires an integrated whole-of-government strategy.

You know, first of all, we have to decide where do we care to compete. You know, we are not going to counter every One Belt One Road initiative nor should we.

But there are some that are—touch on our strategic interests and there we need to think about what is our response. It is not going to—you know, maybe the Chinese are building, you know, a soccer stadium and a bridge to nowhere. But maybe we could go in with digital infrastructure that really makes—helps a country join the sort of transparent open information system that, frankly, will ultimately counter the Chinese influence that they are trying to exert through their construction projects.

So we need to have a strategy is my point and then we need to look at what are the instruments we need to beef up—most of them will be nonmilitary, if not all of them—to really allow—you know, to be able to compete effectively where we need to.

Mr. HUNTER. And I would say I agree that DOD is not the locus within the U.S. Government nor should it be. But it is a player in the conversation. It is a participant, and I would say in some of our allied partner nations it is much harder for their ministries of defense or their military to be involved. Their governments just aren't structured in a way that really supports that.

So I think something DOD can do, working with partners and allies, is help them bring those national security perspectives into their own government conversations in a way that will help.

Admiral McDEVITT. DOD—well, DOD actually does conduct our own sets of gray-zone operations. If you listen to what the Chinese say, our reconnaissance flights around China in their EEZ [exclusive economic zone] that drives them crazy, we continue to do it. We continue to ignore their concerns about it, credibly.

The State Department or whoever coined the term debt-trap diplomacy was a great example of gray-zone pushback, if you will, on BRI [Belt and Road Initiative] and it caused China to really rethink the whole approach.

And so it's not that we are—it is all episodic, though. There is no central coordinating body. Obviously, that has to come out of the White House, the NSC [National Security Council] or something.

Mr. GOLDEN. Thank you. Obviously, the point being that we want to keep our allies in the region feeling confident in us as a partner and keep them in alliance with us.

Ms. FLOURNOY. Absolutely.

Mr. GOLDEN. Real quickly, I just wanted to point out to the committee as we talk about deterrence and everyone is always thinking about hypersonics, about, you know, Navy ships, what does the fleet of the future look like, the Commandant of the Marine Corps, General Berger, has put out a white paper where he is talking about pivoting the Marine Corps back to naval expeditionary purpose that was its original mission and one that it has not been focused on for some time, and he has specifically said that he wants to build a force that can facilitate sea denial and assured access in support of fleet and joint operations.

I think that that is a likely potential successful deterrent if we support that pivot and I hope we will have some opportunity to talk about it in this committee in the year ahead.

The CHAIRMAN. Thank you.

Mr. Scott.

Mr. SCOTT. Thank you, Mr. Chairman, and I want to thank the panel for being here. We are finally getting to the issue that I want to talk about more, which is the Belt and Road Initiative—what some refer to as the debt-trap diplomacy, what I refer to as the recolonization of Africa and other parts of the world through payday lending schemes orchestrated by the Chinese Communist Party.

And Admiral McDevitt, you wrote in your testimony it is difficult to overstate the important role that BRI plays in enhancing Chinese influence globally. In the case of BRI, seaport enhancement projects stretch from Greece to Malaysia. I have been to Djibouti. I have been to several of the countries in that part of Africa. I have also been to West Africa.

Secretary Flournoy, the one thing I would add to your statement is that when you talk about Indo-Pacific and the partnership need there, I would simply add Africa to that as well. And perhaps it is just that I have spent more time there than I have in the Indo-Pacific.

But I no longer believe that China is interested in operating in universally accepted global interest, as some believe; some didn't believe that when their economy took off that they would be—that they would be good stewards.

But I want to ask you, there is—the debt-trap diplomacy, what I refer to as the recolonization of vast areas of the world through the payday lending scheme—the BRI of Communist China—as we talk about other ways to build partnerships, one of the things that is being discussed right now is moving U.S. troops out of Africa.

I have been with some of those U.S. troops in Mali, Niger, Nigeria, and that Lake Chad Basin area, and MINUSCA [United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic], which is the largest U.N. peacekeeping mission in the world, if I am not mistaken. The one thing I remember very well from that trip is the discussion about the damage that China is doing throughout that part of the world with, effectively, using the Belt and Road Initiative to steal the countries' assets—to steal countries' assets without any benefit to the general public.

What is the best way for the U.S.—not just the U.S. but the globe, the rest of the world powers, to counter that in both Eastern Africa and Western Africa, and how do you counter it if you actually pull the U.S. troops out of there?

Ms. FLOURNOY. I will take a stab at it. I do think, again, you need a whole-of-government approach. Some of the most powerful instruments will be USAID [United States Agency for International Development] programs—

Mr. SCOTT. I agree.

Ms. FLOURNOY [continuing]. OPIC [Overseas Private Investment Corporation] programs to help incentivize private sector investment in the areas we care about, the whole digital development initiative that has been started.

So I do think those economic instruments and particularly things focused on digital infrastructure are very, very powerful tools that we are underutilizing.

But I do think that where we have either interests—counterterrorism interests or we found partners who actually want to take on the fight on their home soil but they need some help—they need some training, they need some enablers, they need some support—that that is a very cost effective way for us to protect some of our interests and gain the political influence that comes with that without making—putting our guys kind of on the very front lines of combat in areas where, you know, others are willing to step up.

So I do think our troop presence carefully tailored makes a difference.

Mr. SCOTT. Would you agree that our troop presence is what allows USAID to operate and what allows other nongovernmental organizations to operate?

Ms. FLOURNOY. Depends on the area. In high-conflict areas—

Mr. SCOTT. It is a fair question. A fair statement.

Ms. FLOURNOY [continuing]. It certainly is relevant. In others, less so. But we want to make sure it is integrated for sure in terms of looking at all the dimensions of strategy and how we approach individual countries.

Mr. SCOTT. My concern is that if we pull—if we pull what amounts to a very small number of troops out of certain areas, that nongovernment organizations that provide services to the public—health care, education—

Ms. FLOURNOY. The security environment may not be—

Mr. SCOTT [continuing]. Then they will not be there. And I would just point out, Admiral, that you accurately state, you know, China has the ability to wreck their economies—talking about China's neighbors.

If China would intentionally wreck an economy of one of their neighbors, then you can bet your bottom dollar they will wreck the economy of a country in Africa, and we need to make sure that when it comes to trade agreements and other things, that we are providing some information that maybe less sophisticated countries need when they are engaging in that fashion with China.

The CHAIRMAN. And the gentleman's time has expired.

Mr. SCOTT. Thank you.

The CHAIRMAN. Ms. Houlahan.

Ms. HOULAHAN. Thank you, Chairman, and thank you, Mr. Scott, for your questions. Mine are going to follow up largely on those questions as well and largely be directed to Ms. Flournoy.

I am also really curious as a member of both this committee and also the Foreign Affairs Committee, specifically on the Asia and the Africa Subcommittees, about if we have any real understanding of how the investment of China in Africa—what implications it has to our own national security.

Has there been any sort of overall study or understanding of that that we can reflect on, is my first question.

Ms. FLOURNOY. So I think there has been some great outside work. I know that my old think tank, CNAS [Center for a New American Security], has done some very good work looking at this from a strategic perspective and making recommendations. I am

sure that others like CSIS have as well and perhaps CNA. I don't know.

So there is good think tank work out there that I would commend to you. But I think there—I do want to add that the—we do need a strategy. We need priorities. We can't counter it everywhere nor should we.

There is a very powerful tool we have in transparency. The more people understand the terms that China has imposed on some of these countries the more wary that others will be in going down this road. So that transparency, advertising it, making sure people know what they are walking into, providing that technical assistance in some cases, that is very important.

Ms. HOULAHAN. And you touched a little bit on it with your conversation with Mr. Scott in terms of the fact that we can't necessarily respond directly to every single aspect of China's Belt and Road Initiative but maybe we should be more strategic about how we respond and you talked a little bit about the digital response as an example.

Are there any other examples of those responses? Have we studied anything? Sir, you seemed very interested in that.

Admiral MCDEVITT. I just read something this morning that one of the success stories of Japanese-U.S. cooperation is with Myanmar, Burma, and sitting down and talking with them and empowering them to renegotiate the deal that they had already made with China and vastly improve the financial implications for Burma.

And those are the sorts of things that we have been trying to do piecemeal around the world where people are willing to listen.

The truth of the matter is, as I put in my testimony, given the fact of Chinese largesse, no-questions-asked lending and what have you, they have a whole bunch of people around the world that are willing to toe the line on Taiwan and Tibet and Xinjiang and not do anything to upset the Chinese in order to keep that no-questions-asked-funding flowing to keep their internal developments going.

And so China shows up with a credit card and a full billfold and it is very difficult to—for countries that can't get the money anywhere else.

Ms. FLOURNOY. I would just add, though, the important—the big point here I think is we shouldn't be doing this alone. We should be doing this with our allies who have very shared interests in this area where we can put together a coalition with the Japanese, the Australians—you know, others who can collectively fund alternatives. We will be much—have a much better chance of competing successfully.

Ms. HOULAHAN. And with my remaining time I was wondering if you all had any comment on what the implications of our current combat operations are, current movement in the Middle East has towards our posture towards China.

Are you worried about that at all as we—the strategy of the current administration was to look to China and Russia and now seems to be going somewhere else.

Admiral MCDEVITT. There is only so many ships can be only so many places, and every time you have a large naval buildup or an

Air Force buildup in the Middle East that is—those are the same rotational forces that could be assigned to the Western Pacific or elsewhere in the Indo-Pacific that aren't there.

Ms. FLOURNOY. Also a matter of mindshare and senior leader bandwidth. These crises, you know, wipe everything else off the agenda. And so, you know, Secretary Esper was out in the Reagan Forum saying, my number one priority is China, China, China.

When he has a week like he had last week, he is not spending a lot of time on China because—you know, so I think there are real costs in both resources and in mindshare and what we need right now is a lot of creative thinking about Asia.

Ms. HOULAHAN. Thank you. And Mr. Hunter, do you have anything?

Mr. HUNTER. Well, let me just say briefly on the—kind of the Africa point that I think there is a strong role actually for DOD engagement there, although I agree that it is a whole-of-government problem and the ally point.

But we do have to be careful because when we work with partner military organizations in Africa there is a possibility—a potential—that that can lead to coups and other things.

Where I think we have had a lot of success is with the Department's logistical capacity. So when we have gone to Africa and helped with the health care emergencies they have had because we can bring in medical supplies and that logistical capacity through things like LOGCAP [Logistics Civil Augmentation Program] can be really helpful.

Ms. HOULAHAN. Thank you, and I have run out of time and I yield back.

The CHAIRMAN. Thank you.

Ms. Stefanik.

Ms. STEFANIK. Thank you, Mr. Chairman.

Secretary Flournoy, I wanted to drill down on a particular emerging technology and that is artificial intelligence. We have worked very hard to encourage and mature the Joint AI Center [JAIC] to have a more comprehensive strategy from the Department.

Can you give your assessment on the JAIC? And I also want your recommendation. I am going to visit the JAIC pretty soon here and what questions, if you were me, would you ask of folks when I do visit the JAIC?

Ms. FLOURNOY. So I think that General Shanahan has done a fantastic job of creating something meaningful out of nothing and under initially severe funding constraints—and I applaud the additional funding that you have been putting into the organization as it matures. I think that the JAIC has a lot of promise.

I think it is very, very important to, you know, inform setting of common standards and ethical principles, policies, and, you know, set priorities for what we are doing in AI across the Department.

I think one of the biggest things you may ask about is what kind of senior and mid-level kind of program manager kind of tech talent do they need and what could Congress do to better support them accessing that talent.

Very hard to take someone who has never managed a software development program who comes from, you know, a traditional ac-

quisition background, put them in that role for 2 years, and expect them to be successful.

So there is a training component. There is an attracting talent component. There may also be a financial component. But I think—I think at this point, the long pole in the tent is getting the right talent.

You now have a fantastic CTO [Chief Technology Officer] who is incredibly well regarded in Silicon Valley. He—just him being there will attract people to come want to work for him. But we need to make it a lot easier and reduce some of the obstacles to getting that talent.

Ms. STEFANIK. Thank you for that.

Switching to cybersecurity and a technical question—and this is, again, for Secretary Flournoy—are there any discussions or concerns about the potential installation of Chinese optical fiber and related Chinese photonic components in a DOD network or through our private contractors who are contracted to work with the DOD network? I see folks nodding their heads. So if others want to answer as well.

Ms. FLOURNOY. Short answer is yes, and I think this is where we need to really scrub any dependency we have on any Chinese supplies and parts.

Some may not matter. It may be fine. Some of them are really not okay at all and could be very compromising either—you know, from any number of perspectives. But if there are others who have looked at this more closely and want to comment, I am happy to let you do so.

Admiral MCDEVITT. I would just say that the undersea cable networks that connect the world are all done by—are all privately owned. There are no state owned. And these are private contractors who are building this.

And so yeah, we are liable to wind up with Chinese optical—Chinese material that is in some of these cables that are being laid.

And I honestly don't know what the fix is but if the material itself gives—creates a situation where that data could be stolen or interrupted, that would have huge financial implications for the world.

Ms. STEFANIK. And I just have a slight time left so I am going to jump in here. We have touched upon the importance of allies and partnerships, and as we think about countering the One Belt One Road Initiative, when we think about countering China's significant state investment in emerging technologies, I believe that one of our greatest strengths is those partnerships and working with our closest allies.

I look at the effective R&D that we have pursued between the U.S. and Israel, for example. What are specific initiatives that you would recommend we make investments in and with which particular countries? Because there are countries that are leading in different sectors.

Mr. HUNTER. Yes. So one recommendation—it may or may not require legislation but we have developed these OTA [other transaction agreement] arrangements which have the potential to be incredibly useful for working with allied and partner nations and national champions or technology leaders in other countries. But I am

unaware as of yet that there is an OTA consortium that includes a foreign firm.

I think we should have those. We should have purpose-built OTA consortia so we can work on those kinds of issues with partner nations where they have leading firms in key technologies.

Ms. STEFANIK. Thank you. Secretary Flournoy, 15 seconds.

Ms. FLOURNOY. I would just add I do think that in each of the technology sectors we want to identify who are the leading allied technology partners and seek to use things like OTAs and other funding authorities to try to really leverage their assistance and have some more in the way of joint projects.

Ms. STEFANIK. Thank you. Yield back.

Mrs. DAVIS [presiding]. Thank you.

Mr. Brindisi.

Mr. BRINDISI. Thank you, Madam Chair.

Building on some of the questions regarding investments in information technology, I am particularly concerned about DOD keeping pace—keeping pace with China in terms of our investment in information technology, specifically, quantum sciences.

It has been fairly well documented that information warfare is a core strength of the People's Liberation Army and in recent years China has aggressively invested and increased the pace of its quantum research.

It has been publicly reported that China has surpassed the United States in many areas of quantum research, which is deeply troubling because there is no doubt that early adopters of quantum technologies will gain significant military advantages.

For example, quantum computing could be used for more effective artificial intelligence algorithms, highly secure encryption of communications to defend against hacking, and accurate navigation that does not require GPS [Global Positioning System] signals.

So, Secretary Flournoy, I am worried that we are slightly slow to fully recommend the massive importance of quantum technologies and invest accordingly.

Do you feel we are investing adequate resources fast enough in order to keep pace with China regarding quantum information science research?

Ms. FLOURNOY. I will say I have not looked at this at the level of detail that I can definitively answer that question. But I do think this is an area where we absolutely must compete.

I think DOD, using its own research and development moneys, has a role to play. But I also think we need to be using things like tax incentives and civilian R&D, university research R&D to try to pull more effort from both universities and the private sector into this area.

Because I agree with your assessment. It is absolutely critical that this is an area where we keep our edge.

Mr. BRINDISI. Any other?

Mr. HUNTER. Yes. I would add, you know, quantum is really hard. I think there is a general perception, you know, when you look at these key technologies that are identified in the NDS, they are all important, some of them much more near term than others, and I would probably say of those quantum is more of a reach than some of the others.

Having said that, I also think in that respect DOD's role here could be larger because I think it is going to take some time for, you know, the VC [venture capital] sector and others to really see the kind of return on investment they are looking for in these technologies.

So there is an opportunity for DOD to take a leadership role and shape the development of the technology globally and in the United States, and that is something we should seize on.

That doesn't necessarily require a massive investment of dollars but it does involve, you know, a commitment and having a clearly identified research community within the United States with DOD involvement to push forward on it.

Admiral MCDEVITT. I would just say that my—I wish my 15-year-old grandson was here because he is really into quantum. I don't understand what he is talking about.

But, no, seriously—

Mr. BRINDISI. He can educate me, too.

Admiral MCDEVITT [continuing]. That really is—

[Laughter.]

Admiral MCDEVITT. I was a history major. Give me a break.

Mr. BRINDISI. Me, too.

Admiral MCDEVITT. But the reality is this really is something that China is putting an incredible amount of effort into. And so they see great advantages by—to taking the lead in this.

So this is one that I think that we definitely do not want to find ourselves behind the power curve.

Mr. BRINDISI. I know you mentioned the NDS. The 2018 National Defense Strategy outlines that we must prioritize research and development of emerging technologies like quantum science, artificial intelligence, and machine learning.

China seems to have taken a much more whole-of-society approach than we are. China's military-civil fusion program seeks to explicitly foster ties between the military and civilian enterprises in order to improve military technology, drive innovation, and foster economic growth.

China is showing a clear commitment to investing heavily in game-changing technologies like AI, machine learning, quantum computing, and while I am encouraged by recent steps in the right direction that we have taken, I also believe that the United States needs to double down on its commitment to develop these technologies before our adversaries.

Mr. Hunter, part of my reason for my amendment to create a new Quantum Information Sciences Innovation Center in this year's NDAA was to foster these collaborative relationships in order to accelerate quantum research.

Do you believe there are—there is an adequate amount of collaboration on the research and development of quantum, AI, and machine learning technologies across the different departments, industry, and academia currently?

Mr. HUNTER. I would want to maybe distinguish between quantum and AI in that. I think—I think there is more we can and should be doing in AI.

On quantum I think we have been pretty proactive. By we I mean the U.S. Government and the Department of Defense has

been pretty proactive working with the key industry players and being aware. That doesn't mean we should stop or that we don't need, you know—and then I would also add the international piece to this because, you know, the Australians have quite a bit of capability with quantum and we can leverage our alliances there to help as well.

Mr. BRINDISI. Thank you.

Mrs. DAVIS. Thank you very much. Thank you.

Mr. Banks.

Mr. BANKS. Thank you, Madam Chair.

Biometric identifiers such as fingerprints and facial recognition, DNA, retina, and other personal markers play an increasingly important role in military technological capabilities and threats.

In December, the DOD issued a directive advising U.S. service members against using genetic testing kits such as 23andMe. The memo states, quote, “The test could expose personal and genetic information and potentially create unintended security consequences and increased risk to the Joint Force and mission,” end quote.

So whether it is TikTok or facial recognition apps on an iPhone or 23andMe DNA testing kits, Ms. Flournoy, what could the possible national security implications be if an adversary like China gained access to the genetic makeup of our U.S. service members?

Ms. FLOURNOY. I think the risk is that the development of bioweapons or potential bioweapons is moving into the realm of using genetically modified approaches. So if there were significant genetic differences between, say, you know, the American population in general and the Chinese population in general and something could be designed that would, you know, be very damaging to an American but, you know, a Chinese person would be relatively more protected or less susceptible or what have you, you know, you could imagine going down that road. It sounds very sci-fi like, but that is where the cutting edge of the research could go.

I think in this country there are ethical constraints and legal constraints on going there but in other countries that may not be so. So I think that is what, you know, people are worried about is, you know, is there information that we think is harmless today but could be really misused in the future against us.

Mr. BANKS. Mr. Hunter, maybe you can—could you maybe elaborate or speculate more on why the DOD wrote the memo advising our service members not to participate in Ancestry.com or 23andMe type genetic testing kits?

Mr. HUNTER. You know, when you consider what could be done with this information, I think we all on a daily basis—you know, you read the articles about the way in which we can all be tracked by people getting access to our cell phone information and the pings that our cell phones are sending out every day, and someone can completely map out your life.

So from an espionage perspective, if you know where someone is spending all their time and, you know, first of all, you can go find them there. Secondly, you might discover things that would be personal reliability risk factors. If they have—if they have health issues maybe in the family, maybe that is something that could be leveraged from an espionage threat perspective.

And, you know, when it comes to genetic information you are going to—they are going to find out a tremendous amount about someone's family and their structure, and that could, again, pose a risk for being targeted for espionage.

Mr. BANKS. Ms. Flournoy, in your opinion, is the DOD adequately resourced to counter China's biometric warfare efforts?

Ms. FLOURNOY. Honestly, I haven't looked at it to know and give you a good answer. I am happy to—I am happy to look into that. But I think it is certainly an important area where both our intelligence community and our broader defense and national security community we need to take care.

Mr. BANKS. Mr. Hunter.

Mr. HUNTER. You are asking about biometric with respect to—could you just—I am sorry, just repeat—

Mr. BANKS. Are we adequately addressing this threat and what can we do to better resource the DOD to battle back against it?

Mr. HUNTER. Yes. Well, I have to admit when I think about biometrics it's usually from the perspective of how we leverage it. You know, we did a tremendous amount of use of biometrics in Afghanistan to try and understand who we were working with and to identify people coming onto U.S. FOBs [forward operating bases]. And so, you know, a lot of the effort within DOD has been how to leverage that information, how to share that information because it is really challenging to do all the data transfers necessary to actually—when someone walks through a door you identify them to get that information to the person who can do something about it if they are a threat.

Well, if you flip it around and say what is the risk of, you know, Chinese technology being used to track and monitor U.S. personnel, I agree, that is one I haven't spent as much time thinking about how we would get after that problem.

Mr. BANKS. Thank you very much. I yield back.

Mrs. DAVIS. Thank you.

Mr. Gallego.

Mr. GALLEGO. Thank you, and Rear Admiral, you kind of hit upon this earlier. When Ambassador Harris was Admiral Harris, he advised the committee that the area in which we had the most significant dominance was in undersea domain.

In an environment where our surface assets are threatened, is there a coherent strategy relying on those undersea assets to maintain deterrence?

Admiral MCDEVITT. Do you mean undersea—do you mean submarines?

Mr. GALLEGO. Yes.

Admiral MCDEVITT. Right now, at least on the 7th Fleet fact sheet that is on the internet they say that on an average day there is somewhere between 8 and 12 nuclear attack submarines in the Western Pacific, and in my testimony I suggested that needs to be increased to, say, 10 to—or 12 to 15.

And it would be useful, I think, to have four of them homeported in Japan. We have four in Guam and put four on Japan.

At 20 knots, if a submarine leaves Pearl Harbor, it takes 9 days to get to the Taiwan Straits, and so that is a long time if you are

looking to plus-up the number of resources that you have there because—to deal with Chinese ships and what have you.

So is there a strategy? Obviously, the Navy has a force assignment and allocation process in place but is there a strategy based upon having how many submarines would we like to have on a day in and day out basis to be able to, as Ms. Flournoy said, sink the Chinese navy, then I am sure that is—I am sure somebody knows what the answer is but I am sure it is also classified.

Mr. GALLEGO. Ms. Flournoy, yes, can you expand? I am very interested in your idea in terms of the deterrent factor of, for example, sinking the Chinese navy. Are we actually rightsized for that?

Ms. FLOURNOY. If I—if I could just say, there is a big important set of force multipliers for the undersea competition and that is unmanned systems—for ISR [intelligence, surveillance, and reconnaissance], for strike, for counter mine, and particularly the larger, extra large UUVs [unmanned underwater vehicles]—and this is a classic area where the Navy needs to be able to have some of these to experiment with, to develop concepts, and then procure at scale.

But in terms of—again, that was just one example. What I am trying to get at is, you know, when we face or try to deter a nuclear power from going to war over their vital interest and something that we also care deeply about, but they may perceive that their interest is stronger than ours, what can we hold at risk credibly without necessarily, you know, walking up the nuclear escalation ladder.

And so I think—and if you can hold at risk the very assets they would need to launch the aggression or carry it through and that the costs of—to those assets would be quite—not just tactical but strategic, then I think, you know, that is—that is what we need to think about.

I think if we developed some new operational concepts and made some tweaks we do—you know, there are munitions we have today and platforms that we have today that if we were to make them—they're cross-service, but we could put them together in ways that would give us a near-term kind of interim solution or, you know, option, and there are probably others.

So, again, the really important part of this is funding the concept development experimentation efforts, things like the SCO that take really hard problems of the combatant commanders and say, I know maybe I will solve it in 10 years when new technology is here, but I don't have that long. I've got to solve it today and tomorrow, in the next 5 years—how do I do that with what we have, and really put some serious effort behind those creative concept work and then technology tweaking and cross-service work to get to some of these solutions. The one I gave was just an illustrative example. I am sure there are a hundred other good ideas out there.

Mr. GALLEGO. Thank you. I yield back.

Mrs. DAVIS. Thank you. Mr. Waltz.

Mr. WALTZ. Thank you, Madam Chair.

So just to set the table for a moment and to be very candid, I think we are in a new Cold War with China. They certainly have been with us for some time. I think the policies that we are seeing under President Xi has accelerated that dynamic.

I don't think the United States in many ways across our whole of society has fully woken up to what Xi has explicitly stated he wants to go and where he wants to go in terms of global dominance.

But if you look at how the U.K. [United Kingdom] essentially peacefully stepped aside as a global leader post-World War II and the United States essentially made that a *fait accompli*, there is a large body of analysis out there that I have seen that essentially wants China or believes that China is going to follow that same model.

So that if you look at what we are facing over the next 10 years, particularly right around 2030, Chinese military dominance on the cusp, if you buy—if you buy into the fact that they plan to do this by 2035, our entitlements going upside down, our debt reaching 100 percent of GDP [gross domestic product] if not sooner, their navy larger than ours in quantity and possibly in some cases quality as well.

So it really is a perfect storm in many ways for them to make that essentially a *fait accompli* for the United States to begin sharing if not stepping back from the world order that I think many take for granted.

So going back to a deterrence model and what we can do now, between now and then, Ms. Flournoy, or really for the entire panel, what would be more of a deterrent, getting inside the Chinese thinking, what they fear the most. Is it things like, for example, a free Hong Kong? The Uighurs on its western—on its western flank, so to speak, in its western boundary? A rearmed Japan? Denial to our capital markets? A unified Korea? Are those things—what would deter Chinese behavior and aggression more? Things like that or a few more submarines in the Western Pacific?

Because I would argue—I am probably showing my cards—that it would be the former, not the latter, and I completely agree with you, Ms. Flournoy, in counting ships and counting planes, one, isn't the right metric but, number two, it is not one on the current economic paths that both countries are on that we could win.

So I really—I mean, I think a lot of this back and forth today has been great and illustrative. But I don't know that this committee is really thinking about or, frankly, or the administration, the American society is really thinking about this in the right way and in a creative way. And I would welcome your thoughts on that kind of premise.

Ms. FLOURNOY. Yes. This is why I started my testimony with saying I realize this is the HASC [House Armed Services Committee] and we are focused on military dimensions of deterrence. But this is a whole-of-government and a whole-of-nation challenge, and the Communist Party cares about one thing, which is staying in power in China, period.

Mr. WALTZ. The Iranian regime as well, I will throw in there.

Ms. FLOURNOY. And—yes, and so there are lots of ways that we can help them to be very preoccupied internally and also that we can use their missteps in places like Hong Kong or if they were to overreach in Taiwan to mobilize the world to push back on their coercion and their aggression.

I think, again, this is not—we have to think in terms of allies and partners. You know, the U.S. trying to counterbalance and constrain China's negative behaviors is much harder than us rallying other like-minded states—democracies—who want to push back on authoritarian systems in general and certainly don't want a world order in Asia that is defined by Chinese coercion.

Mr. WALTZ. Completely agree. And just in the interests of time, if there is any hard recommendations. I am also on the Science and Technology Committee and we are wrestling with on the one hand dramatically increasing our authorizations and investments; on the other hand, not using those investments then or finding ourselves in a situation where those investments are essentially supplementing the Chinese who are taking advantage of our very necessary openness.

So how do we, on the one hand, make those investments that we need, keep it open enough but also block and tackle that—you know, those then new technologies running right over to Beijing? I am talking National Science Foundation, NIST [National Institute of Standards and Technology], you know, those other areas that have, frankly, from a cultural standpoint have not really kind of bought onto this threat and—

I yield.

Mrs. DAVIS. Thank you. We are going to have to—we are going to have to stop it there, and I know that you have been adding to those questions along the way.

Thank you. Ms. Escobar.

Ms. ESCOBAR. Thank you so much to our panel for being here this morning. Really appreciate your time. I have learned a lot through our discussion today.

I was especially interested in your opening, Secretary Flournoy, where you talked about how part of what would make us stronger in terms of our competitiveness against China is investing in ourselves, investing in our R&D, investing in STEM.

Mr. Hunter, you talked about the challenges in our workforce with regard to so many foreign students, and coming from a university that—where I get to boast that the vast majority of our STEM university graduates are American citizens ready for clearance, we see the competition with other universities where there are a lot of foreign students. And so it makes it more challenging, obviously, because of the clearance issue.

Now, with regard to the—your testimony, Ms. Flournoy and Mr. Hunter, you all mentioned the need for flexibility in contracting when it comes to new technology and smaller innovative companies.

Can you both share your perspective on whether efforts like Army Futures Command are hitting the mark? Also, are we doing enough to support the vast array of technologies and competencies like advanced materials manufacturing facilitated by 3Di printing?

And finally, is Congress providing the necessary support for this agility? If not, what else can we do? I know that is a lot of questions. Tried to squeeze them in.

And then, Admiral, if you have anything to add I would appreciate your thoughts as well.

Mr. HUNTER. Yes. On Army Futures Command, to my mind it is still fairly nascent, which is not a critique because it takes time to establish a four-star command.

I am highly encouraged by the work done by the cross-functional teams [CFTs]. I think it is—you know, there are six of them and so—at my last count. It could be updated.

And so I think they are not all the same, right. They aren't all achieving the same things. I am most familiar with the Future Vertical Lift CFT—vertical lift aviation—because we have done some work with them where I think they have come up with some very creative approaches to make a generational shift to a next generation of technology.

And I think that the work that the CFTs have been doing is what I right now think of as what Army Futures Command is accomplishing and I think a lot of it is very positive.

I want—I hope that we reach an outcome where the CFTs and the goodness that they have brought to the Army's modernization program is sustained and brought forward by Army Futures Command and not supplanted by Army Futures Command and the structures that it puts in place.

And I do have to say, you know, the Army has been the leader in the use of other transaction authority agreements. So they have been on the cutting edge of these more flexible tools for reaching out to nontraditional partners and they deserve full credit for that.

So on the whole I would give it a pretty good grade at the moment. But we still have to keep our eye to make sure that the bureaucracy doesn't kind of solidify around some of what they have been doing.

On additive technologies, I do know—I think that is still a huge area of opportunity for the Department of Defense. I think the capabilities that additive brings really suit very well to military missions. You know, the example a lot of folks talk about is having a 3D printing machine on a carrier where they can print the parts and not have to go back into port or ship them out.

The military applications are really, really well tailored to that technology.

Ms. ESCOBAR. Thank you.

Ms. FLOURNOY. And following up on your question in the spirit of Representative Thornberry's request for concrete proposals, so this committee has done an incredible job of seeding lots of, you know, authorities types of support to try to spur the Department to innovate.

I think what we need now is a couple of efforts to kind of really assess what is working, what is not. I would love to see, like, an end-to-end analysis to sort of say if you're a small company and you start with a SBIR [Small Business Innovation Research] contract in the Air Force, then you get an OTA to prototype.

Then you—like, almost an end-to-end how do these—this patchwork fit together into a path that a small—that is repeatable and that companies can be successful moving down. Where are the gaps, where do they—you know, in practice where are they falling through the cracks, where are they stumbling and getting disconnected, where are they—you know, what—so to really assess, put it all together as a journey, because that is what the experience is

for these companies and how do we help them make the full journey, those that, you know, are successful.

The other thing is sort of traditional, you know, management consulting portfolio analysis. Again, lots of things have been tried. In some cases, it is too early to assess whether Futures Command is succeeding.

But can we start doing some regular portfolio analysis by this committee to say what is actually working out there, where are the wins, and how do we double down and start scaling those, and if it is happening in one service how do we get it across all the services, and so forth.

Mrs. DAVIS. Thank you, Ms. Flournoy. I think we really do want to put that piece together. I appreciate it.

Ms. ESCOBAR. Thank you.

Mrs. DAVIS. Mr. Wittman.

Mr. WITTMAN. Thank you, Madam Chairman. Thank you to the panel members too for joining us today.

Admiral McDevitt, I would like to begin with you and follow up on your written testimony where you talk about the track for the Chinese navy and where it'll be in 2035 with, essentially, 420 ships, about 260 of those blue-water ships, the other 160 various other types of ships.

Again, I am pretty taken aback by that 420 ships. That is a pretty significant navy and that doesn't include various auxiliary ships, minesweepers, smaller amphibious ships. In fact, to put that in perspective, just this last Sunday, as you know, the Chinese commissioned a Type 055 *Renhai*-class destroyer.

Now, that is on par with our cruisers and they are going to be using that to support carrier strike groups, and we saw recently they commissioned their second aircraft carrier, the *Shandong*, who allegedly can support 36 fighter aircraft.

So they are building quite a capacity, and if you look at where they are going with large transport ships, amphibious transport dock ships with larger platform amphibious ships capable of carrying aircraft, they are on track not just to be a near-peer competitor but—and to be a pacing threat but be one that we are going to be far behind as they are pushing with everything they have got to build a 420-ship navy by 2035 and we are doing everything we can just to try, to try to get to 355 ships, not to mention that the big sucking sound we are getting ready to hear in years to come out of the shipbuilding account is going to be *Columbia* class.

And certainly we need that, but that is \$128 billion that would come right off the top in the shipbuilding account, and we had a discussion about that the other day about national sea-based deterrence and trying to not have other shipbuilding programs be the bill payer for *Columbia*.

I want to go to Admiral Gilday's words yesterday at the Surface Navy Association. He said, "If we believe that we require overmatch in the maritime, if we believe that we are going to execute distributed maritime operations and operate forward in greater numbers now, that we need more iron, then we need more top line."

And to this end, I ask you this. Can we hope to keep up with the Chinese, our pacing threat, and not let them so surpass us that we have not the impact we need to deter in the maritimes?

If we continue down the road of the formula of one-third, one-third, and one-third for our service branches, since in the future, or, I would argue, even today, the tip of the spear, that capability to be there on station to be able to deter and to react and to act is there in the maritimes with the Navy-Marine Corps team?

And no detriment towards our Army and Air Force brethren, but I just want to get your perspective on that.

Admiral MCDEVITT. You know, as a former naval officer—as a retired naval officer, one part of me is saying hear, hear. But in truth, I think we need to not be too carried away by the numbers game with regard to the PLA navy.

I talked about the numbers game just to give some sort of a sense of how big the breadbox is, quite frankly. But we also need to remember that the Navy we have and that we will have for the foreseeable future—you know, the ships that are here today or we are building tomorrow are going to be with us for another 30 years or so—is we still have a qualitative advantage.

We may not have a numerical advantage. And, certainly, we don't know how well those ship—the Chinese ships actually are in terms of can they maintain those things when they are out 6 months on deployment.

Are their sailors really competent to do anything? Does the dual command arrangement—where you have a political officer and the commanding officer both of the same rank—how will that work when the chips are down, et cetera, et cetera.

There is lots of uncertainties here, and so, clearly, I think that—I didn't hear what the CNO [Chief of Naval Operations] said yesterday at the Surface Navy Association but I do know that the U.S. Navy is really terrified by the prospect of having a hollow Navy.

And so whatever they need, whatever size Navy we wind up with, it ought to be fully resourced and ready, and not be—not be something that is—we can't—I lived through a hollow Navy where you can't maintain the ships, where you don't have enough sailors, the spare parts are nonexistent, et cetera, et cetera, et cetera. So—

Mr. WITTMAN. Yes, Mr. Hunter.

Mr. HUNTER. Just two thoughts. I mentioned in my testimony—in my written testimony that, you know, shipbuilding is an area where the Chinese have made incredible, incredible progress, and to my eye it is directly tied to the fact that they have a commercial shipbuilding industry that is world class. They are world leaders in that area.

And so it is perfectly logical that this is—it is the reinforcing function why I say you have to pay attention to the economic commercial side.

Secondly, on budget share, I will just say if you look at contract data and budget data, not to say that the Navy has exactly the right share today but I am not as concerned now as I used to be that the services will all just get a third because it has changed quite a bit in the last 5 years.

And the Department of Navy actually has done well.

Mrs. DAVIS. Thank you. Thank you. Mr. Brown.

Mr. BROWN. Thank you, Madam Chair. What an insightful and informative discussion today. So I want to thank Admiral McDevitt and Director Hunter, Secretary Flournoy, for being here today and sharing with us your thoughts on DOD's role in competing with China.

We have talked a lot about modernization and procurement, force structure, technology, AI, quantum computing—a lot of things—the impact on the budget.

I want to kind of shift a little bit to sort of current and near-term allocation of resources, deployment of forces, you know, ISR, intelligence, ground forces, and let me just start with a statement that General Votel offered a year ago in his posture statement, as you know, former CENTCOM [U.S. Central Command] commander.

He said, “We recognize the U.S. is rightly shifting its resources toward Europe”—he is thinking Russia—“and East Asia”—he is thinking China—“to balance great power competition but remain mindful that the CENTCOM AOR [area of responsibility] represents a geopolitical crossroads and a principal zone for that competition as well.”

We saw, and I think there was a question when I was out of the room that the Pentagon is eyeing a drawdown in Africa. I visited AFRICOM [U.S. Africa Command]. There is some collective anxiety about their troop strength and their role in great power competition.

I visited SOCOM [U.S. Special Operations Command] recently. They are sort of creatively describing their mission to meet both the counter VEO [violent extremist organization] effort, which they spent a lot of time and they do a great job, but how they also play a role in great power competition, and if you've had the same experience I have, when they try to articulate that they are struggling a little bit.

So I guess the question is what is the intersection of our requirement to counter violent extremist organizations and to take on great power competition?

Sometimes there seems to be oh, it's an either/or. Once we sort of settle the violent extremist organizations and we minimize that threat, which we mostly see in CENTCOM but we know it's in Africa, it's in the Indo-Pacific, then we will even have more resources to modernize and take on China and Russia.

Can you share with me some thoughts about the intersection today—current allocation of resources and assets and how the counter VEO threat enables us to compete with China?

Anybody.

Admiral MCDEVITT. I am going to tee up former Secretary Flournoy because what you're talking about really in terms of the Department is having to balance risk.

You have to make a—there is never going to be enough money to do everything. There just won't be. So the question needs to be what is—where are you willing to, if you will, disinvest or take troops out of Africa or wherever it is where you think you can accept that risk and take those resources and apply them somewhere else.

And so people like former Under Secretary Flournoy are the ones that have to make decisions on how do you accept that risk.

Ms. FLOURNOY. I used to advise my boss and he would make the decisions.

[Laughter.]

Ms. FLOURNOY. But no, I do think that we need—after, you know, 20 years or almost 20 years, we do need to sort of take a strategic look at countering violent extremism not only from a military perspective but from other tools and to really assess, you know, which of these groups directly threaten the United States and the United States homeland; which of them, you know, threaten important allies and partners and we want to assist them in dealing with, you know, building their capacity and dealing with them, you know; and which of these are really, really nasty groups but, frankly, it is more important to use our resources we would use to cover down on them, say, in the special operations community instead to regrow the kinds of Cold War skill sets that special operations had in terms of, you know, what are they going to do vis-a-vis the Soviet Union.

So in a great power competition the special ops becomes very important in the gray zone. They become very important in any kind of irregular warfare or use of proxies. They become very important if it actually came to some kind of confrontation, you know, behind the lines and in the shadows and so forth.

Those are skill sets that community has not really trained and practiced on and used for decades now, and so they have a very big challenge to start reexercising some of those muscle groups while also keeping a lid on counterterrorism and CVO because we count on them for that.

And that threat is not going away, even if we are willing to manage some risk in that area.

Mr. HUNTER. If I could just add, you know, having been in the Pentagon when we had 150,000-plus troops overseas and we might have a daily variation of 5,000 troops in theater at any—from day to day, I am always a little puzzled by having, you know, really intense discussion about 1,000 troops in this location.

You know, I mean, it is just—to me, it is a little overblown. Not to discount the—you know, the mindshare issues that have been brought up.

And I would also say when it comes to Africa, you know, it is the fastest—economically the fastest growing continent and likely to be so for some time to come.

The Chinese are making a huge strategic play for it. So I don't see a U.S. return on investment, if you will, by pulling out from there in a meaningful way.

That doesn't mean you can't adjust.

Mr. BROWN. Thank you very much. I yield back, Madam Chair.

Mrs. DAVIS. Thank you very much.

I just want to thank you all. I want to thank Mr. Smith, Mr. Thornberry, for bringing this together. I think there are a long list of people that were here throughout the morning and it has been very informative. I can assure you we want to follow up on a number of these issues, and thank you very much, once again.

Ms. FLOURNOY. Thank you very much.

Mrs. DAVIS. Meeting is adjourned.

[Whereupon, at 12:26 a.m., the committee was adjourned.]

A P P E N D I X

JANUARY 15, 2020

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

JANUARY 15, 2020

Testimony before the House Armed Services Committee

DOD's Role in the Competition with China

**Michèle A. Flournoy
Former Undersecretary of Defense for Policy**

January 15, 2020

Chairman Smith and Ranking Member Thornberry, distinguished members of the House Armed Services Committee, it is truly an honor to testify before you today on the Department of Defense's role in the United States' strategic competition with China.

U.S.-China Competition Broadly

Strategic competition between the United States and China is multi-faceted, with economic, technological, political, ideological, and military dimensions. Any successful approach to this competition must take account of each of these dimensions and neglect none. Therefore, before I outline the Department of Defense's role in the competition with China, I'd like to sketch how I view U.S.-China competition more broadly.

First, the strategic competition between the U.S. and China is taking place between two globally integrated economies. For about two decades, the United States premised its approach to China on the belief that integrating a rising China into the global economy and international institutions would increase the likelihood that Beijing would become a "responsible stakeholder" in the rules-based international order, and that this was in the U.S. interest. While the assumption behind this engagement strategy is no longer universally accepted, the legacy of it is universally acknowledged: the U.S. and Chinese economies are deeply intertwined. These connections provide benefits to U.S. business – markets, supply chains, investment and talent – but also create vulnerabilities for U.S. business and U.S. national security – via theft of intellectual property and data, and untrustworthy supply chains with ties to the People's Liberation Army. Because of these vulnerabilities, some have proposed that the United States initiate a so-called "decoupling" from the Chinese economy. But if the U.S. were to pursue blanket restrictions on its commercial ties with China, this could have the unintended effect of hurting U.S. economic dynamism. I do not think wholesale decoupling is realistic or wise, but I do think we need to do a better job of using carefully targeted measures to protect our intellectual property and data while safeguarding technologies critical to our national security.

Second, the period of unrivaled technological superiority the United States enjoyed after the Cold War is over. China is investing tens of billions of dollars in a state-directed technology roadmap for emerging technologies – from hypersonics and robotics to quantum computing and artificial intelligence. Indeed, the primary competition on which the United States must focus is the tech race with China, as it is this competition that will determine whether we keep our military edge and will have the most profound and long-lasting impacts for U.S. prosperity and security over the next half century. In the quest to maintain our edge in key technologies, we must be clear eyed about the risks that our open economy poses: China is trying to use foreign investment and espionage to gain access to nonpublic IP and leveraging its role in U.S. supply chains to introduce vulnerabilities into our systems.

Third, competition between the U.S. and China will be shaped in large part by our success in developing close relationships with allies, partners, and other countries in the Indo-Pacific

region. It is in China's interest for Washington to view U.S.-China competition in purely bilateral terms. Instead, we must be laser focused on further developing our existing relationships in the region and on building new relationships. The U.S. will be far more effective if we pool our resources and efforts with allies and partners who share our interests. Yet we must seek to avoid forcing countries to choose between the United States and China; given the deep economic relationships countries in the region have with China, our allies and partners will not sign up to a virtual Berlin Wall separating the Indo-Pacific into openly competing U.S. and Chinese spheres of influence. The best ways to bolster these relationships is to show up in the region more often, invest in bilateral cooperation with key allies and partners, participate and lead in regional fora, strengthen military-to-military ties, and cooperate on global issues like climate change, nonproliferation and economic development.

Fourth, competition between the U.S. and China has a strong ideological and narrative element. The number one objective of the Chinese leadership is to maintain the Communist Party's control of its system of government, and the number one threat to their system is for economic liberalization and the rising expectations of the Chinese population to spark some kind of democratic movement like the one we're seeing in Hong Kong. The Chinese government is therefore attempting to shape both a domestic and global narrative of China through a robust information campaign. Too often the United States is caught flat-footed. We must do a better job of offering a contrasting vision of the Indo-Pacific – one that is free of coercion; respects sovereignty, the rule of law and human rights; and is open to the free flow of people, goods, and ideas.

Militarily, the resurgence of great power competition requires the United States to reimagine how we deter and, if necessary, fight and prevail in a future conflict with China. America's military advantage is rapidly eroding in light of China's modernization efforts. In fact, if we stay the current course, a rising China will likely achieve overmatch in a number of key capability areas, calling into question our ability to credibly deter aggression; defend our interests, allies, and partners; and prevail in any future conflict at acceptable levels of cost and risk. The number one military objective for the United States today should be to re-establish credible deterrence; I will expand on this point below.

Finally, at the same time as we compete with China, we must remember that China may also serve as a critical partner to address global challenges like climate change, North Korea, and the proliferation of weapons of mass destruction. We should be able to compete with China while also cooperating in key areas of mutual interest.

Principles for Strategic Competition

In each of these five dimensions – economic, technological, political, ideological, and military – there are three overarching principles that should guide the United States' approach to strategic competition with China.

First, the most important thing for the United States to do is to invest more substantially in the drivers of U.S. competitiveness here at home. This includes science and technology, research and development, using federal funding to incent private sector investment in key technology areas, STEM education, broader access to higher education, and 21st century infrastructure like 5G. We also need a smart immigration policy. We should welcome foreign-born talent that pose no risks to our national security and encourage them to stay and build innovative companies here in America. We should also do a better job of protecting the crown jewels that are essential to our security while maintaining the open system that drives our prosperity. This is a moonshot moment, and we need the national leadership, call to action, and smart investment plans to inspire and enable America to compete and win. As our history proves again and again, this is something we know how to do as Americans. It is imperative that Congress overcome its current partisan polarization to make urgently needed strategic investments in our future.

Second, the United States should leverage the unique, strategic advantage of having many allies and partners around the world. The best way to deal with the challenges China poses is by making common cause with our allies and partners whenever possible. We are infinitely stronger confronting China's violations of the rules-based order as a coalition of like-minded states committed to a shared set of norms rather than as the U.S. alone. This lesson seems to have been lost on the Trump administration as it engineered a trade war with Beijing in strictly bilateral terms. Going forward, the United States should work closely with its allies and partners to make a clear-eyed assessment of what each country can contribute to stabilizing the Indo-Pacific environment and deterring the increasingly aggressive behavior of revisionist powers. This will also require reassuring our partners in words and deeds that they can count on the United States to have their backs in disputes with Beijing and ultimately to defend them against coercion or attacks.

Third, the United States should lead in protecting and adapting the rules-based international order to the new realities of the 21st century. We should uphold norms like freedom of navigation and the peaceful resolution of disputes, in order to ensure "might does not make right" in the Indo-Pacific. An Indo-Pacific dominated by a revisionist power like China would be very different than the one we all live, trade, and travel in today. Ships that today can freely navigate the seas would be liable to possible harassment. Decisions taken today by independent governments could increasingly fall prey to coercion. And failure to resist these coercive measures would, in turn, limit our collective ability to deter aggression or – if aggression takes place – to reverse it. The U.S. needs to do a better job of spelling out the stark contrasts between what international rules and norms shaped by Beijing would look like in contrast to those the region has enjoyed to date.

The Role of the Department of Defense

The first objective of the Department of Defense in the strategic competition with China must be to re-establish credible deterrence vis à vis Beijing. While I believe neither the United States nor China is likely to deliberately start a war given the dire costs involved, we could

nevertheless stumble into conflict if the Chinese leadership were to miscalculate the ability or willingness of the United States and our allies to respond to provocations or outright aggression. I assess that the risk of miscalculation is greatest in the next 10 years – when the United States has telegraphed its vision for the future force but has yet to procure and deploy all of the technologies and systems necessary to fully translate this vision into fielded capabilities.

Since the first Gulf War, China has gone to school on the American way of war and has developed an expanding set of asymmetric approaches to undermine our strengths and exploit our vulnerabilities. At the core of the military challenge to the United States and our allies is the substantial investment by China and Russia in anti-access/aerial denial or “A2/AD” capabilities. These A2/AD capabilities – ranging from persistent precision strikes on U.S. logistics, forces, and bases to electronic, kinetic, and cyber attacks on every digital connection and system inside our battle networks -- mean that the United States can no longer expect to achieve air, space, or maritime superiority early in a conflict; we will need to fight to gain superiority and then to keep it in the face of ongoing efforts to disrupt and degrade our battle management networks.

Thanks to Beijing’s massive, systematic theft of Western intellectual property and its doctrine of “civil-military fusion,” in which any commercial or research-based technological advancement with military applications must be shared with the People’s Liberation Army, the Chinese military has made rapid advancements in artificial intelligence and machine learning. Indeed, Chinese military doctrine is now premised on the belief that the side that can make and execute battlefield decisions most quickly – and preferably well inside the decision-making cycle of the adversary – will gain a decisive strategic advantage in a future conflict. Given the centrality of emerging commercial technologies like AI, quantum computing, 5G and autonomous systems in ensuring the U.S. military keeps its edge, the United States needs its own effective (though undoubtedly different) answer to “civil-military fusion,” and soon.

In addition, China has paired these technological investments with doctrinal innovations. China’s theory of victory increasingly relies on “system destruction warfare,” an effort to take out or cripple an adversary’s networks at the outset of conflict – deploying sophisticated electronic warfare, counter-space, and cyber capabilities to disrupt critical C4ISR networks, thwart U.S. power projection, and undermine our national resolve. This means the United States can no longer take space for granted as an uncontested domain from which to provide services like early warning, navigation and communications. In the future, space will be a critical warfighting domain through which and from which to project power.

To prevent a miscalculation or escalation to conflict with a nuclear-armed rival, the United States must decide what capabilities we need to prioritize developing, acquiring, and demonstrating in order to credibly deter aggression, deny any adversary the ability to rapidly seize territory, and prepare to impose significant costs for any act of aggression. And we need to do this with two timeframes in mind: deterrence in the interim (the next 5-10 years) and deterrence in the long term (10 years and beyond).

The United States must think creatively about how we might stop a rival great power from starting down the road to war. As an illustrative example, what capabilities would U.S. forces need to credibly threaten to sink 300 military vessels, submarines, and merchant ships within 72 hours? Such a capability would certainly pose a fundamental dilemma for any great power contemplating aggression, forcing them to consider whether it's worth putting their entire fleet at risk. Undoubtedly, there are other approaches to be considered to give an adversary pause in the near to mid-term. DoD should devote considerable effort to conceptualizing and wargaming a suite of interim deterrence approaches using existing capabilities in new ways to deny or dissuade aggression.

Strengthening deterrence will also require major, focused efforts to enhance and demonstrate new capabilities, including emerging capabilities that could dramatically increase the costs borne by an aggressor in the longer term. New technologies will enable potential adversaries to challenge us in new ways on the battlefield, but these technologies can also greatly strengthen our ability to deter aggression and bolster our response capability should conflict break out. The United States also needs a strategic framework to guide whether, when and how to reveal new capabilities that could cause a future adversary to rethink the costs and risks associated with aggression.

Assessing the Department's Performance

In assessing the Department of Defense's performance in the strategic competition to date, I will focus on the three principles I outlined at the beginning of my testimony: (1) enhancing our competitiveness, with a focus here on military and technology elements; (2) strengthening our relationships with allies and partners; and (3) protecting and adapting the rules-based order.

First, despite some promising exceptions, the Department of Defense has not, on the whole, adequately re-oriented itself to fully leverage emerging technologies. The Department is currently under-investing in the new technologies that will ultimately determine our success in the future security environment and is still over-investing in legacy platforms and weapons systems. While DIU, SOCOM, and various service units are playing important tech scouting roles, there remains a difficult to cross "valley of death" between achieving a successful technology demonstration or prototype and becoming a program of record. Moreover, the Department lacks the tech talent – senior and junior, civilian and military, active duty and reserve – to develop, integrate, and deploy these critical emerging technologies rapidly and at scale. In the acquisition workforce, DoD has not yet adequately trained or incentivized employees to use the flexible authorities Congress has provided. While there are pockets of excellence (e.g., in SOCOM and Air Force acquisition), the bulk of the acquisition corps is not using these authorities effectively, consistently and at scale.

In addition, the Department is right to take a hard look at Chinese investments in the U.S. tech sector, particularly in areas with national security applications, as well as export controls and DoD's dependency on Chinese suppliers in its supply chains. But the Department should take care to approach each of these areas with a scalpel, not a sledgehammer. DoD would be wise

to undertake a deeper dialogue with cutting-edge tech companies, investors, and defense industry to better understand how to work with these partners to reduce DoD vulnerabilities while not undermining the vibrancy of the very companies on whom we must rely for our technological edge.

Second, the Department of Defense has continued to do great work with allies and partners at the tactical and operational levels to bolster deterrence and to build interoperability and their capacity to contribute to coalition operations. The National Defense Strategy rightly acknowledges that “mutually beneficial alliances and partnerships are crucial to our strategy, providing a durable, asymmetric strategic advantage that no competitor or rival can match” and calls for a “robust constellation of allies and partners.” Across the Indo-Pacific, DoD is doing a great deal to implement this aspect of the NDS. For example, the U.S. and India have held Tiger Triumph, the first land, sea, and air exercise in their history, after signing a bilateral Defense Agreement in 2018. The U.S. has also transferred a former U.S. Coast Guard cutter to Vietnam and conducted an historic aircraft carrier visit there in 2018.

However, at the political level, the signaling and relationship management is so poor in some cases that it is undercutting otherwise strong military-to-military relationships. For example, the Trump Administration postponed regular exercises with the Republic of Korea as an act of “good will” to North Korea and aggressively pressured both Korea and Japan to pay even more for hosting U.S. troops and bases in order to offset trade imbalances. This transactional approach to some of our closest allies, combined with the unpredictability of U.S. policy and Presidential tweets, has created strains in some of our most important bilateral defense relationships that must be rectified if we are to compete effectively with a rising China.

Finally, while this administration has taken constructive actions to protect and adapt the rules-based international order through increased freedom of navigation operations in the South China Sea, it has not been sufficiently present in regional dialogues that will help form future military, diplomatic, and economic arrangements in the region. For example, the Department of Defense’s own 2019 Indo-Pacific Strategy Report argued that the United States’ participation helped make the East Asia Summit the “region’s leading forum for addressing political and security challenges,” yet the administration downgraded U.S. participation at the summit that same year. These mixed signals undercut the U.S. ability to be seen as a trusted partner in leading and upholding the rules-based order.

Recommendations for the Department

Today, I’d like to recommend seven lines of effort the Department of Defense should pursue in competing with China.

First, the DoD needs to implement a series of acquisition, investment, and workforce development reforms to foster the innovation ecosystem necessary to maintain the U.S. military’s technological edge. As the Department prioritizes procuring the software and network capabilities critical to enabling future joint, Multi-Domain Operations, it will need an

acquisition cadre trained and incentivized for the rapid and agile development of new technologies. Fully leveraging more flexible authorities and incentivizing program managers will also require top-down leadership to provide strategic direction and top cover in pursuing more ambitious goals. For example, what if the Secretary of Defense were to set an audacious goal for each of the services to drive more rapid integration of transformative technologies into the force? For example, he could direct the Marine Corps to field a newly conceived Special Purpose Marine Air Ground Task Force built around human-machine teaming and leveraging AI and unmanned systems to the maximum extent possible by the end of the FYDP. Similar goals could be set for re-imagined Navy, Army and Air Force combat teams.

DoD must also accelerate reform efforts to make it easier for leading-edge commercial technology companies to do business with the Department, including increasing the availability of funds to rapidly scale successful prototypes into full-fledged programs. One potential approach would be to authorize funds that each service could allocate on a competitive basis to sustain continued capability development in priority areas and bridge the gap between prototyping contracts and formal competitions for programs of record. For example, let's say an AI company won a SOFWERX competition in FY2019 and the Army decides to put out an RFP to acquire the capability at scale in its FY2021 budget request. How does that small company stay in the game through FY2020? Bridge funding can provide a critical lifeline to small technology companies looking to continue the development of urgently needed, cutting-edge capabilities for the U.S. military.

To bolster the tech workforce, DoD should work with Congress to expand programs (currently focused on cyber talent) that offer scholarships or debt relief to students in a broad swathe of tech fields in return for a government service commitment. DoD should also recruit mid-career technical talent by expanding fellowships for private-sector technologists to serve a tour of duty in national security, bringing in private sector HR best practices, educating national security leaders about the range of expedited hiring authorities at their disposal, and overhauling the painfully slow and antiquated security clearance process. Meanwhile, DoD can meaningfully enhance the tech skills of existing employees by providing more training opportunities in key areas and creating viable career paths for technical talent that allow for both promotion and continued professional development, including rotations in private sector tech companies.

Second, the Department should ramp up its efforts to develop joint and service-specific operational concepts to drive more rapid fielding of game-changing technologies. The United States needs urgently to develop and test joint concepts, such as Multi-Domain Operations, and supporting service concepts, such as the Navy/Marine Corps' Distributed Maritime Operations, both of which are premised on eroding adversary advantages by creating simultaneous dilemmas across multiple domains, spreading out (rather than concentrating) the force across the theater of operations. Testing the technologies that will be most critical to operationalizing these concepts -- from battle management networks to unmanned systems to long-range precision fires -- will require a continuous, reinforcing cycle of wargaming, prototyping and experimentation.

To do so, Congress should provide the services with robust funding to field small numbers of emerging capabilities for early-stage concept development and experimentation. For example, Congress should not hesitate to allow a service to acquire small numbers of AI-enabled unmanned systems of various types to facilitate the development of new concepts for human-machine teaming. Unfortunately, DoD and Congress now find themselves in a Catch-22 – some in Congress want more clarity before they fund experimental systems, while the Department needs a certain number of these systems to experiment with in order to develop a compelling case for Congress to fund the capability long-term. It's time to break this logjam, accept a bit more risk in the short term, and allow the services to acquire the prototypes they need to enable an agile development process that includes robust field experimentation and iterative feedback from the warfighter. This is the only way we will be able to develop new concepts and capabilities fast enough to keep pace with our competitors.

Meanwhile, in the short term, concept development and wargaming can also provide insights into how to reconfigure existing platforms to shore up critical capability gaps. For example, as the Department continues to develop new long-range weapons systems, the Navy and Air Force could experiment with reconfiguring bombers with LRASMs for long-range sea patrol against Chinese surface combatants and the Chinese A2/AD complex. This is exactly the sort of critical bridging work that the Strategic Capabilities Office (SCO) has done historically and should be empowered to do in the future. SCO has a unique and invaluable role to play to driving efforts to shore up deterrence and the U.S. military's operational edge in the near to mid-term. (To do so, it should not be subsumed under DARPA where its focus would necessarily shift to the longer-term future.)

Third, the Department should adopt best practices and lessons learned from commercial sector technology development and program management. The Department has ambitious goals to migrate to the cloud, leverage large data sets for artificial intelligence and machine learning solutions, and build interoperable, multi-domain networks at scale. The Air Force is already building its Advanced Battle Management System -- the long-pole in the tent for bringing Multi-Domain Operations to life -- which will require rapid advancements in sensor integration, data processing, artificial intelligence, network connectivity, and cloud computing.

Integrating private sector approaches to technology development, data management, and network security will be critical to realizing these advancements on the timeline required. As previously mentioned, this means using a spiral development model with integrated prototyping that enables substantial input from real-world operators. It also means exploring how to incentivize industry to leverage open-source approaches that support iterative design and testing and provide platform and system interoperability. Finally, it will require prioritizing what elements of a complex network of networks must be secured, continuously weighing and re-evaluating potential trade-offs between openness, security, and resiliency.

Fourth, budget realities will require the Department and Congress to make urgent trade-offs between legacy platforms and critical new technologies. Currently, the United States is under-investing in the new technologies that will ultimately determine our success in the future

security environment and over-investing in legacy platforms and weapons systems. This is a recipe for failure with dire costs for the nation. In order to make the trade-offs necessary to position the United States to compete and win, DoD and Congress must answer a fundamental question for every major program of record: Where is the knee in the curve? Where is the point where it makes more sense to forgo the n+1 platform in order to invest those resources in the cutting-edge technologies and capabilities that will keep the existing platforms survivable, combat-relevant, and effective? For example, if the cost of a single additional aircraft carrier could cover the cost of electric weapons for ship defense, UAVs for ISR, refueling and electronic warfare, and new longer-range penetrating weapons for strike, would it be smarter to trade that extra carrier for a slightly smaller, but much more capable fleet? The same question can be used to frame the trade-offs associated with buying more amphibious ships for the Marine Corps, fighter squadrons for the Air Force, or tanks for the Army. The Secretary of Defense should ask each service tough “knee in the curve” questions and be willing to make the hard choices necessary to prepare for the future fight – and Congress should support the Pentagon when these hard but correct choices are made.

Fifth, the United States will need to adapt and enhance our overseas posture and shore up ally and partner capability to deter and operate in more contested, lethal environments. The United States should expect that Russia and China will seek to disrupt our ability to project power to re-enforce forward forces from the outset of a conflict and in all domains – air, sea, undersea, space, cyber. Therefore, we need to make our forces, forward bases, logistics networks, and C4ISR networks more survivable, resilient, and geographically dispersed.

The United States must fortify key overseas bases, while also moving towards a more distributed model of “places not bases.” Key forward bases that sit at the outer edge of China’s threat ring will still be critical for staging and logistics. However, the military services will increasingly rely on smaller, distributed, more agile force packages to operate within the densest Chinese A2/AD threat rings. These forces, working with allies and partners, will provide temporary bases and resupply for forces in the area as well as more distributed fires to further complicate adversary planning.

Enabling our allies and partners to better defend their own sovereignty and serve as critical force multipliers necessitates a more strategic approach to security cooperation. This should begin with a clear-eyed assessment of what each partner country can contribute, followed by the development of multi-year security cooperation plans for each country and the region – laying out what capabilities we collectively need to deter coercion and aggression. One low-cost, high-value opportunity is to invest in AI-enabled systems that fuse unclassified data streams to identify, track, and characterize the behavior of ships at sea or aircraft in the air; such unclassified systems exist today and can be easily shared with partners to dramatically improve their situational awareness.

Sixth, the Department should align its efforts around shoring up near-term vulnerabilities that undermine deterrence even as we invest in longer-term technological and organizational innovations. As I’ve noted, I believe that the next five to ten years will prove the most

challenging and determine the course of U.S.-China relations for many decades to follow. In the near term, the United States must work with greater urgency to close this vulnerability gap by re-configuring current platforms with new technological enablers, re-evaluating our “reveal or conceal” posture to demonstrate resolve, re-investing in building ally and partner capacity, and fortifying vulnerable forward bases while establishing new places from which we can operate when needed. Long-term superiority, however, will require fundamental shifts in technological capability, operating concepts, and force posture.

Seventh, the Department must be more active in setting norms and standards for emerging technologies and in participating in security dialogues, in order to show the U.S.’ commitment to the rules-based order. In the absence of a concerted U.S. effort to set norms and standards in emerging technology areas, China has begun filling the void. For example, establishing norms of behavior in cyberspace would bolster deterrence by setting collective expectations and enabling collective action when red lines are crossed. In addition, the U.S. needs to do a better job of leading in key regional fora, like the East Asia Summit and various ASEAN fora. Lastly, the U.S. should reestablish a strategic dialogue with China that is led by the State Department and includes other players like the Departments of Treasury, Commerce and Defense. We need to have a clear strategy and whole of government engagement with China to advance it.

Conclusion

In conclusion, strategic competition with China is more than a military contest – it has economic, technological, political, and ideological elements the United States must not neglect. The actions we take in the next few years could not be more critical. They must be driven by a broader strategic vision of the core values and interests we seek to protect. The United States must maintain its unique leadership role as a force for good in the world -- a defender of democracy, human rights, and the rules-based international order. The United States must maintain its ability to leverage all instruments of national power, not only defense, but also diplomacy, development, and economic influence. Only by harnessing all of these levers can the United States demonstrate the resolve and capability to compete effectively on the world stage, deter war among the great powers, defend our interests, allies and partners, and, if necessary, fight and win in a far more challenging future.

Within this larger context, the Department of Defense’s role is central: the Department needs to make urgent investments in its technological capacity and new operational concepts, redouble its commitment to allies and partners, and take consistent actions to protect and adapt the rules-based international order. Speed is of the essence, and we are not moving fast enough given how rapidly the challenges we face are evolving.

In the course of this competition, there will be temptations to take actions that distract from our foremost objectives. Being drawn into an avoidable conflict in the Middle East, for instance, would have a substantial impact on DoD’s ability to stay focused on this strategic competition.

We must calibrate our aims with our resources and focus on the most consequential long-term challenge we face as a nation: the strategic competition with China.

Michèle Flournoy

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Michèle served as the Under Secretary of Defense for Policy from February 2009 to February 2012. She was the principal advisor to the Secretary of Defense in the formulation of national security and defense policy, oversight of military plans and operations, and in National Security Council deliberations. She led the development of the Department of Defense's 2012 Strategic Guidance and represented the Department in dozens of foreign engagements, in the media and before Congress.

Prior to confirmation, Michèle co-led President Obama's transition team at the Defense Department.

In January 2007, Michèle co-founded CNAS, a bipartisan think tank dedicated to developing strong, pragmatic and principled national security policies. She served as CNAS' President until 2009, and returned as CEO in 2014. In 2017, she co-founded WestExec Advisors, a strategic advisory firm.

Previously, she was senior advisor at the Center for Strategic and International Studies for several years and, prior to that, a distinguished research professor at the Institute for National Strategic Studies at the National Defense University (NDU).

In the mid-1990s, she served as Principal Deputy Assistant Secretary of Defense for Strategy and Threat Reduction and Deputy Assistant Secretary of Defense for Strategy.

Michèle is the recipient of numerous honors and awards, including: the American Red Cross Exceptional Service Award in 2016; the Department of Defense Medal for Distinguished Public Service in 1998, 2011, and 2012; the Chairman of the Joint Chiefs of Staff's Joint Distinguished Civilian Service Award in 2000 and 2012; the Secretary of Defense Medal for Outstanding Public Service in 1996; and CARE's Global Peace, Development and Security Award in 2019. She has edited several books and authored dozens of reports and articles on a broad range of defense and national security issues. Michèle appears frequently in national and international media, including CNN's State of the Union, ABC's This Week, NBC's Meet the Press, BBC News, NPR's Morning Edition and All Things Considered and PBS' News Hour, and is frequently quoted in top tier newspapers.

Michèle serves on the boards of Booz Allen Hamilton, Amida Technology Solutions, The Mission Continues, Spirit of America, The U.S. Naval Academy Foundation, CARE, and sits on the Honorary Advisory Committee of The Leadership Council for Women in National Security. Michèle is also a former member of the President's Intelligence Advisory Board, the CIA Director's External Advisory Board, and the Defense Policy Board, and is currently a member of the Council on Foreign Relations and the Aspen Strategy Group, and is a Senior Fellow at Harvard's Belfer Center for Science and International Affairs.

Michèle earned a bachelor's degree in social studies from Harvard University and a master's degree in international relations from Balliol College, Oxford University, where she was a Newton-Tatum scholar.



**Statement before the
House Committee on Armed Services**

“DOD’s Role in Competing with China”

A Testimony by:

Andrew Hunter

Director, Defense-Industrial Initiatives Group and
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January 15, 2020

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Chairman Smith, Ranking Member Thornberry, thank you for the opportunity to testify today on the topic of “DoD’s Role in Competing with China.” This topic is a broad one, and I believe appropriately so. China has shown every intention of competing vigorously with the United States, and the rest of the world, in every domain of commercial and military activity. The comprehensiveness of this competition suggests that the United States think broadly about its response. China’s interest in assuming a role of world leadership in both economic and military arenas is not unique, but its potential to fulfill this objective, and to do so in ways that could run counter to U.S. interests, is potentially unique. China is also prepared to work for decades, if necessary, to achieve its strategic objectives. The United States must adopt a strategy to respond to China’s efforts and to shape the nature and direction of this strategic competition to the benefit of the United States and its allies. We must meet the China challenge, as I and many of my colleagues at the Center for Strategic and International Studies put it in our 2018 report on this topic.¹ As China’s efforts are far reaching, determined, and comprehensive, the United States will need to respond with a strategy that is similarly extensive.

It is quite possible, highly likely in fact, that the primary arena in which success in this competition will ultimately be determined is in the commercial economic realm rather than in direct or indirect military competition. However, while the DoD’s role is most significant in the military domains, it has a significant role to play in the broader competition as well by enabling U.S. and allied success in the development of key technologies that are likely to form the commanding heights of global markets in the future. At the same time, DoD is required to compete militarily in a way that deters, prepares for, and if necessary, wins any military engagements that do occur. In exploring DoD’s role, I will focus my testimony on the capabilities and activities of the defense acquisition system, and the ways in which that system will need to operate in order to support U.S. objectives in a competition with China. As the primary means for developing, acquiring, and implementing new military capabilities, the defense acquisition system will be a key part of DoD’ role in meeting the China challenge, and more broadly, the challenge of peer competition with the United States.

Needed Capabilities of the Defense Acquisition System

The most central point to understand is that there is no single solution nor any single area of focus that will ensure the U.S. defense acquisition system can deliver all the capability the nation needs for this strategic competition. The acquisition system will be called upon to do many things that will require an ability to shape and adapt to different priorities and manage different activities. Different elements of the system, therefore, need to be capable of operating in very different manners. At times, the priorities of different parts of the acquisition system will be in tension with one another. These tensions will need to be managed because they cannot be fully eliminated.

The acquisition system will need to be able to develop highly capable, expensive systems that meet the exacting specifications required to operate in the most challenging conditions, such as nuclear weapon systems and long-endurance undersea systems. These are the kinds of challenges

¹ James Andrew Lewis, ed. “Meeting the China Challenge: Responding to China’s Managed Economy,” Center for Strategic and International Studies, January 2018.

the defense acquisition system specialized in addressing during the Cold War. Although the pace of commercial technology development means that alternative, commercially based approaches can meet or exceed the performance of purpose-built defense articles in many areas, the need for an acquisition system capable of developing purpose-built solutions to specific defense requirements remains.

The system also needs the capability to pioneer breakthroughs in fields such as artificial intelligence, quantum computing, directed energy, and hypersonic systems where non-defense oriented research and commercial activity may set the pace of the leading edge of technology, but where fundamental challenges that relate directly to defense requirements remain. Advances in fundamental science and engineering must be made for these technologies to reach their full capability in both defense and commercial applications and DoD can play a critical role, particularly in advancing the art of testing and evaluating these challenging new technologies.² This is another area in which the defense acquisition system excelled during the Cold War, working with private industry and research universities to advance key technologies and building critical test centers that helped advanced the state of the art in both the defense and civilian sectors. Today the concept of the national security innovation base, highlighted in the national security strategy, articulates the importance of working with the research community and the tech sector and the needed linkage to national security.³

In addition to continuing defense acquisition system roles that look familiar from the Cold War era, the acquisition system will also need to increase its ability to perform new roles to compete with China. It will need to be able to follow fast - understanding and catching up to breakthroughs achieved by the Chinese that outpace our own development in key areas. Give the scope and scale of China's efforts and the resources at its disposal, it should be anticipated that China will succeed in achieving breakthroughs in militarily relevant technologies. The defense acquisition system must be capable of rapidly responding in these instances. The acquisition system will need to be able to build adaptable systems, which combine multifunctional capabilities with the ability to add new features so that we can deploy emerging capabilities into military operations rapidly.⁴ Adaptable systems will help the United States maintain technological advantage in areas where we lead, and catch up quickly to technologies on which we fall behind. True technological breakthroughs are relatively uncommon, but adaptable systems can utilize and combine existing technologies in innovative ways that make a major difference. Developing adaptable systems will require a substantial change to how DoD engages in software development.

Perhaps the most critical role for the defense acquisition system in competing with China is building a strong connection to commercial technology providers. DoD has struggled to successfully acquire commercial technology to serve military requirements, especially information technology, and it has also struggled to be a good customer and partner with the

² Lindsey Sheppard, Andrew Hunter, Robert Karlen, and Leonardo Balieiro, "Artificial Intelligence and National Security: The Importance of the AI Ecosystem," Center for Strategic and International Studies, November 2018.

³ <https://www.csis.org/events/implementing-innovation-21st-century-national-security-innovation-partnership-conference>

⁴ Maura McQuade, Andrew Hunter, and Schuyler Moore, "Acquisition of Software-Defined Hardware-Based Adaptable Systems," Center for Strategic and International Studies, August 2019.

commercial sector. The acquisition system will need to leverage and support a robust network of commercial technology providers so that DoD remains in touch with the cutting edge of fast-moving commercial technology. DoD's investments can also serve to support the United States' larger economic and strategic objectives where they can appropriately serve such a role, particularly through its work with the national security innovation base.

Relatedly, the competition with China features a struggle to shape and master global supply chains across a range of today's key industrial sectors such as semiconductors, networking technology (including 5G), advanced materials, and data analytics, as well as the key industrial sectors of tomorrow such as quantum-based systems, intelligent systems, and synthetic biology. One real possibility is that today's global supply chains, in which the United States and China are highly dependent on one another, will bifurcate between a Chinese-led supply network and a separate network of U.S.-affiliated market economies. Such a bifurcation could take different forms where, for example, each country would be ultimately forced to choose one or the other network or even where individual firms would have to make such a choice. However, it is also distinctly possible that global supply chains persist for the most part, but each supply chain becomes a source of intense, continuous strategic competition. In either scenario, the defense acquisition system will need the ability to manage supply chains in a more complex business and security environment than ever before. And it will need to do so in a manner that does not divorce DoD from commercial suppliers.

China's Acquisition of Defense Capabilities

China has developed structures for providing all the acquisition capabilities described in the preceding section. While China's structures aren't ideal, or even always terribly effective, China is making notable progress along each of the major lines of effort required for the acquisition of effective defense capabilities.

In the arena of complex weapon systems purpose-built for defense requirements, China has made significant progress in becoming a developer of defense capability. From rockets and missiles, to ships and submarines, to fighter aircraft and defense electronics, China has significantly advanced the number and capability of its defense assets. While the quality and capability of China's systems currently remains somewhat behind Western standards in most areas, its ability to produce new systems in volume and at relatively low cost makes its development and production of new weapon systems an area of real concern. What is notable is how extensive China's development of new systems across all military domains has been. China has spared little in this effort. It has significantly ramped up its defense budget in recent years while retooling its force structure. This combination has allowed China to dedicate substantial resources to investing in new systems. It has also bought, leased, copied, and stolen defense technology and design information liberally.

China's progress in defense technology, however, is likely not the result of it having cracked some previously unknown code for defense acquisition. While it is challenging to gather accurate information on developments in China, an unpublished CSIS assessment of timelines for developing major weapon systems suggests U.S. and Chinese timelines for developing new

purpose-built defense systems is quite similar.⁵ China's advantages in growing resources, lower costs, and access to technology shortcuts is likely offset by weaknesses in corporate structure, manufacturing quality and sophistication, and experience. Indeed, China's greatest advances have usually built on areas notable for their commercial success, such as shipbuilding and electronics. China's commercial activity in these sectors have built up impressive reservoirs of industrial capacity and human talent. China has also shown the capability for being a fast follower, building its own versions of U.S. systems like long-endurance drones and stealth aircraft. China's research capacity is also impressive. Its research institutions are robustly supported by the government, and Chinese researchers are at the leading edge in many scientific fields, often serving as co-authors on papers published by leading U.S. research institutions.

The size and growth of the overall Chinese market serves as a key reinforcing function for its efforts, sometimes allowing China to progress despite deep flaws in the design and implementation of its programs. A key element of China's strategy is to leverage this market size effect to its advantage in the military sector through its policy of "Civil-Military" fusion. Civil-military fusion inherently links technology development efforts in the civilian and military arenas to ensure that the best technology is provided to China's People's Liberation Army. It links China's dynamic technology companies to its government-sponsored research institutes and legacy defense industry comprised of state-owned enterprises that have historically been much less dynamic. China's Civil-Military fusion approach reinforces and leverages the "national champion" companies that are promoted in China's overall economic policy, and at the same time, reinforces the leverage of the state over the private sector. The size of China's market not only draws resources in, but it can distort global markets in ways that China seeks to leverage to its advantage by capturing market power over key supply chains to expand its industrial capabilities.

As a whole, China's approach to competition with the U.S. in producing defense capabilities has both key strengths and key weaknesses, but its comprehensive nature and the deep level of commitment to it from national leadership necessitates a serious U.S. effort in response.

Needed Changes in the US Defense Acquisition System

There are several efforts underway in the defense acquisition system that are crafted to deliver the capabilities needed for the competition with China. In several areas, CSIS research has been done in recent years that discussed these developments and makes detailed recommendations. I've worked to reference these reports throughout this testimony.

A core concept in the effort is the capability to apply multi-faceted and distinct approaches to different elements of the competition, a concept captured in DoD's Adaptive Acquisition Framework. The framework specifies a wide range of processes and pathways to developing defense capabilities that can be applied to different lines of effort. While the concept has been formally embraced in policy, DoD is only beginning to develop the capacity to use many new elements of the Adaptive Acquisition Framework and has yet to identify best practices for the

⁵ CSIS is performing a study of schedule in major defense acquisition programs through a research grant awarded in 2019 by the Naval Postgraduate School. Publication of the completed study is scheduled for fall 2020.

use of approaches such as the middle tier of acquisition and new software acquisition pathways. A key test will be DoD's ability to field and deploy capabilities developed through alternative approaches in the framework, something which has not yet been demonstrated at scale. Appropriate acquisition pathways for software development within the Adaptive Acquisition Framework will take significantly more development to meaningfully enable strategic competition with China, and an adaptable systems lane within the framework would help DoD accelerate the deployment of new capabilities.⁶

Another central concept in the effort is the national security innovation base. This concept has grown from DoD's initial outreach to the tech sector through the Defense Innovation Unit Experimental (DIUX) to today, where a growing body of major technology companies are actively competing for DoD business in cloud computing and big data applications. While episodes such as Google's withdrawal from Project Maven show that there are real threats to DoD's ability to access the national security innovation base, the overall situation is currently one of increasing engagement. The research university component of the national security innovation base is also deeply engaged with DoD but is challenged by the fact that a high proportion of graduate students in key fields are non-U.S. citizens without security clearances. These thorny issues between DoD and its partners in the national security innovation base show that management of human capital is one of the key issues in the strategic competition with China. The U.S. is in a competition for talent with China and must protect its ability to appeal to the best technical talent as a core asset. The continuing dynamism of the U.S. economy depends on this asset.

Clarity on the key technologies of the future is also beneficial. The National Defense Strategy (NDS) enumerates a set of core technologies vital to national defense that are highly congruent with the key technologies being pursued in the commercial sector. This clarity will help DoD and the federal government more broadly engage in a focused dialogue with the national security innovation base, and the rest of the private sector, on developments in the strategic competition with China to leveraging private sector R&D in core technologies.⁷ A key missing ingredient to date, however, has been a serious DoD commitment to investing in the key technologies identified in the NDS. While DoD's investment accounts have grown substantially in the last three years, this growth has been highly concentrated in buying systems from existing production lines and doing prototypes of military systems. New investments in the NDS technologies have been modest in comparison, particularly with some of the fundamental science and engineering challenges that confront both DoD and its commercial counterparts. More robust investment in these technologies will not only speed their development, but also support diversifying risk in technology development across the economy through greater competition.

Furthermore, the strategic competition with China gives rise to challenges that can undermine the defense acquisition system's ability to stay linked to commercial markets. China's aggressive use of cyber technology theft and the threat of counterfeit parts has led to efforts protect defense

⁶ Maura McQuade and Andrew Hunter, "The Change We Need: Making Defense More Future Proof through Adaptable Systems" Center for Strategic and International Studies, March 2019.

⁷ Ryan A. Crotty and Andrew P. Hunter "Keeping the Technological Edge: Leveraging Outside Innovation to Sustain the Department of Defense's Technological Advantage" Center for Strategic and International Studies, September 2015.

supply chains, sometimes in ways that could unintentionally cut DoD off from access to commercial markets.⁸ Our current efforts to protect defense supply chains are hindered by the fact that control of our supply chains is highly fractured and frequently obscured. We have a long way to go to achieve the mastery of supply chains which the United States and its allies will need in this strategic competition. A close and continuing dialogue with industry is required to build effective supply chain awareness and enable sound supply chain management.

Finally, I recommend that the committee consider establishing some core metrics for evaluating the defense acquisition system's performance in meeting the China challenge and require that these metrics be monitored over time. At a minimum, such metrics should include the level of DoD's investment in the key NDS technologies and success in leveraging commercial R&D in these areas, the acquisition system's performance in developing and fielding purpose-built military systems such as the performance reports DoD published from 2013-2016, measures of DoD's engagement with different elements of the national security innovation base, and measures of DoD's ability to identify and manage key risks in its supply chain.

I thank you for the opportunity to submit this testimony.

⁸ Dwyer, Morgan, "Does the Defense Department's New Approach to Industrial Base Cybersecurity Create More Problems Than It Solves?" Center for Strategic and International Studies, December 18, 2019.

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From 2005 to 2011, Mr. Hunter served as a professional staff member of the House Armed Services Committee, leading the committee's policy staff and managing a portfolio focused on acquisition policy, the defense industrial base, technology transfers, and export controls. From 1994 to 2005, he served in a variety of staff positions in the House of Representatives, including as appropriations associate for Representative Norman D. Dicks, as military legislative assistant and legislative director for Representative John M. Spratt Jr., and as a staff member for the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China. Mr. Hunter holds an M.A. degree in applied economics from the Johns Hopkins University and a B.A. degree in social studies from Harvard University.

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Testimony Before the House Committee on Armed Services on a hearing on “DOD’s Role in Competing with China”

January 15, 2020

Introduction

Chairman Smith, Ranking Member Thornberry, members of the House Committee on Armed Services, I am honored to appear today and offer my thoughts on “DOD’s Role in Competing with China.” I served 34 years on active duty in the U.S. Navy as a surface officer, with approximately 23 years of that time either operating in the Indo-Pacific or being involved in US Asia-Pacific strategy and policy formulation and execution. Since retirement from the navy this has continued to be my primary focus while establishing an Asian research program at CNA and most recently as a commissioner on the US China Economic and Security Review Commission. I want to emphasize that I am appearing today in my personal capacity and my comments reflect my personal views not necessarily those of CNA, The US China Economic and Security Review Commission or the U.S. Navy.

China as a regional hegemon

It is obvious that Washington and Beijing are in a sustained competition for position, power, and influence throughout the world, and especially in Asia. On June 1, 2019 the Department of Defense (DOD) released its *Indo-Pacific Strategy Report* that repeats the claim first made in the Trump Administration’s *National Security Strategy*, that China seeks “Indo-Pacific regional hegemony in the near term and ultimately global preeminence in the long term.”¹

I think it is important to unpack these claims. First regional hegemony. It is absolutely true that all the countries that live in the shadow of China are never going to escape the predicament of geographic proximity to China. That shapes their security situation and political choices. The reality they face is a China that already militarily overshadows and intimidates them, especially if China’s army is able to march or drive to their frontier. Virtually all of the Asian countries that surround China depend upon trade with China for their economic well-being. In every case China is their largest trading partner. Economically they need China far more than China needs them.

¹ The Department of Defense, “Indo-Pacific Strategy Report: Preparedness, Partnership and Promoting a Networked Region,” June 1, 2019, <https://media.defense.gov/2019/Jul/01/2002152311/-1/-1/1/DEPARTMENT-OF-DEFENSE-INDO-PACIFIC-STRATEGY-REPORT-2019.PDF>

China has the ability to wreck their economies. These geo-economic realities provide Beijing with tremendous political, diplomatic and economic leverage.

A fortunate few: Japan Taiwan, the Philippines, Indonesia, Singapore and further afield Australia have the advantage of being separated by the ocean from the threat of overland invasion. However, except for Australia, all are still within range of China's land based air power (thanks to Spratly and potentially Cambodian airfields) and/or short and intermediate range ballistic missile force. In sum, becoming the regional hegemon in East Asia, the Western Pacific, is a credible Chinese objective.

China is working hard, with some success, to bridge the challenges of projecting combat power across the maritime domain to a distant shore. Most immediately in the case of Taiwan. Actually, Taiwan's shore is not all that distant, and the 100 miles of open water—the Taiwan Strait—still presents a serious challenge for the PLA. But as mentioned Beijing's air and missile power, along with cyber-attacks, provide the means to inflict considerable damage and kill lots of people.

DOD leadership have emphasized that the Indo-Pacific is the priority theater for the US military, yet the Middle East morass is seemingly impossible to escape, and causes these assures to ring somewhat hollow. It continues to absorb US forces that otherwise would be available for additional rotational deployments to the Western Pacific. An increased in rotational deployments from all services is something DOD should seek to expand.

It is important that the US be militarily present throughout the Indo-Pacific to reassure our allies and friends they have not been written off. It is important to provide visible reinforcement to the important policy that “the US military will sail, fly or exercise wherever international law permits.” In this respect DOD should be encouraged provide to Congress its detailed plan for Indo-Pacific Security Initiative so that funding for this previously authorized program can be appropriated. Based of the track record of its European counterpart, this initiative could make an important contribution to US posture and readiness in the Indo-Pacific.

Now to be clear, in East Asia the PLA is always going to have a quantitative advantage over America's “first responders” –the US 7th Fleet, the 5th and 7th US Air Forces and the III Marine Expeditionary Force (III MEF). On a day-to-day basis these organizations are woefully outnumbered by the ever-expanding PLA.

China is after all, the “home team,” with the vast majority of its Army, Air Force and Rocket Forces focused on China's seaward approaches. With but one seaboard, China's entire navy is located along the shores of the East and South China Seas. We cannot match this numerically, but we could greatly improve our qualitative posture; for example, by maintaining a much larger submarine force structure in the region. According to a US Seventh Fleet Fact Sheet,

at any given time there are 8 to 12 SSN's assigned to Seventh Fleet.² Four are permanently stationed in Guam; it would be helpful if four more were stationed in Japan. When combined with rotational deployments from Hawaii and the West Coast, Seventh Fleet submarine presence should be increased to an average of between 12-15. Submarines remain our greatest operational advantage.

Now free of the INF Treaty, DOD is beginning to capitalize on the opportunity to deploy land based conventionally armed ballistic and cruise missiles to the Western Pacific. At this point it appears that this will be a US Army mission assigned to its "Multi-Domain Task Forces." This is still in the fledgling stage, but DOD should be encouraged to make this a priority in order to begin to offset the unchallenged advantage that China Strategic Rocket Force currently enjoys.

Global Preeminence is another matter

I am going to shift now to the second aspect of DOD's official forecast of China's ambitions. Specifically, that over the long-term China seeks global preeminence. Since, DOD did not offer a definition of preeminence; I have taken the liberty of assuming that it includes all the instruments of national power, which includes military power.

China's ability to be militarily preeminent is much more problematic once its forces move away from China and operate beyond the umbrella provided by its land-based air power and ballistic missile forces. It is certainly not preeminent in the Eastern Pacific, the Indian Ocean, the Mediterranean Sea or Atlantic Ocean. There is no question Beijing seeks greatly increased global economic and political influence, we see that playing out daily often in conjunction with threats to withhold trade, or Chinese investment, or Belt and Road (BRI) projects made toward nations that Beijing judges to be insufficiently obsequious. It is difficult to overstate the important role that BRI plays in enhancing Chinese influence globally. In the case of its BRI seaport enhancement projects that stretch from Greece to Malaysia, they improve Chinese trade and economic penetration, while also providing assured access for its navy, and in the future its coast guard.

While Beijing sometimes overplays its heavy handedness, on balance it has successfully formed a broad international herd of states who reliably support, or at least do not contest Beijing's core interests in international fora. They toe the line on Taiwan and Tibet and maintain silence in the face of Beijing's notorious human rights abuses.³ Clearly, China seeks explicit acknowledgement and the attendant deference associated with recognition as a great power. However, they are not close to being preeminent.

² U.S. Seventh Fleet Fact Sheet, <https://www.c7f.navy.mil/About-Us/Facts-Sheet/>

³ See for example, Andrea Kendal-Taylor and Rachel Rizzo, "The U.S. or China? Europe needs to Pick a Side," *Politico Magazine*, August 12, 2019, <https://www.politico.com/magazine/story/2019/08/12/us-china-europe-relations-227614>

Becoming a “great maritime power” is a perquisite for both hegemony in the Western Pacific and preeminence in either the Indian Ocean or globally. In 2012 Xi’s predecessor established the national objective for China to do just that, become a “great maritime power.” Xi enthusiastically supports this objective.⁴

To this end, the PLA remains intent on fielding a capable expeditionary force that could be used throughout the Indo-Pacific and along Africa’s littoral. It is putting in place all the necessary pieces; a large marine corps, a blue water capable amphibious force, aircraft carriers and capable surface combatants needed to gain local sea and air control, but this remains a work in progress.

China is also enhancing its peacetime military position worldwide through foreign military sales to countries such as Thailand, Pakistan, Nigeria, and Algeria, free military education and training and infrastructure projects, often associated with larger BRI initiatives. If this sounds vaguely familiar it should, they are following the US playbook that we perfected during the Cold War.

In order to address Chinese ambitions for military preeminence in the Indian Ocean region, DOD might spend effort and offer assistance in encouraging friends and allies to copy a concept from the PLA and develop their own local anti-access area denial concepts to protect their own maritime approaches from Chinese expeditionary activities. Such an approach would include as a minimum a system of wide area surveillance, which could come from an information sharing arrangement with Washington, land-based air power with anti-ship cruise missiles, land-based missiles and submarines. Australia provides a good example today.

The China Dream and a World Class Military

China’s ambitions are not a secret. General Secretary Xi Jinping has spelled them out since he assumed power in 2012. Xi Jinping’s grand strategic vision, known as the “China Dream,” is to achieve what he terms “the great rejuvenation of the Chinese nation by 2049,” the 100th anniversary of the founding of the People’s Republic. Importantly “the Dream” includes the development of a military commensurate with being a great power; indeed, given Xi’s formulation it would be impossible to accomplish “the Dream” without a powerful military, especially a navy because so much of China’s wealth generation rests on imports of natural resources and trade in finished goods. According to Dr. James Mulvenon: “At the strategic level, he [Xi] linked the “realization of the Chinese dream” to “the dream of strengthening the military forces.” For Xi a powerful PLA is a necessity for achieving “the Dream.”⁵

⁴ For example, “Xi Jinping Stresses the Need To Show Greater Care About the Ocean, Understand More About the Ocean and Make Strategic Plans for the Use of the Ocean, Push Forward the Building of a Maritime Power and Continuously Make New Achievements at the Eighth Collective Study Session of the CPC Central Committee Political Bureau,” Xinhua, July 31, 2013.

⁵ James Mulvenon. “The Cult of Xi and the Rise of the CMC Chairman

During his first work report as General Secretary to the 19th Party Congress in 2017 Xi made this linkage explicit, stating he wanted China's entire military establishment, to be a "world class" force by 2049, and he wants ongoing modernization to be largely be completed by 2035, just 15 years away.⁶ Neither Xi nor other senior officials have defined what "world class" means, but "world class" carries the connotation of being "second to none," being in the "top tier," or being the "best in the world."

One little appreciated aspect of becoming a "world class military" is its linkage to what the Chinese call "military civil fusion." This is firm policy, not a fortunate happenstance. The intent is to spur innovation that capitalizes on artificial intelligence, new materials, and new energy. These technologies underpin further innovations. The aim is to link these outcomes to Chinese military modernization. The goal is to eliminate barriers between the commercial and defense sectors to aid in long term Chinese military development. A good discussion of "military-civilian fusion can be found in the 2019 Annual Report by The US-China Economic and Security Review Commission.⁷

As a former strategic planner, I think it is prudent to assume the worst when an authoritarian leader sets a specific objective of becoming "world class." Xi's "world-class" military goal should be viewed as a general, high-level concept of force development and not as a strategy for how China plans to use its armed forces. The goal of developing a "world-class" military is to catapult the PLA into the top tier of military powers. It wants to be able compete effectively against the best. One way to think about this question is to expect China to achieve widely-recognized benchmarks of what is means to be a top-tier military today (e.g., aircraft carriers, nuclear weapons, long range bombers, space assets and capabilities).⁸ It is also focused on the future, China's 2019 Defense White Paper reaffirms that its vision of future warfare is one that emphasizing information technology, intelligence, surveillance, and reconnaissance, and precision strike capabilities.⁹

Responsibility System," *China Leadership Monitor*, Winter 2018, Issue 55, January 23, 2018, <https://www.hoover.org/sites/default/files/research/docs/clm55-jm-final.pdf>.

⁶ Xi Jinping, "Secure a Decisive Victory in Building a Moderately Prosperous Society in All Respects and Strive for the Great Success of Socialism with Chinese Characteristics for a new Era," Delivered at the 19th National Congress of the Communist Party of China, October 18, 2017,48. http://www.xinhuanet.com/english/download/Xi_Jinping%27s_report_at_19th_CPC_National_Congress.pdf:

⁷ 2019 Report to Congress of the U.S.-China Economic and Security Review Commission, <https://www.uscc.gov/sites/default/files/2019-11/2019%20Executive%20Summary.pdf>

⁸ M. Taylor Fravel, Testimony Before the U.S. China Economic and Security Review Commission, June 20, 2019, https://www.uscc.gov/sites/default/files/Fravel_USCC%20Testimony_FINAL.pdf.

⁹ The State Council of the People's Republic of China, *China's National Defense in the New Era*, Beijing July 2019, 4.

I trust that DOD is as concerned as I am about how little we apparently know about what a “world class” Chinese military would actually consist of. I assume it will be big, but how big and with what kind of capability? Is it going to be a copy of the US force structure, with Chinese characteristics of course? Adding a section to its annual report to Congress on Chinese Military and Security developments that specifically addresses the “world class” military objective would be a useful way to focus more attention on this Chinese objective.

China has “sea lane anxiety.”

The United States and its friends and allies currently have important military leverage because of China’s economic dependence on maritime trade in raw materials, especially hydrocarbons. Its strategists are obsessed with notion that America is bent on containing China, and the PLA’s mission includes trying to prevent this since any attempt at military containment would almost certainly focus on Beijing sea-lanes of communications (SLOCs). Reading official PLA defense documents suggests, justifiably, that the PLA is suffering from a case of “SLOC anxiety.”¹⁰

Many of China’s traditional sea-lanes in the Indo-Pacific have been rebranded as the “Maritime Silk Road” and as such are part of Xi global BRI initiative to make China the center of global trade and economic development. In the Indian Ocean China’s long SLOC presents China’s navy with a very difficult defensive problem.

China is bent on addressing this by establishing a network of bases or places, what the PLA sometimes calls outposts, along the Indian Ocean littoral. Djibouti is the first.

The PLAN has also commissioned or launched over 130 modern ships capable of operating in the Indian Ocean, or for that matter anywhere in the world, while remaining on station for months at a time. Today this is far and away the second largest and most modern “blue water” navy in the world. These ships have all been built over the past 15 years, and includes two aircraft carriers, thirty-six modern multi-mission guided missile destroyers (DDG), thirty modern frigates, twenty-six submarines and ten replenishment ships. Significantly, this is simply a current count on the way to unknown endpoint. China continues to build blue-water capable ships and submarines with no publicly known numerical force structure objective. (Attachment 1 to this testimony includes a detailed breakdown.)

¹⁰ The State Council Information Office of the People's Republic of China, *China's Military Strategy*, May 2015, 9, <http://eng.mod.gov.cn/Database/WhitePapers/index.htm>. The strategy has this to say about sea lanes, “With the growth of China’s national interests...the security of overseas interests concerning energy and resources, strategic sea lines of communication (SLOCs), as well as institutions, personnel and assets abroad, has become an *imminent issue*. (emphasis added.)”

Operationally, the Chinese navy and I suspect eventually the Chinese air force will be increasingly drawn into the Indian Ocean in larger numbers than its current small anti-piracy Task Forces because of the BRI and SLOC anxiety. This is something DOD needs to monitor closely lest PLA deployments and “forward presence” operations begin to tip the scales toward the Chinese preeminence that DOD has written about.

Influence Operations

A central PRC objective is to make the global environment “safe” for the Chinese Communist Party, for the Party to be recognized and accepted as the legitimate government of China, rather than as some sort of a way station on the way to democracy. Beijing vehemently rejects what it terms the threat of “peaceful evolution” to a more representative form of government. Accordingly, it pursues “influence activities” to create sympathetic views of its government, policies, society, and culture, as part of a worldwide effort to shape international narratives about and policies toward China.

In this effort, all the instruments of Chinese national power, especially its economic strength and concomitant diplomatic influence, especially in the UN and UN agencies and its increasingly global military capability are harnessed “to control the global narrative about China in order to coopt people and governments overseas into supporting China’s foreign and domestic policy positions. The campaign targets all regions of the world and involves use of informational, institutional, and technological instruments to influence a wide variety of actors in foreign societies.”¹¹

Washington needs whole of government activity that is sustained over the long term to provide a counter narrative. In the case of DOD, obviously policy experts in OSD play a key role in delivering America’s narrative. Another potential resource is available. Below the four-star officer level, who are out and about, other uniformed leaders are engaged on daily basis with foreign audiences both uniformed and civilian. In my experience, the vast majority shy away from any discussion of US policy approaches that stray beyond cooked strategy comments or the mission of the moment. That is not the case with PLA officers who go abroad and are practiced at reciting the litany of alleged American transgressions. It is worth investigating whether it is good idea to arm all our uniformed leaders with the information necessary to factually explain

¹¹ Task Force Report, “Course Correction : Toward an Effective and Sustainable China Policy,” eds. Orville Schell and Susan Shirk, Asia Society Center on US-China Relations and UC San Diego School of Global Policy and Strategy 21st Century China Center, February 2019, p. 41.

US policy and interests, while commenting on what China is up to. They must be able to respond to questions.

Concluding thoughts:

Time does not permit a detailed comments on China's very bold ambitions in space. Both the United States and China are dependent on space-based assets for military operations in peace and war. But beyond the purely military uses of space, Beijing has produced a sweeping civil-military master plan that is aimed at making them the world's leading space power. It is not simply a statement of aspirations, but a detailed approach to development of capabilities that they have been executing quite well. For example, this year, China will have completed its network of the Beidou global navigation system that has more satellites than our original GPS system. Significantly, it has better coverage of the Indo Pacific than GPS. This major economic implications for the global positioning industry. Rather than merely repeat the excellent assessment and related recommendations found in in the 2019 Report to Congress by the U.S. China Economic and Security Review Commission, I recommend that DOD and the new Space Force be asked to report to this committee on the implications for US security on China's space ambitions.

I think there is too much talk about the fact 60% of the US military is stationed in the Indo-Pacific largely in Hawaii and along the western seaboard. This constant refrain could lead to miscalculations abroad, suggesting that the US would only employ slight less than two-thirds of its military capabilities in a dust up with China. We need to make clear that should a crisis arise that could lead to conflict it is the ENTIRE United States military, not just 60%, that would be involved, including in the case of the US Navy, the bulk of the Atlantic Fleet.

Finally, the long-term challenge to US important national interests comes from China and not from anywhere in the Middle East or Russia. We must adopt a long-term plan, that, as I mentioned, is whole of government. For DOD, that must begin with a predictable level of funding, that is not disrupted annually, with continuing resolutions and the like. The only way that DOD can plan for a long-term competition is with predictable strategic policies that value our alliances and a predictable resource base. A good starting point is DOD's 2019 Indo-Pacific Strategy Report. It is not a perfect document, it is too glossy and too long, but it lays out a sensible strategic approach. However, it lacks clout, it needs to be signed by the President not an interim Secretary of Defense. I suggest that it be recast, shortened to not more than 10 pages, vetted on Capitol Hill and be approved by the White House.

I look forward to your questions.

Attachment 1**China's blue water Navy**

It is difficult to appreciate the magnitude of PLAN's development of a blue water navy without context. One way is to compare them to the other great navies of the world. The chart below does this. This comparison *is not an order of battle inventory* in which every ship of every class is counted. Rather it is a comparison of the number of Chinese blue water warships to other nations with who have historically demonstrated the ability to operate globally. The ship count totals are projected to the 2020-2021-time frame.

Exhibit 1: "Blue water" Capable Ships of Major Naval Powers (In commission or fitting out after launch) ca. 2021

	China	UK	France	Japan	India	Russia	United States
Carriers	2	2	1	2 (Izumo class being adapted for F-35B aircraft.)	2	1	11
Aegis-like Destroyer	36	6	2	12	4	0	90 (CG and DDG)
Modern Frigate (FFG)	30	13	8 (FREMM)	0	4	10	0 (25 LCS are not FFG's)
Large Amphibious	9	5	3	3+2 DDH	1	0	34
Combat Logistics	10	3	3	5	5	3 very old	30
SSN	8	6	5	0	1	17+8 SSGN	53+4 SSGN
SS	30 (Song 8/Yuan 22)	0	0	22	16	19	0
SSBN	6	4	4	0	1	13	14
Total	124	39	26	44	33	71	236 (plus 25 LCS)

Sources: DOD Annual Reports to Congress: Military and Security Developments on the PRC 2012, 2018, 2019, Janes Defense Weekly's announcements of ship commissioning's, IISS Strategic Balance 2018 and 2019 for all countries listed in the table, Websites for the Indian Navy, Royal Navy, French Navy, Rick Joe's *Diplomat* series on the future of the PLA Navy, Ronald O'Rourke's, semi-annual update of his Congressional Research Service report China Naval Modernization, Office of Naval Intelligence (ONI) *The Russian Navy 2015*, and ONI's *The PLA Navy: New capabilities and Missions for the 21st Century*.

This chart illustrates that in terms of modern warships and submarines China either matches or far outstrips any erstwhile naval competitors, except the United States. While the PLAN's far seas capabilities are very impressive when measured against the rest of the world, America's far seas naval forces still overshadow the PLAN. Virtually all of America's warships are blue water capable since they are expected to operate globally. The United States has both a qualitative and quantitative advantage in aircraft carriers, high-end air defense cruisers and destroyers, large amphibious ships and nuclear attack submarines. On the other hand all of China's ships, both the "blue water" ships listed above plus who have not been included because they are not "blue water" in mission or employment history but are dedicated to "near seas" roles, are homeported in East Asia whereas most the US Navy is homeported thousands of miles away. What this means in practice is that on a daily basis virtually all of the Chinese Navy is either in port in China or operating in home waters in and around the "First Island Chain."

A Big Uncertainty: How large will the PLAN be in 2035?

We know Xi wants a "world class force." He was not the first to indicate China needed a big navy; former party Secretary Hu Jintao, also established an ambitious objective in 2012 saying "Building strong national defense and powerful armed forces that are *commensurate with China's international standing* and meet the needs of its security and development interests is a strategic task of China's modernization drive..."¹² We also already know that China has not yet seen fit to publish its intended navy force structure objective, it remains a state secret. A few experts like Rick Joe and James Fanell have published projections of PLAN strength in 2030. What follows below is my estimate of overall PLAN warship strength in 2035.¹³

¹² Full text of Hu Jintao's Report at the 18th Party Congress," Xinhua, 17 November 2012, http://news.xinhuanet.com/english/special/18cpenc/2012-11/17/c_131981259.htm

¹³ See, James Fanell, "The Rise of China's Navy: A Discussion with Captain James Fanell," *Hudson Institute*, May 21, 2019, <https://www.hudson.org/research/15045-transcript-the-rise-of-china-s-navy-a-discussion-with-capt-james-fanell>. Fanell projects 450 surface ships and 110 submarines in 2030. See also Rick Joe, "Predicting the Chinese Navy of 2030," *The Diplomat*, February 13, 2019, <https://thediplomat.com/2019/02/predicting-the-chinese-navy-of-2030>. Joe predicts a total of 110 surface combatants (not including corvettes or fast attack craft), 84 submarines, 4 carriers, and 11 major amphibious assault ships for a total of 209 of these classes of ships in 2030.

To speculate on what the PLA would look like in 15 years a good starting point is to assess what it has done over the past 15 years. Over the last 15 years China commissioned or has launched 124 blue water capable ships (listed in chart above) I am counting only surface combatants, including the carrier, major amphibious assault ships, submarines and large fleet replenishment ships. Over the same 15 years China has constructed the approximately 115 warships destined for operations only in China's near seas. So, over the last decade and a half it has added a total of approximately 240 new warships to its navy. During several of these years China's most modern ship yards were not yet in production, so it is not unreasonable to forecast that over the next 15 years it could commission or launch 140 more blue water ships in order to grow far seas capacity and to replace ships some of today's blue water ships that were commissioned between 2005 and 2010. *In sum, my forecast of just the PLAN's blue water capability in 2035 is around 262 warships.*

I think this mix would include many more submarines, perhaps doubling the size of the PLAN current submarine force. Submarines will increasingly be valued since they cannot, yet, be tracked from space. The number of nuclear attack submarine will be a larger proportion of the overall submarine force. If the anticipated new nuclear submarine construction hall at Huludao actually has the capacity that enthusiasts have suggested it would not be unreasonable to estimate that over the next 15 years, the PLAN could commission an average 1.5 SSN's annually.¹⁴

The need for air cover for surface ships operating away from China leads to the question of how large will the PLAN carrier force become? It seems that three will be operation by 2025, and the issue is how many more carriers does the PLAN think it needs, and how many will it have in the water by 2035. The track record of PLAN carrier and airwing development has been a careful unhurried approach. The PLAN has demonstrated admirable caution in how it has elected to take a measured approach to introducing carrier aviation into the navy. I see no reason for that to change. A third larger catapult equipped carrier is apparently under construction, it is estimated to considerably larger than the *Liaoning* and her near sister, somewhere in the range of 85,000 tons.

This is an entirely new, and unproven design. On a ship of this complexity, the construction and fitting out process could take some time. As the United States has learned to its dismay with its new design *Ford Class* carrier, the urge to stuff as much new technology as possible into the ship can result in expensive delays.¹⁵ The PLAN also needs to invest in new air

¹⁴ Rick Joe, "Pondering China's Future Nuclear Submarine Production," *The Diplomat*, January 23, 2019, <https://thediplomat.com/2019/01/pondering-chinas-future-nuclear-submarine-production>.

¹⁵ For instance, this paragraph summarizes the problem of many new systems being introduced simultaneously: "The delays in the ship development and initial trials pushed both phases of initial operational testing until FY21 and FY22. The delay in the ship's delivery and development added approximately 2 years to the timeline. As noted in previous annual reports, the CVN 78 test schedule has been aggressive, and the development of EMALS [Electromagnetic Aircraft Launch System], AAG [Advanced Arresting gear], AWE [Advanced Weapons Elevator],

frames for the PLAN's carrier fleet, the search for a replace for its carrier capable J-15 "Flying Shark" aircraft is already underway. If one assumes a six-year building and outfitting period, and the design remains relatively stable the PLAN could have a five to six carrier force by 2035. By that time *Liaoning*, if it is still in commission, will probably have been relegated to the status of a carrier aviator training ship.

PRC shipyards have demonstrated the ability to turn out destroyers, frigates and corvettes in quantity so building capacity is not an issue. The PLAN will have an important voice in determining the precise mix of surface combatants, but it may also be forced to make sub-optimal choices if economic or leadership developments cause its budget share to drop. I would guess that over the next 15 years the numbers of these classes of ships will grow with an emphasis on improved ASW capability and on long range surface to air missiles systems.

Turning to the near seas category of warships I estimate that its "near seas" unit strength will remain constant, in the range of 160 ships (115 of which were commissioned since 2005). The biggest change will be ongoing replacement of the 60 odd single mission *Houbei* class fast attack craft with frigates or corvettes that retain the same ASCM punch but also add ASW capability.

Finally, my guess is that the PLAN in 2035 will consist of approximately 260 blue water ships of the classes discussed above, plus another 160 smaller ships, or special mission units that are really not well suited for distant water operations. *The result will be a 420 ship PLAN that will be the world's largest, by far. (This number does not include minesweepers, small amphibious ships and sundry auxiliary ships.) By any measure this sort navy will have to be judged "world class."*

DBR [Dual Band Radar], and the Integrated Warfare System delayed the ship's first deployment to FY22." Ronald O'Rourke, "Navy Ford (CVN-78) Class Aircraft Carrier Program, *Congressional Research Service* RS 20643, July 24, 2019, <https://fas.org/sgp/crs/weapons/RS20643.pdf>, 21.

Rear Admiral Michael McDevitt, Retired
Senior Fellow, CNA

Rear Adm. Michael McDevitt focuses on U.S. security issues in East Asia. He founded CNA's Strategic Studies division in 2000, and since stepping down as a Vice President in 2012 has been active as a Senior Fellow, leading several major projects related to maritime disputes in the East and South China Seas and China's ambition to become a "great" maritime power. He also developed a major project that analyzed significant security issues along the entire Indian Ocean and Pacific Ocean littoral from a maritime perspective.

His other expertise includes strategy, war planning and naval operations worldwide.

During his 34-year naval career, McDevitt held four at-sea commands, including command of an aircraft carrier battle group. He spent all of his operational time in the Pacific, including a two-year assignment in Sasebo, Japan. McDevitt was Chief of Naval Operations Strategic Studies Group Fellow at the Naval War College and has been the Director of the East Asia Policy Office for the Secretary of Defense. He also served as the Director for Strategy, War Plans and Policy (J-5) for U.S. CINCPAC. McDevitt concluded his active-duty career as the Commandant of the National War College in Washington, D.C.

McDevitt holds an M.A. in American Diplomatic History from Georgetown University and a B.A. in U.S. History from the University of Southern California. He is also a graduate of the National War College.

RECENT NEWS

August 30, 2019

Michael McDevitt says, "The reality on the ground is that China has occupied the entire Paracel group for 40 years and, short of military action by Vietnam to recapture the archipelago, will never leave."

CNN: "The Tiny Islands That Could Explode the China-Vietnam Relationship"

March 6, 2019

Michael McDevitt says, "Between 1950 and 1953, the U.S. Air Force and Navy flattened North Korea, so the NORKS have had 65 years to think about how to make sure that does not happen again and dig lots of bomb proof shelters and tunnels,"

The National Interest: "Stealth Strike: North Korea vs. America's F-22, F-35 and B-2 Bombers"

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**WITNESS RESPONSES TO QUESTIONS ASKED DURING
THE HEARING**

JANUARY 15, 2020

RESPONSE TO QUESTION SUBMITTED BY MR. COURTNEY

Ms. FLOURNOY. I do see the contradiction. South Korea actually makes one of the largest contributions to defray the costs of the U.S. troops it hosts relative to other allies. They are actually a very good partner in terms of financial support as well as military and operational cooperation. So we should not be beating them about the head and shoulders on this issue. [See page 21.]

RESPONSE TO QUESTION SUBMITTED BY MR. TURNER

Ms. FLOURNOY. China is one of the few countries that has real leverage over the North Korean regime given Pyongyang's dependence on China for both trade and energy supplies. Any serious U.S. diplomatic effort with regard to North Korean nuclear weapons should aim to bring China on board as a partner in reducing the threats to regional stability that North Korea poses. The U.S. and China have a shared interest in preventing conflict on the Korean peninsula, and the U.S. should seek to enlist and encourage Beijing to use what leverage it has to keep Kim Jong Un from undertaking provocative actions, like nuclear and ballistic missile testing, and to incentivize him to come to the negotiating table and engage more seriously on measures to reduce and roll back the North Korean nuclear threat. [See page 23.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

JANUARY 15, 2020

QUESTIONS SUBMITTED BY MR. MITCHELL

Mr. MITCHELL. Ms. Flournoy, in your witness statement, you raise concerns about the DOD acquisition workforce, its training and use of the flexible authorities Congress has provided in recent years. I supported legislation this year that directed the DOD to update its certification and education requirements.

Do you think this legislation went far enough?

Do you have any recommendations for future legislation and/or recommendations for the DOD as they implement this legislation?

Ms. FLOURNOY. I applaud your efforts to require the Department to have more rigorous education and certification requirements for the acquisition workforce. My main concern is that leveraging cutting-edge commercial technologies to accelerate defense innovation requires a different approach to acquisition than what the DOD acquisition workforce is traditionally trained to do. Acquiring software—and other technologies that use agile development—is a very different process than acquiring an aircraft carrier or weapons system. I also applaud the requirement in your legislation for DOD to establish training and management programs for oversight of software development and acquisition. That's a great step in the right direction. But I think the Department needs to go farther, in three key ways. First, it should develop a cadre within the acquisition workforce that is trained and specialized to focus on commercial technologies that require agile development processes, including but not limited to software. (As you well know, the Department is currently relying on people who've managed traditional acquisition programs to oversee software development programs that require a completely different skillset, risk tolerance, and approach to be successful.) Second, the Department needs to incentivize the new cadre, and the acquisition workforce more broadly, to use all of the flexible authorities that Congress has provided, with speed and at scale. In some cases, the spiral development process associated with developing and integrating emerging commercial technologies will require program managers and their seniors (not to mention their Congressional overseers) to be willing to tolerate a higher degree of risk than is normally the case. Taking appropriate risk that allows developers to fail fast, learn and iterate for more rapid success should be recognized and rewarded. Third, the Department must provide a viable career path for this new cadre and attractive opportunities for promotion over time.

QUESTIONS SUBMITTED BY MR. WALTZ

Mr. WALTZ. How do we increase authorizations and investments in science and technology research across the U.S. government, while ensuring that those investments are not exploited by the Chinese government? Especially for those agencies like National Science Foundation, National Institute of Standards and Technology, National Oceanic and Atmospheric Administration that may or may not fully comprehend the threat to their data.

Ms. FLOURNOY. The surest way to strengthen the United States' ability to compete with China is to invest in the drivers of American competitiveness. This includes investing in science and technology research across the U.S. government and incentivizing the private sector to increase its R&D investment as well. In terms of reducing the ability of the Chinese government to exploit that research, we should have a clear notion of which areas we need to protect. There may be areas where it is fine for us to share and collaborate (e.g. climate change mitigation technologies, or ways to prevent pandemics). But in areas that touch on national security, we should take care to protect against compromise or exploitation along several dimensions. First, we should require USG agencies to undertake careful due diligence on any foreign research partners. Second, research teams should be required to show that they have undertaken a cybersecurity assessment to determine whether appropriate measures have been taken to protect sensitive IP from state-sponsored cyber threats. Third, there should be more fulsome interagency discussions on this subject, so that agencies outside the national security community that sponsor or conduct some of this research are aware of some of the national security factors or concerns.

Mr. WALTZ. What options do you see for strengthening the scrutiny with which Chinese investment is reviewed by Committee on Foreign Investment in the United States (CFIUS)?

Ms. FLOURNOY. The CFIUS process has been strengthened over the years, and I believe it is performing well. I don't have any particular recommendations for how

to make it stronger. In general, I think we should focus not on passive Chinese investment, but on investments that would give Chinese investors a controlling interest, access to non-public IP, a board seat, and/or substantive decision-making authority in companies that have dual-use or national security related technologies.

Mr. WALTZ. What do you believe is China's strategy in Africa and why is it important that the U.S. maintain a presence in the region?

Ms. FLOURNOY. China seeks, first and foremost, to secure access to strategic natural resources that it relies on for its economic growth. Its near-term motivations to gain access and influence in Africa are largely mercantilist in nature. That said, for the long term, it is also seeking access to infrastructure and leaders that can support future growth in its military footprint, specifically military bases that could be used for power projection and the securing of sea lines of communication. Given the scale and scope of China's Belt and Road initiative, the United States must take a strategic approach to deciding where it is important to counterbalance Chinese influence, and prioritize accordingly. We also need to be creative about how best to compete for influence in key parts of the continent, leveraging new tools like a U.S. Digital Development Fund. This will help ensure that we have the influence we need to protect our interests. In the near term, we also need to evaluate the presence we require to support important ongoing counter-terrorism operations.

Mr. WALTZ. How do we increase authorizations and investments in science and technology research across the U.S. government, while ensuring that those investments are not exploited by the Chinese government? Especially for those agencies like National Science Foundation, National Institute of Standards and Technology, National Oceanic and Atmospheric Administration that may or may not fully comprehend the threat to their data.

Mr. HUNTER. The awareness of the Chinese threat to U.S. R&D is currently high among U.S. government agencies including the civilian R&D agencies. However, the main vulnerabilities associated with this information lies in the entities that perform the bulk of this research, which are primarily universities and industry. The awareness of the aggressive measures Chinese institutions employ to collect research and technology from U.S. and other international sources is also growing in this R&D community. However, this awareness comes after a long period of time in which China's successfully exfiltrated large volumes of U.S. R&D, meaning that existing university and industry information protection practices need reform and making these changes can be difficult and sometimes expensive. Solutions to the problem are also complicated by the need to distinguish basic science research (which is generally published and publicly shared) and technology development that requires protection. While 6.1 basic research is usually designed for public release, 6.2 applied research often has dual use applications and can be harder to assess. Usually 6.3 advanced technology development is more focused on applications where military relevance is clear. In addition, the talent pool for advanced science and technology work is heavily dependent on foreign students including many from China. This requires the research community to clearly distinguish between more general scientific work, which can be internationally shared and undertaken by international students, from more focused research that must be closely protected from espionage.

For industry engaged in R&D activities, there is a financial incentive to protect intellectual property so that revenues resulting from the R&D can be retained by the firm. There are also strict contract requirements and procedures for handling classified information, but a significant amount of important information falls outside the classification schema while nonetheless requiring protection. The Department of Defense has been increasingly working with industry to enhance security for this "controlled unclassified information (CUI)," working to identify this information and develop protocols for protection. The civilian R&D agencies have recently worked to expand protection of CUI among their research recipients.

For universities, the challenges are more acute. The financial incentives around information protection are less clear cut and the challenges steeper. There are also less clear mechanisms for enforcement. Having said that, the university research community is now taking the challenge seriously. A recent December 2019 report by the JASONS (https://nsf.gov/news/special/reports/jasonsecurity/JSR-19-21FinalResearchSecurity_12062019FINAL.pdf), commissioned by the National Science Foundation, recommended a path ahead on these challenges. It leverages the existing mechanisms in place for enforcing research integrity as a means of ensuring compliance with the need to protect CUI.

In my view the most effective path to improving university information protection practices is to work closely with universities to identify mechanisms and protocols that work in the university research setting. I am concerned that an approach not well coordinated with key research universities will drive researchers away from

government work while not substantially increasing security. The National Science Foundation does seem the best equipped civilian agency to take on this role, potentially with support from DOD's Under Secretary of Defense for Research and Engineering.

Mr. WALTZ. What options do you see for strengthening the scrutiny with which Chinese investment is reviewed by Committee on Foreign Investment in the United States (CFIUS)?

Mr. HUNTER. CFIUS is a highly effective review process when it is engaged. In fact, the expansion of CFIUS reviews as a result of the FIRRMA legislation have reportedly served to substantially reduce Chinese-connected M&A activity in Silicon Valley and elsewhere in the United States. The two biggest hurdles for effective CFIUS review right now are resource limitations and the growth of non-transparent investment vehicles such as private equity.

The CFIUS review process has no dedicated funding source. Agencies staff CFIUS reviews as they arise and if the pace of cases increases there is no corresponding increase in the resources available to review them. This creates the potential for understaffed reviews at just the point in time they are most needed, for example during a surge in overseas investment in sensitive U.S. industries. There has been some discussion of creating a dedicated funding source for CFIUS through a transaction or filing fee. I think resourcing this process properly should be a priority.

One of the main challenges of CFIUS reviews is determining how extensive the potential for foreign influence is that needs to be mitigated. Private equity and other investment funds can be used a vehicle through which foreign funding can reach U.S. companies while presenting either a domestic or non-threatening foreign façade. This issue is addressed in the banking system through "know your customer" mandates. This problem could be addressed with disclosure requirements for mergers and acquisition activity in the absence of more transparency in private equity more generally.

Mr. WALTZ. What do you believe is China's strategy in Africa and why is it important that the U.S. maintain a presence in the region?

Mr. HUNTER. China's approach to Africa is consistent with its broader foreign policy objectives of developing a network of friendly states with political and commercial ties to China in which China plays a leadership role. Often, these ties work very much to China's advantage through the development of long-term leases of critical infrastructure, such as ports, and with preferential access to Chinese industry. China sees Africa as a major area of foreign policy opportunity because of historically good ties between China and Africa, historically problematic ties between Africa and the West, and the dramatic growth of African economies. China's presence in Africa is highly visible and comprehensive. My colleague, Judd Devermont, has written an in-depth look at China's activity in port infrastructure and the potential challenges this presents to U.S. interests: (<https://www.csis.org/analysis/assessing-risks-chinese-investments-sub-saharan-african-ports>).

The United States has seen many of the same strategic opportunities in Africa and past Administrations have sought to leverage these opportunities through increased trade ties (e.g. the African Growth and Opportunity Act), cooperation in fighting the AIDS epidemic (PEPFAR), and support for more effective governance and development through the Millennium Challenge Corporation (MCC).

On the military side, U.S. Africa Command (AFRICOM) was formally separated from U.S. European Command in 2007 so that a dedicated command could focus on building security through strong military relationship across the continent. AFRICOM was initially structured to facilitate this long-term relationship building with a strong tie to the U.S. State Department. The longer-term relationship and security building aspect of AFRICOM's mission is probably most important to countering Chinese influence in Africa.

However, operational realities in Somalia, Libya and the Sahel region have also made AFRICOM one of the United States busiest operational commands. While the footprint of U.S. forces in Africa has been relative light, these operations have been very active, continuous, and they range widely over multiple areas. The U.S. presence has been important in helping to avoid conflicts spreading across the African continent and in directly countering terrorist influence. If the United States were to abruptly abandon these operations without an opportunity to transition them to other forces (if any were found willing to take them on) it would substantially set back U.S. credibility on the continent and undermine many of the relationships already established.