

[H.A.S.C. No. 113-4]

**PERSPECTIVES ON THE FUTURE
NATIONAL SECURITY ENVIRONMENT:
TECHNOLOGICAL, GEOPOLITICAL,
AND ECONOMIC TRENDS AFFECTING
THE DEFENSE STRATEGIC GUIDANCE**

HEARING

BEFORE THE

SUBCOMMITTEE ON INTELLIGENCE, EMERGING
THREATS AND CAPABILITIES

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

HEARING HELD
FEBRUARY 13, 2013



U.S. GOVERNMENT PRINTING OFFICE

79-492

WASHINGTON : 2013

SUBCOMMITTEE ON INTELLIGENCE, EMERGING THREATS
AND CAPABILITIES

MAC THORBERRY, Texas, *Chairman*

JEFF MILLER, Florida	JAMES R. LANGEVIN, Rhode Island
JOHN KLINE, Minnesota	SUSAN A. DAVIS, California
BILL SHUSTER, Pennsylvania	HENRY C. "HANK" JOHNSON, JR., Georgia
RICHARD B. NUGENT, Florida	ANDRE CARSON, Indiana
TRENT FRANKS, Arizona	DANIEL B. MAFFEI, New York
DUNCAN HUNTER, California	DEREK KILMER, Washington
CHRISTOPHER P. GIBSON, New York	JOAQUIN CASTRO, Texas
VICKY HARTZLER, Missouri	SCOTT H. PETERS, California
JOSEPH J. HECK, Nevada	

KEVIN GATES, *Professional Staff Member*

TIM MCCLEES, *Professional Staff Member*

JULIE HERBERT, *Staff Assistant*

CONTENTS

CHRONOLOGICAL LIST OF HEARINGS

2013

	Page
HEARING:	
Wednesday, February 13, 2013, Perspectives on the Future National Security Environment: Technological, Geopolitical, and Economic Trends Affecting the Defense Strategic Guidance	1
APPENDIX:	
Wednesday, February 13, 2013	37

WEDNESDAY, FEBRUARY 13, 2013

PERSPECTIVES ON THE FUTURE NATIONAL SECURITY ENVIRONMENT: TECHNOLOGICAL, GEOPOLITICAL, AND ECONOMIC TRENDS AFFECTING THE DEFENSE STRATEGIC GUIDANCE

STATEMENTS PRESENTED BY MEMBERS OF CONGRESS

Langevin, Hon. James R., a Representative from Rhode Island, Ranking Member, Subcommittee on Intelligence, Emerging Threats and Capabilities	9
Thornberry, Hon. Mac, a Representative from Texas, Chairman, Subcommittee on Intelligence, Emerging Threats and Capabilities	1

WITNESSES

Berteau, David J., Senior Vice President and Director, International Security Program, Center for Strategic and International Studies	7
Hoffman, Francis G., Senior Research Fellow, Institute for National Strategic Studies, National Defense University	2
Lewellyn, Dr. Mark T., Director, National Security Analysis Department, Johns Hopkins University Applied Physics Laboratory	5

APPENDIX

PREPARED STATEMENTS:	
Berteau, David J.	73
Hoffman, Francis G.	41
Lewellyn, Dr. Mark T.	58
DOCUMENTS SUBMITTED FOR THE RECORD:	
[There were no Documents submitted.]	
WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING:	
Mr. Nugent	91
QUESTIONS SUBMITTED BY MEMBERS POST HEARING:	
Mr. Franks	95

PERSPECTIVES ON THE FUTURE NATIONAL SECURITY ENVIRONMENT: TECHNOLOGICAL, GEOPOLITICAL, AND ECONOMIC TRENDS AFFECTING THE DEFENSE STRATEGIC GUIDANCE

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON INTELLIGENCE, EMERGING THREATS AND
CAPABILITIES,

Washington, DC, Wednesday, February 13, 2013.

The subcommittee met, pursuant to call, at 2:05 p.m., in room 2118, Rayburn House Office Building, Hon. Mac Thornberry (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. MAC THORNBERRY, A REPRESENTATIVE FROM TEXAS, CHAIRMAN, SUBCOMMITTEE ON INTELLIGENCE, EMERGING THREATS AND CAPABILITIES

Mr. THORNBERRY. The hearing will come to order. I think Mr. Langevin is on his way, but we have been asked to go ahead and get started. So let me just take a moment to welcome our members, witnesses, and guests to the first hearing of the 113th Congress for the newly renamed Subcommittee on Intelligence, Emerging Threats and Capabilities. I think this added portion of our responsibilities dealing with military intelligence oversight is a perfect fit with this subcommittee's charge to look ahead at national security challenges facing our Nation in the future.

And I am particularly pleased, and I can say this since he is not here, that I have the opportunity to continue to work with Mr. Langevin. Both of us being on the Intelligence Committee as well as this committee I think is a real asset to fulfilling those new responsibilities.

Today we start our hearings with a broad look at global trends that may affect our national security. Recently the National Intelligence Council released publicly its latest installment of their Global Trends publication, which received a fair amount of attention in the press, and it seems to me that our witnesses today have valuable but also varied perspectives to help stimulate our thinking about the challenges that our country faces in the future. And again, that is exactly what this subcommittee has been asked to look at.

Unless the gentleman from Georgia would like to make an opening statement, I can reserve until Mr. Langevin comes and let him do it when he arrives. It is up to you all.

Mr. JOHNSON. I would like the opportunity, but I think it is best to wait for Mr. Langevin.

Mr. THORBERRY. Okay. I will let him make whatever statement he wants to and then his questions.

So anyway, again, thank you all very much for being here. Let me now turn to our witnesses. They include Mr. Frank Hoffman, senior research fellow at National Defense University; Dr. Mark Lewellyn, director, National Security Analysis Division at Johns Hopkins University Applied Physics Laboratory; and Mr. David Berteau, senior vice president, director of the International Security Program for CSIS, Center for Strategic and International Studies.

Again, thank you all for being here. Without objection, your full statement, written statements will be made part of the record, and at this time we would be delighted for you to summarize or offer such other comments as you would like.

Mr. Hoffman.

STATEMENT OF FRANCIS G. HOFFMAN, SENIOR RESEARCH FELLOW, INSTITUTE FOR NATIONAL STRATEGIC STUDIES, NATIONAL DEFENSE UNIVERSITY

Mr. HOFFMAN. Thank you, Mr. Chairman and other members. It is great to be here today, an honor to appear for you, this subcommittee, once again. It has been a long time. I am also very honored to be here with two very prominent experts who are long-standing old friends of mine.

I would like to offer a much broader statement than my written statement, which was reflective of my previous work and keeping with where I think you want to go today with this particular committee. So I would like to talk about broader trends beyond the current defense guidance.

There is a pernicious concept floating around Washington, D.C., right now that the tides of war are receding and that the United States can retrench without risk. There is what I call a new peace theory floating around town, reflected in prominent journals and think tanks here in town. Recently one commentator from a think tank here in Washington said that, "There is no single causal factor at work, but all point in one direction. We are nearing a point in history when it is possible to say that war as we know it has disappeared."

That is a bold and very dangerous statement and one I do not agree with. Great progress has been made in the last decade, but the notion of a dramatic change in human nature or a significant shift outweigh 2,000 years of recorded history is tenuous at best. I have spent 35 years in the Department of Defense, most of my career looking forward, casting headlights out with some distance to gain some foresight about the future, and I see things through a much darker lens than that. I think the new peace theory crowd is confusing correlation of data with causation.

Now, there are five reasons to be satisfied today about our current security situation if one is just looking backwards over the last 10 years. These five include our current status as a world superpower, applying our stability and leadership to the world. There is a consensus on a Western model based upon rule of law, economic prosperity on a capitalistic model and a representative government.

That also includes globalization's shared and equal economic progress.

Since 1991 we have enjoyed a lack of major power competition. We have had extensive peacekeeping support from the international community, to include the UN [United Nations], that has been very helpful. And, fifth, there is a growth and a continued contribution from the conflict resolution community, the IOs [international organizations], the PVOs [private volunteer organizations] and the NGOs [nongovernmental organizations], that has been very useful. And these five conditions clearly cause positive assessments looking back over the last 10 years.

But the Emerging Threats Subcommittee, and this committee has a reputation for not driving by a rearview mirror, you are required to look forward, as some of us are in the Pentagon, and there is a number of reasons looking at things from a future tense that should make people have some pause. And the first one is, most significant I think for you and for this Congress, is the perceived hegemonic retrenchment of the United States due to some perceived decline in our capabilities or interest in sustaining our position in the world.

The second reason is the rise of emerging powers. History suggests some caution when new emergent, non-status-quo powers arise and create disequilibrium by seeking to restore either their previous status or some perceived slights. I won't have to mention which state I am referring to.

The third reason is continued or reduced international support. I suspect that over the next decade we are going to see a degree of peace support fatigue or simply a lack of domestic support for many allies and other agencies that have been very useful in allying with us and keeping instability down.

The fourth reason is, and I am someone who is spending a lot of time in Europe these days working on my education, but there is a lot of discussion about the decay or the dissolution of important alliances to us and important alliance partners. I am particularly concerned about NATO's [North Atlantic Treaty Organization] self-disarmament. It is a group of states that has been allied with us for a long period of time to great effect, but they are going to be older, poorer, and less inclined to work with us in the future, and that should be a pause for concern.

My fifth source of concern is proxy wars. These can be very catalytic in terms of conflicts. They are not intended to, but they can produce a major war out of what is supposed to be a smaller conflict. And there is new forms of conflict which this committee is very, very aware of in the cyber world in which attribution of the attacker is very hard to identify, and that can create new forms of conflict and also then catalytically lead to a more conventional kind of conflict if we perceive the attack to have been directed and attributable.

Number six, resource conflicts. I think energy, water, food, rare materials, most of the time there is a body of evidence that suggests these do not lead to conflicts, but they certainly can create the tinder box for conflicts. I see actions in the South China Sea by China and its efforts to secure energy resources and raw earth assets as something to be taken seriously in this regard.

There is an issue of demographic decline or demographic change in many states around the world. We used to worry about youth bulges, having very high numbers of young people in states in Africa and Asia that were unemployed or in the Middle East that might lead to destabilizing things. I think we now instead of youth bulges also have to worry about graying bulges in some areas, particularly in Southern Europe, where there are large numbers of people who are going to be pensionless, underemployed or unemployed for long periods of time. That will produce more disillusionment and more angry people than I think we have seen in the past that will lead to political instability and also allies who are more insular in their orientation rather than in exporting security.

Eighth is the most obvious, is divided religions and religious extremism. The continued sacred rage coming from Islam is going to make internal fights. I think the Arab Spring has a lot of hope in it, but it is also going to produce some illiberal democracies, and we will see some other forms of government emerge out of that. And I am particularly concerned, of course, about Egypt, among other areas. We are creating a lot of fertile ground for Al Qaeda and its affiliated movements to take root in some places, and we are not going to be happy with the results.

Number nine, disintegration of socio-economic stability. Again, I am particularly concerned about southern Europe and northern Africa, there is a great deal of distress, dissent, and discord there from economic instability. We need to consider the conditions in which the new normal in southern Europe where unemployment, the new norm might be peaking out and stabilizing at 25 percent, is not going to be allies and states that are going to be exporting security for us or working with us in other places.

And finally, my last, my 10th point is the democratization of means of conflict. Again, the diffusion of technology in lethal and nonlethal forms is something that is creating not—I don't go as far as Thomas Friedman with super-empowered networks or super-empowered individuals, but we should think of super-empowered networks with means of mass disruption that can hit us in many, many different ways.

So for those reasons, those 10 conclusions make my lens look a little bit darker than some of the other people in the community here in Washington, D.C.

Plato had it right. Only the dead have seen the end of war. We may not face another bloody century like the last, which was pretty bad, but the world remains a very dangerous place, and I know General Dempsey has stressed to you in the past. Trends suggest that the next decade is not going to be as placid as the last 10 or 20 were, and many of us don't think that the last decade was that great.

There are folks whose real agenda is cutting defense, not contributing to our security, and you need to consider that in looking at their evidence. We have to be prepared for a much more broadening array of actors and challenges rather than one singular one that is very, very deep and of great challenge to us. We have to be ready for a broad spectrum of conflicts that range from purely irregular and terrorist at one end to perhaps rising powers with conventional capabilities at the other, and then all the messy in the

middle that my statement talked about, the converging of low-end threats with high-end capabilities, producing hybrid threats.

This committee's charge is at the cusp at what is emerging in the national security arena and what is going to no doubt I think generate the greatest threats and the risk to our prosperity and security in the next decade. It is a sobering responsibility. I am glad to be able to help you with that to the greatest degree I can. Thank you for the opportunity to discuss these challenges.

[The prepared statement of Mr. Hoffman can be found in the Appendix on page 41.]

Mr. THORNBERRY. Thank you.

Dr. Lewellyn.

STATEMENT OF DR. MARK T. LEWELLYN, DIRECTOR, NATIONAL SECURITY ANALYSIS DEPARTMENT, JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY

Dr. LEWELLYN. Congressman, I look forward to provide my views that will shape the national security environment looking out to 2030 and how that might affect the path set by the 2012 defense strategic guidance. The opinions stated are my own.

Mr. THORNBERRY. Excuse me, Dr. Lewellyn, would you pull the mike a little closer or something, we are having—

Dr. LEWELLYN. Good, sorry.

Mr. THORNBERRY. Oh, that is much better. Thank you.

Dr. LEWELLYN. Thank you.

So I was saying I look forward to giving you my opinion on how the path set by the 2012 Defense Strategic Guidance will affect things. The opinions I state are my own and do not necessarily reflect those of the Johns Hopkins University Applied Physics Laboratory or its sponsors.

Will this strategy get the military capability we need in the near term, especially in the context of declining funding for defense? The strategy attempts to be comprehensive. However, there are some areas where we may be falling short, and we must think through an integrated response to address them.

The strategy identifies a range of missions that U.S. forces need to address with the resources that are available and the threat environment in which the missions must be executed. Much of our technical effort focuses on improving the capabilities of the sensor, weapon, communications, cyber, and space systems that will be used to address the emerging threats. Our work indicates there are gaps in the capabilities we need to defeat emerging threats identified in the strategy, particularly the anti-access/area-denial threats posed by Iran and China.

Kinetic weapons we are developing to counter threats launched against our forces, while capable, should be supplemented by non-kinetic systems to ensure we can deal effectively with large coordinated attacks. Nonkinetic means to defeat these threats include netted electronic warfare systems, integrated cyber-attack capability, lasers and other directed energy systems. In addition, we should explore creative uses of existing weapons to counter threat systems. We must also continue to explore ways to use electromagnetic weapons with their promise of large magazines of relative inexpensive bullets to counter threat kinetic weapons.

Maintaining our access to space is a real issue, and we must pursue viable backups to counter attacks on our satellite communications networks close to denied areas and quickly reconstitute the capability they provide. This includes the need to identify methods to operate in environments where the global positioning system, GPS, is denied.

We have an edge in the capability of our submarine force relative to potential threats, and we must work to maintain it. The ambiguity posed by the unseen presence of a capable submarine can be leveraged to our advantage. Exploring ways to operate unmanned systems autonomously will allow the proven capability of these systems to be used in new ways.

Finally, we must ensure that our Special Operations Forces have the technology they need to perform their critical missions. While we work to improve the ability of our systems to defeat those of the threat in war, we must also consider how we can better use these systems to deter potential threats and win without fighting, much as we did during the Cold War. In China, the United States has a competitor with a coordinated strategy for achieving its national objectives without needing to resort to war. In other words, to win through shaping and deterrence, as evidenced by its development of anti-access/area-denial capabilities.

To deter China effectively, the U.S. must employ an effective countervailing strategy informed by an understanding of the implications of divergent U.S. and Chinese perspectives. We must include an understanding of these differing views as we operate our current forces and as we develop, test, and employ new capabilities to ensure that the messages we want to send to China are received as we intend. The message China sent by demonstrating its ability to shoot down a satellite several years ago was received clearly by us.

So what does this mean for Congress? You should ensure that our intelligence collection efforts remain strong and that as a government we encourage openness and transparency, drawing on insights gained from social media and other information technologies. Information is critical, and there is already evidence that in the cyber world operations may be shifting beyond deterrence into more direct competition. We must ensure that our cyber forces are equipped with the appropriate technologies and rules of engagement to win.

You should support the development of warfighting capabilities that contribute to deterrence, such as the aforementioned efforts to supplement our kinetic systems by developing complementary, non-kinetic means to defeat threats. These include netted electronic warfare systems, integrated cyber attack capability, lasers, and other directed energy systems as well as electromagnetic weapons. In addition, we need to maintain our edge in submarine warfare, cyber operations, and special operations capability, and because communications and intelligence are critical for deterrence, we must work to maintain our access to space and identify ways to improve resilience in our space systems.

A vibrant research and development base will be critical to supporting these efforts, and I want to comment briefly on how reductions in funding for this base can be made reversible. It is impor-

tant for each research and development organization to identify its core competencies and protect them when funding reductions occur. More important perhaps for us is to maintain a robust science, technology, engineering, and mathematics education program, or STEM program, to ensure a continual refresh of thinking about defense from the brightest minds of our next generation. I personally benefited from the National Defense Education Act when I was in high school back in the 1960s.

Thank you for the opportunity to provide my comments. I am prepared to address any questions you may have. Thank you.

[The prepared statement of Dr. Lewellyn can be found in the Appendix on page 58.]

Mr. THORNBERRY. Thank you.

Mr. Berteau.

**STATEMENT OF DAVID J. BERTEAU, SENIOR VICE PRESIDENT
AND DIRECTOR, INTERNATIONAL SECURITY PROGRAM, CENTER
FOR STRATEGIC AND INTERNATIONAL STUDIES**

Mr. BERTEAU. Thank you, Mr. Chairman, Mister, as we say it in south Louisiana, Langevin, which is a more Cajun way of pronouncing it than they do in Rhode Island, I suspect, members of the committee. It is a high privilege to be here today, and I am very grateful to you.

It is also nice to be in this room and to read Article I, Section 8 and the plaque that sits in front of us as witnesses. I teach three times a year a graduate class in Congress and national security policy, and virtually every session of every class comes back to that one sentence in the Constitution, so it is a privilege to be sitting here and reminding of that.

It is also a great privilege to be in this room and look at the men whose pictures are on the walls around us here and realize the contributions that this committee has made to the success of national security over my entire lifetime.

I have submitted a written statement, as you have indicated it is in the record in its entirety. I won't repeat some of the things that are in there, and I would like to emphasize just a couple of points so we can get to the questions, if you will.

You spent the whole morning and a good chunk of the afternoon actually on a lot of the budget and sequestration and economic-related issues, and I will be happy to get back to those during the questions if you want, but there are a couple of key points that I would like to make.

One is in the charts in my statement, and I will refer here to chart 2, the second chart, is the result of a recent study—I am sorry, I have got my charts out of order here. It is actually chart 5. In addition to all the challenges that DOD [Department of Defense] faces with sequestration, with the problems of the continuing resolution, with the future impact of post-sequestration caps from the Budget Control Act, there is an internal cost growth problem in DOD, and that internal cost growth is illustrated here on this chart.

We have just completed a project at CSIS [Center for Strategic and International Studies], and we put our public briefing out last week. We are going to put a report out later this month, and I will

be glad to provide it to the subcommittee because I think you will want to take a look at it, but it basically tracks the internal cost growth of both military pay and benefits, including health care, and of the operation and maintenance account, and the degree to which that cost growth independent of the sequestration or the budget caps will by the beginning of the next decade essentially drive out all opportunity for investment costs, for R&D [research and development], and for procurement. And absent either a dramatic increase in military spending or a dramatic reduction in force structure and personnel, unless those costs are brought under control, they are going to basically squeeze out investment, and it will be hard to sustain and maintain our edge, if you will, under those circumstances. Be glad to go into that a little bit further.

The second point that I would like to make is on figure 7, contract obligations for R&D. We do at CSIS annual reports on contract spending across the Federal Government, and we do a specific report on DOD. You know that this is, we are now in the middle of our fourth drawdown in the last 60 years, post-Korea, post-Vietnam, post-Cold War, and today. I hate to call it post-BCA [Budget Control Act] because that doesn't quite have the same ring, if you will. But one of the very big differences between the buildup that we have had over the previous decade and previous buildups is in R&D spending, and this probably applies to science and technology across the board. In previous buildups R&D spending tends to go up faster than the overall increase in DOD spending, and that creates a technology reservoir, if you will, from which we can draw as we are drawing down and invest in periods of decline.

That did not occur in the decade of the aughts, where R&D spending both as a percent of DOD's budget and as a percent of total contract dollars actually went down, and that is what this chart depicts. We were at 15 percent in the late 1990s, we are down to only 10 percent not of the budget, but of contract spending, of money spent under contract. Now, this is unclassified R&D, it does not include classified contracts, but the trend is the same for the classified contracts as well. I just can't reflect the data in an unclassified document.

What that says is we have not invested in the future in the way we typically do during a buildup. That is going to make it harder during the drawdown. And I think for the S&T [science and technology] responsibilities of this subcommittee it is something that will require some particular attention as we go forward as well.

Let me focus on my last of my comments, if you will, on what does all this mean, what does it mean for industry, what does it mean for innovation? Industry itself relies upon the Defense Department for demand signals. Typically those demand signals come from the budget and they come from the Future Year Defense Program. One of the great strengths of the Defense Department is its ability to do fiscally disciplined long-term programming and then to use that as the baseline for execution. Obviously we modify it each year, this committee pays a lot of attention to that Future Year Defense Program to look at whether the investments being made today will be sustained over time.

We haven't had a good fiscally disciplined FYDP [Future Years Defense Program] in a long time. We have been in two wars, we

have had supplementals and overseas contingency operations accounts to pay for anything you couldn't fund in the base budget, and frankly we have lost some of the internal skills in DOD to do this and some of the processes. It is critical that those get restored.

Industry does need those just as much as you do because that is their demand signals. That tells them where to invest, what kind of skills to hire, what kind of workforce to retain, what kind of technologies to be developing. Right now they are pretty much left guessing. One of the most important things that could be done, obviously there are benefits from dealing with sequestration and Budget Control Act from an impact on readiness, but there is also a big benefit from the long-term investment in industry in helping them where to go.

Similarly with innovation, what we have seen is a historic shift in the development of technology for national security. We have relied for 60 or 70 years on new technology developed for national security, under DOD contract by defense contractors; DOD gets first dibs at it. That is changing, and it is changing not only because we are not investing as much as previous data show, but it is also changing because where innovation is occurring now is often in the global commercial market, not in the domestic national security market, and we need to do a better job of both identifying those kinds of technology developments, and this is everything from communications and data management and sensors and data fusion to nanomaterials and 3D [three dimensional] printing and a whole host of other technologies that DOD is paying attention to but is not the driver.

And we also are about to wrap up and will also have ready later this winter and will be glad to provide to the committee some recommendations that CSIS is making on how DOD could do a better job both identifying and ultimately taking advantage of global commercial technology developments around the world.

With that, Mr. Chairman, I will conclude my remarks and I will be happy to take your questions.

[The prepared statement of Mr. Berteau can be found in the Appendix on page 73.]

Mr. THORNBERRY. Thank you. And I appreciate all the comments that all three of you made. Lots of food for thought and interesting points to pursue. But at this point I will yield for any statement and any questions the distinguished ranking member would like to make.

STATEMENT OF HON. JAMES R. LANGEVIN, A REPRESENTATIVE FROM RHODE ISLAND, RANKING MEMBER, SUBCOMMITTEE ON INTELLIGENCE, EMERGING THREATS AND CAPABILITIES

Mr. LANGEVIN. Thank you, Mr. Chairman, and I take this opportunity to welcome our witnesses. I apologize that I had run late. I was tied up in another meeting, as often happens around here, but I am looking forward to your testimony and to getting to the question and answers.

But, Mr. Chairman, since this is our first subcommittee of the 113th Congress, I will start by saying how much I look forward to working with you. I enjoyed looking with you in the last Congress

and look forward to working with you in this as well. And I want to also start by again welcoming our newest Members to Congress and particularly to the subcommittee. I look forward to working with these gentlemen and ladies as well, and look forward also to our strong—their strong participation and valued input as we do our part in shaping our Nation’s defense strategy.

As this subcommittee is charged with overseeing the Department’s authorities and investments that are primarily focused on addressing asymmetric threats as well as developing promising capabilities to address these varied and complex challenges, I am sure that our first hearing will spur some thoughts about, among our members, regarding the future national security environment and how we should best prioritize our defense resources against the backdrop of fiscal pressures and other concerns.

So over the past decade we have rightly vested in short-term deliverable-based acquisitions and related research, and we will continue to provide near-term capabilities to deter and defeat our adversaries. However, as we will hear today, we must appropriately prepare for future challenges. The Department of Defense, and our interagency and international partners, confront a broad range of challenges including cyber warfare; terrorism; weapons of mass destruction; homeland defense; space; anti-access/area-denial; instability; and humanitarian operations.

So I look forward to hearing more from our witnesses on how best to shift our current short-term emphasis, particularly in innovation, to one that might provide long-term benefits to our national security.

As many of our past members know, I am always particularly interested in hearing your thoughts on advancing our cyber defense strategy and capabilities, which is going to become increasingly important as we go forward and will be more widely used and relied upon, as well as the advancements of potentially game-changing technologies such as directed energy, autonomous unmanned systems, and electromagnetic rail guns to name a few, some of which you have already mentioned in your testimony here today.

So I also see that some of you are affiliated with universities, and I believe the members of this subcommittee would benefit from any comments you might have regarding the health of our innovative pipeline, particularly addressing science and technology future workforce needs of the Department.

So with that, I again welcome our witnesses. And Mr. Chairman, look forward to working with you. Thank you.

Mr. THORNBERRY. Thank the gentleman. And I said the same thing, but I got to say it before you got here. So would you like to go ahead and question the witnesses?

Mr. LANGEVIN. I will yield to you first, Chairman, and then I will go.

Mr. THORNBERRY. Well, I was just going to yield to other members unless you want to.

Mr. LANGEVIN. That is okay, then I will yield.

Mr. THORNBERRY. Mr. Nugent.

Mr. NUGENT. Mr. Chairman, thank you so very much.

And this is my first subcommittee meeting on HASC [House Armed Services Committee], so I appreciate our panel being here,

and always interesting to hear your take in regards to where we are intelligence-wise and the other.

But to Mr. Hoffman, and this relates to Pakistan. You know, India is on track to have an economy, I believe, 16 times that of Pakistan. And so the question—I have multiple questions, but one is, how do we expect Pakistan to react to that in the climate that they are in, and do you think they are going to promote a broader terrorist activity to try to counter India's growing power as it relates to financially?

Mr. HOFFMAN. Sir, I am not an Asian expert or a South Asian expert, but do have that kind of asset in my office. I can get you a more specific answer.

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

Mr. HOFFMAN. But in general I believe that Pakistan will continue doing what they have been doing for the last several years, is a much more severe acceleration of their nuclear deterrent. The scale in terms of size, population, and economic clout of India is very daunting to Pakistan, and their idea of their national narrative is, you know, that they are overwhelmed, and it gives them a justification to invest in nuclear materials. They will still also support on their perimeters the kind of alliances and proxy forces that they have had in the past, which are largely, you know, terrorist in nature.

Mr. NUGENT. I understand that is not your subject area, but what is the take in regards to, will Pakistan work with us, do you think, as relates to trying to move to a more free market economy which may, in fact, then counter India's strength?

Mr. HOFFMAN. I think they are trying to. I think, you know, the ports, the activity in Karachi and the southern half, it definitely would benefit from economic development, exports and imports, and that would be an approach to take with them. But I think that the overwhelming national narrative and the scale of their relationship with India is still going to lean them towards retaining something that is the ultimate high ground for them, nuclear or some other means.

Mr. NUGENT. Obviously, I mean, with the Taliban and as it relates to Afghanistan and where they, you know, where they are positioned with Pakistan, it is concerning, to say the least, in regards to where they move forward, particularly as they move forward with the Taliban.

But to Mr. Berteau, you know, we heard a lot today earlier in the HASC meeting reference to what is going to happen with sequestration and obviously with the CR [continuing resolution]. But how do we prioritize as it relates to prioritizing and maintaining partnerships around the world? You know, we train with other organizations, and it sounds like we are going to be cutting back our training and our ability to reach out and help.

Mr. BERTEAU. Mr. Nugent, that question really hits at the core of I think the impact of both sequestration and the disconnects between budget requirements and the continuing resolution, but it extends well beyond fiscal year 2013 as well.

I would actually start with your Pakistan-India question because I think one of the lesser understood elements of that is the eco-

conomic growth and the potential value and the need for the U.S. to be both aligning itself with and actually investing intellectually and sometimes from a capital point of view. One of the unsung benefits of the way in which we have been evolving the economic strategy in Afghanistan over the last couple years is to take advantage of Indian investment in Afghanistan to bring the Pakistanis into a better economic relationship, not cross-border, but in a regional sense, and things like the TAPI pipeline, the Tajikistan-Afghanistan-Pakistan-India pipeline, goes a long way towards creating some of that economic integration that is very difficult to do. This is obviously outside the realm of the Defense Department in terms of its requirements, but it is clearly part of the broader geopolitical and geostrategic framework.

When we took a look last year at the pivot to Asia and what the Pacific would respond, and CSIS did a report, I was co-director of it, that was submitted to the Congress, we testified before another subcommittee of this committee last year, one of the real things we looked at was kind of the lower end of that spectrum, engagement with countries, using training, using opportunities in humanitarian assistance and disaster recovery, using the Pacific Command augmentation teams from Special Operations Forces, et cetera, to build that engagement at a low level, but across 30 countries in the region to create more of a dynamic, and training and exercise money is a critical piece of that. It is pretty small in the overall defense budget perspective, but it is critical not to let that slip away, and yet under sequestration clearly it will.

The difficulty, and you heard this from Dr. Carter and General Dempsey and the rest earlier today, is that as it is being implemented, sequestration does not permit for the allocation of those priorities. I would submit that they need that flexibility. One of the ways in which the Congress, however, can give them that flexibility is with an actual appropriations bill for the rest of the fiscal year as opposed to a CR, but even if there is a CR, at least substantial reprogramming and transfer authority within it. Even so, the question of what priorities you would apply, which is really the basis of your issue, remains somewhat unanswered from that point of view.

Mr. NUGENT. Mr. Chairman, I yield back. Thank you. Thank you very much.

Mr. THORNBERRY. Thank you.

Mr. Johnson.

Mr. JOHNSON. Thank you, Mr. Chairman.

This is a somewhat philosophical discussion we are having today, and I will get a little philosophical. Heaven and hell, aspects of human nature, high side, low side, every human being has it. It is easy to dwell on that low side, which is fighting, cussing, trying to conquer, control, greed, those kinds of conditions. There are other conditions of living that are much higher: Altruism, compassion, mercy, spirit to see everyone be happy. Some would say that that is a utopian ideal that will never happen, and I agree that it will never happen, and it certainly will never happen if we don't work towards it.

And so for the peaceniks and others who see nothing but peace and happiness, we need that group, and we also need the group

that sees nothing but danger ahead, and both of those groups need to look at the situation, try to do so through the same lens, and maybe we can find somewhere in the middle where we can start making good, rational decisions about defense and security in our Nation, emerging threats. That means that the threats are there, and they are always going to be there, but they change.

And so what kind of changes can we make in our defense strategy to keep us from having to go to war? And so I think maybe we could be reaching a point where we are moving away from the hard power solutions to the soft power solutions. As people get more educated and as we trade with each other more, we have less time for fighting. And that doesn't mean we don't need to be prepared for the fight.

And so I actually think that we should always be willing to expand our thinking about how to address the threats that we see emerging, and soft power has to be, although it is not within the domain of this particular committee, perhaps we should pay more attention to it, perhaps there is a need for not income revenue, shifting away from hard power assets such as nuclear weaponry into things that will be more likely to happen, like cyber threats, and you know.

So we have got to—I think what our tendency has been to do is with respect to defense is we plan ahead 20, 30 years, we build out, but we never do address the fact that the time has changed and as there are new threats, do we need to continue doing what we have been doing? Do we need as many personnel? Do we need that many boots on the ground in light of the threats that we are likely to face and the way that is most smart to address those threats?

So I would just challenge my colleagues to look at things not as they have been but as how we want them to be. If we don't try to shape the world in a more peaceful way, then it will never get to that point. So with that I will say that I very much enjoy service on this committee, on this subcommittee, I enjoy my services on Armed Services. I think this is one of the most bipartisan committees in Congress, and I enjoy serving on it, look forward to future service. Thank you.

Mr. THORNBERRY. Mr. Hunter.

Mr. HUNTER. Thank you, Mr. Chairman.

Thank you, gentlemen, for being here today. First question is this, Mr. Hoffman, you alluded to this when you talked about think tank folks, really smart people, Ph.D.s, Secretaries of Defense of the past, I would say, too, who have said that we are not going to be in a big air war again, we are not going to be in any more pitched naval battles, we are never going to have any peer-to-peer anything anymore, warfare has changed.

I guess my question to you is, where is that school of thought coming from? And I don't want to be disrespectful of those previous Secretaries or those super smart Harvard Ph.D.s that have said this kind of stuff, but how could you be so, in my opinion, naive and shortsighted that you look back a few thousand years and think that human nature has really transformed in the last 50 to where you are not going to have it anymore? I am just curious, where do you see that coming from?

Mr. HOFFMAN. Thank you, Mr. Hunter. A lot of people put a lot of hope in the better angels of our nature. They aspire to and seek and want to see us move forward to enjoy the prosperity that our hard investments in security have created for ourselves.

There is a very strong statistical case in work by Joshua Goldstein, Steve Pinker, and others in the literature right now that suggests that both the number of conflicts and the number of lethality or casualties in conflict has statistically been going down for some period of time. There is actually a factual basis for that. One can quibble, and I have, I am doing research right now for the chairman on, you know, how good some of those statistics are, but there is a general trend line. If you take World War I and World War II out of this thing, war is not a normal phenomenon. It does not always occur. It creates these big disequilibriums, and if you can invest smartly and avoid one, you would be very wise to do so.

The causality for why these lines have been going down, I believe we, this body, has created with the investments and the sacrifice that our Armed Forces have created for ourselves over the last 10 or 20 years. But what I think is some people want a policy aim, and they are backing the data in to support what they want. They want to reduce defense spending. They don't understand that that defense spending has actually created the security conditions and the reduced number of wars and the reduced lethality of these wars in our favor. And they don't seek to sustain that.

Mr. HUNTER. Let me ask you, though, if you look pre-Cold War you have got a few engagements in the last 100 years. If you look post-Cold War you have dozens of engagements, but the lethality has gone down, but the number of events has gone up. So we aren't having—there aren't fewer hot spots than there were in the 1960s or 1970s, there is more, but there is much less lethality in the wars in Iraq and Afghanistan than there were in World War II, Korea, World War I. Would you agree with that or no? Do you see the number of events going down?

Mr. HOFFMAN. The data for the number of events has gone down, but they are generalized from global statistics, from numbers of conflict in Asia and Africa in which United States had no interest whatsoever. If conflicts go from, say, 100 a year down to 5, and all 5 of them deal with treaty partners or very close friends of the United States, then I still have a cause for concern.

So the overgeneralization of statistics from a mass number of global things that we never heard about and didn't care about, and if the only conflicts we care about are off Taiwan, the South China Sea, Korea, the Middle East, Iran or Israel, then we have cause for concern. So my problem is people are overgeneralizing global statistics, and they are not getting down to the meat and specifics of threats to friends and interests of the United States. And they are wrong. We need to continue to invest in security, but smartly, and we need a comprehensive approach that both prevents and deters conflict.

Mr. HUNTER. Let me ask the other witnesses, too, a totally separate question. Do you see a point in which technology and its ubiquity, and as the cost of technology gets lower and lower, it is offsetting our personnel problem at any point? Is there a tipping point where you can say we don't need as many people, we don't need

as many hospitals on base, we don't need as many day care centers because we have the ability to strike nonkinetically, we have the ability to deter with other means besides manpower? And if you see that, is there an actual tipping point there or do you think it is always going to take one and the other kind of hand in hand where you have the choice between going kinetic or nonkinetic or using high technology stuff versus stabbing people in the face when you have to go door to door?

Mr. BERTEAU. Mr. Hunter, let me take a first crack at that. First of all, with respect to are we having more hot spots now than before, from the U.S. perspective clearly yes, but I think one of the biggest differences—and I think it permeates this whole discussion—during the Cold War there were parts of the world we could ignore. We and the Soviets essentially had agreed we will leave those guys to sort their own thing out, it is not part of our fight. Today there is no part of the world we can ignore. The nature of a failed state, the nature of a vacuum in governance, the nature of a vacuum in economics creates both an intelligence threat and an opportunity for bad guys that is something we can no longer ignore.

Part of that is because of the spread of technology. But your point on can we trade technology for human beings, that is actually been what we have been doing really for the last 30 or 40 years. It clearly has a point in the curve where that will slow down. I don't think we yet know for the advanced unmanned systems that we have in place today what the long-term tail requirements are to support and sustain those, and you may trade military personnel but not necessarily cost and investment, if you will, in terms of the long-term ability to sustain and support that operation.

Ultimately I think it still needs to be a blend. I mean, time and again we see that the human being in the loop is critical to mission success at whatever level, squad, all the way up to theater. And I don't think we will ever bypass that part of the product. I don't know if Mark has anything to add to that.

Dr. LEWELLYN. I would say it is a matter of looking at over time what mix we need. When you fire a kinetic weapon, it blows something up, you can see the effect. With some of the nonkinetic weapons you don't really know what effect you have had until either the weapon from the other side doesn't show up or it misbehaves. So we need to have a spectrum of responses now and look for a cost-effective mix.

In terms of costs, one thing I have been personally struggling with over the last several years is figuring out how much a pound, for want of a better term, a pound of cyber costs. You know how many people it takes to man a weapon system and support it. To get the level of cyber defense and attack capability we need, how many people do we need? How do we do that equation? I think we are very immature in that area in terms of understanding the personnel needs in that area, and we need to do more to do that over time.

Mr. HOFFMAN. Could I add on to that?

Mr. HUNTER. I am so far past my time.

Mr. THORNBERRY. If you have something to add to that.

Mr. HOFFMAN. Just add something. Mr. Hunter and I share a background with bad haircuts and running clubs and stuff like that, so I have to disassociate myself from any implication that I might think that technology is the solution to a lot. We think of warfare, unfortunately, in stovepipes called air, sea, land kind of domains, and we associate either institutions or technologies with those.

To me the most decisive domain, the most important aspect of the conflict spectrum is a human domain that cuts across all those, and that would be my principal investment area, and technology is not going to be—is always an enabler in the right context, employed properly with judgment, and that judgment comes from investment we have made in commanders and people who are working in that battle space that understand that. But the human domain is the most decisive domain.

Mr. HUNTER. Thank you, Mr. Chairman.

Mr. THORNBERRY. Thank you.

Mrs. Davis.

Mrs. DAVIS. Thank you, Mr. Chairman, and thank you all for being here. And perhaps just going along with that line, Mr. Hoffman, and if that is the case, would you say—how would you characterize our ability to organize ourselves and have a military strategy around that? Is that where we are? It seems to me we are kind of far from there, and how do we get there if you think that is appropriate?

Mr. HOFFMAN. No, I think our strategy in the past, at least in my time of service and in the Department of the Navy, has been to understand that we need to recruit, sustain, educate—where I now work in an educational facility—retain and take care of the All-Volunteer Force. And in the Defense Strategic Guidance, I am surprised, you know, there is an element in there in which sustaining the All-Volunteer Force and treasuring that in the modern sense is an important part of the strategy. Keeping that sustainable is, you know, is an issue because of the cost that it has derived.

But I think there is a recognition in the strategy and the building and the Services that, you know, the quality of the force is important, the investments in the human domain is important, but all these investments are going to be prioritized and pressurized in the next few years, both on the civilian side and in the military side.

Mrs. DAVIS. Is that well organized to fight the hybrid wars that we have now?

Mr. HOFFMAN. I believe we are organized to fight the hybrid wars. The SOF [Special Operations Forces] community has made a lot of developments over the last few decades, or at least the last decade, which also needs to be sustained and examined relative to the future. We have other investments, though, on the nonkinetic and the cyber community, do we have the right workforce and how do we sustain that workforce? We have done research at NDU [National Defense University] on what does that mean in the Cyber Command, what aspect of that needs to be in the military and what needs to be civilianized. You can get a very nice clearance for a military officer with 20 years in the Air Force or the Marine

Corps, but some of the people we need in the cyber community are like some of my daughters or some of the boyfriends that come into my house that have—that wear jewelry in places that I don't attach, you know, things, and they are different. How you bring that into the community, too, and sustain that so you have a very capable force? That might be an area to explore.

Mrs. DAVIS. Mr. Berteau, would you like to comment on that? I mean, you seem to suggest that perhaps at least the way we organize our new defense strategy doesn't necessarily comport with what we are doing right now.

Mr. BERTEAU. Thank you, Congresswoman Davis. I think it is a little bit hard to tell. You know, the redone strategic guidance issued January a year ago was driven by the \$487 billion over the 10-year period that came out from the first tranche of Budget Control Act cuts, and it was clearly, by the comments of DOD afterwards, it was pretty close to the thin edge of what was sustainable against those dollars, right? Because no sooner had it come out then you had generals and DOD senior civilians saying if you cut further we are going to have to rewrite the strategy.

Well, it is not a very robust strategy if you have to rewrite it every time the number of dollars goes down a little bit. So you have to say to yourself perhaps we need a slightly less fragile strategy. But if it was at the thin edge then we haven't really tested it, because what DOD did is they said we built the 2013 budget consistent with that strategy. But if you look at the issues, most of them were shoved into 2014 and beyond. We haven't yet seen that 2014 budget or the Future Year Defense Program associated with it, but right now the number that that is built to is not the number that is consistent with the cap of the Budget Control Act. It is \$50 billion too high, or \$45 billion if you believe the latest reports.

It is awful hard to assess the disconnects or even lay out priorities when you don't have enough money to fund the basic piece of it. But what is distressing is those priorities have not come into play in the sequestration debate. There has been no argument back that says forget this everybody takes the same percentage, let us prioritize and put that in place through a priority process. Nobody has made that argument. It is hard to tell whether it is because we don't know the answers or because it is just caught up in a much broader net and DOD is just part of that trap, if you will.

Mrs. DAVIS. Dr. Lewellyn, did you want to comment as well? How do we fix this?

Dr. LEWELLYN. I think, you know, flexibility is the key. I have spent a lot of my career working with Navy and Marine Corps, and they are very much into task organization and flexibility. So I think the more we can get away from standard ways and units of approaching things the better. In my own line of work in research and development, I think sharing and collaboration is being facilitated by information technology. I am amazed at the amount of ideas that pass around among the younger folks that work for me.

One of the big problems I see, however, is sharing across classification boundaries, looking hard at what needs to be classified, what doesn't, so we can get the brightest minds working on the hard problems, and that is a challenge we have to struggle with.

Mrs. DAVIS. Thank you, Mr. Chairman. I will come back. Thank you.

Mr. THORNBERRY. Dr. Heck.

Dr. HECK. Thank you, Mr. Chairman.

Thank you all for being here this afternoon.

And, Mr. Hoffman, in your opening statement you referenced our, the United States' hegemonic position that we now hold across the globe and the fact that we have really no near competitor. In today's earlier full committee, you know, we heard about the potential impacts of sequestration and those indiscriminate cuts, and Chairman McKeon stated in his questioning that his concern, and I believe rightfully so, is that as we make these cuts we may see a decrease in our standing not just amongst potential adversaries, but also amongst our allies as showing a sign of weakness.

The question is, my question is, where does that, where does sequestration, where will it have an impact on those emerging threats?

What types of threats may emerge due to the fact that we go into sequestration and there is this potential perceived weakness now of the United States in the loss of our hegemonic position? And short of actually replacing the sequester, on which capabilities do we concentrate our remaining resources to best deter those emerging threats?

Mr. HOFFMAN. Until you got to the last thing, I thought I could answer the question. The impact of sequestration at a strategic level is a torpedoing, I believe, of the perception that America is interested and willing to lead. That literature in Tokyo, in Australia and in London, where I do VTCs [video teleconferences] or have visited in the last year, is commonly now referred to in white papers, that America either doesn't want to lead, doesn't have the will and the wallet to lead, even though the relative power balance for us is we are in a rather significantly advantageous position right now, particularly in the measures that we add—you know, how much money we are spending into defense—which doesn't necessarily always equate to an output that is equal to the same thing. But we focus on numbers like 535, 555, 575, and we think that equates to something, and generally it does, but maybe not in regions and other places where people are measuring things.

The Chinese have their own way of measuring aggregate national power, and they put other tangibles and intangibles into that. They may perceive it. But in Australia and the government in Japan, this idea that we are not able to come to an agreement on the spending and the spending priorities and put our house in order has already undercut us. And they talk about it in papers and they talk about whether or not they need to be intimidated or appease China in compensation for that the conventional deterrent that we are offering, that extended deterrence, is somehow weakened.

And the other impact on sequestration is, I think in both 2013 or 2014, we are going to torpedo the industrial base. It is far too fragile. I spent 2 years as a political appointee in the Department of the Navy working on naval industrial base and investments, and I think we will hurt ourselves in that sense. And it can be rebuilt,

but it is far easier to crash it than it is to rebuild it over a period of time.

So the impact on the threats is not really the threats, it is our allies and our perceived perception of who and what we are in the world.

Mr. BERTEAU. Could I piggyback on that just a little, Dr. Heck? You raised the question of potential enemies or adversaries showing that America is weak because we can't even get our own act together, if you will. And I think that is a legitimate concern. You know, the whispering that says, you see, you really can't trust the United States. They are going to pull back. They are going to leave. They are not going to be here.

Dr. Kissinger in his seminal book on China recently said ultimately all of those nations in the region that are not seriously already our allies really only want two things: Don't make us choose, but don't leave. And anything that creates a signal that we are leaving opens a vacuum, if you will. But it is equally true for our allies and partners who won't sustain what they have.

Mr. Hunter asked earlier about partnership capacity. And we spent a lot, in fact this subcommittee has spent some time on building partnership capacity and looking at the questions. But a lot of that is at the low end of the spectrum, which is where the threat is. There is also partnership capacity we already have in high abundance with our serious allies, with Japan, with the Republic of Korea, with the United Kingdom, with France, with NATO. We need to sustain that partnership capacity as well. And whatever we do sends signals to them that it is okay for them to do it as well.

You know, we have done some look at European defense spending, and of course, as you all know, it has been coming down dramatically and it is going to drop even further. But for the first decade of this century, European defense spending dropped but spending per soldier actually went up. Their technology investment was sustained, if you will. Why? Because their force structure actually came down faster than their spending did.

They protected their investment in research and development, whereas we use it as a bill payer right off the top of the bat. Those are the kinds of signals that are not only important internally, but are important externally and globally as well.

Dr. LEWELLYN. I would just add to that, that I think looking more over the long trend getting past sequester with defense funding coming down, the R&D community needs to look smartly at how we are investing our skills and capabilities, looking across mission areas about what is common technically across them to make sure we maximize the commonality. And that is the way I would answer your question and deal with the science and technical community and our allied countries so we convey to them that, hey, we are thinking this problem through smartly and we are going to come out the other end as good a position as we can be.

Dr. HECK. Thank you. Mr. Chairman.

Mr. THORNBERRY. Mr. Carson, would you like to ask questions?

Mr. CARSON. Yes, sir. Thank you, Mr. Chairman.

It is becoming increasingly clear that our offensive use of cyberspace is pretty much a growing threat. While there are sophisticated computer systems getting cheaper each and every day, it is pretty easy to imagine that some countries or even terrorist organizations would lack the resources and knowledge to really conduct serious cyber attacks. As we develop increasingly sophisticated countermeasures, do you believe that we will continue to see cyber threats from around the world or will they be pretty much contained to sophisticated governments like China?

Dr. LEWELLYN. I think there is certainly a sophisticated end, you know, states can organize a lot more capability. That doesn't mean I dismiss so-called lone actors. I think we are still getting a handle in some areas on the vulnerability over all of our systems. There are industrial control systems on Navy ships that were bought before the days that we worried about cyber attack, and understanding those vulnerabilities, which the Navy is starting to do, is important.

So I think there is work we need to do. We need to be careful about the information we put out to share, to understand the vulnerability of that information, and be more sensitive to the way cyber has infiltrated into all of our lives, both personal and from the Government perspective and military perspective. So I am not quite at the stage where I think it is going to be something that we are going to have to worry about for some time.

Mr. BERTEAU. Mr. Carson, in many ways the cyber threat is the ultimate of asymmetric threats, but it is a very scalable asymmetric threat and can quickly become a symmetric threat, if you will, because the vulnerabilities that we have continue to increase almost at the same rate as in fact our ability to defend against and respond to the threats of those vulnerabilities.

My own view—and this is not sustained by any particular research but by long-term observation of it—is that the various roles of the parts of the Government still remain to be resolved a bit. You know, the President's Executive Order that he announced last night in the State of the Union that we got to read publicly yesterday takes some modest steps in this direction, but clearly a lot more is needed, and the role of the Congress in providing that more is quite powerful.

Mr. CARSON. Thank you.

Thank you, Mr. Chairman. I yield back.

Mrs. HARTZLER. Thank you, Mr. Chairman.

I had an interesting discussion with a person on the plane ride home last week. And he is a third-generation Latino, had relatives along the southern border, and we had a lot of discussion about many topics, but certainly one of them is the rise in narcoterrorism on the border. And I see, Mr. Hoffman, that in your testimony you mention that as one of the threats and the challenge of the gangs you say as a disruptive force inside America and in Mexico portend greater problems down the road. And certainly we are starting to see more and more of it in our neck of the woods.

So could you describe more in detail the challenges that you think might be faced with the Mexico scenario, from technical, intelligence, manpower, and others, and how might the U.S. deal with it?

Mr. HOFFMAN. Excellent question. It is a little more speculative aspect of my statement, but I didn't like the trends over the last number of years. More sophisticated forms of attacks. More planning of ambushes. More overt acts of terrorism against police. Ambushes against American officials. Body armor-piercing ammunition. The acceleration of learning curve on detonation means of forms of IEDs [improvised explosive devices] in Mexico have been going up. These are not good trends. So it is in the higher end of the narcoterrorism category, not yet merging and converging with kind of the conventional capabilities and the irregular tactics of the hybrid threat, but it is on the trend line to get there.

There are a few open source indicators with Middle Eastern sources, to include Hezbollah's interest in Latin America and Mexico, that would offer more learning curve increases that bother me as a concern. I don't have any validated intelligence on those whatsoever. When Admiral McRaven and maybe Judge Webster are here at the HASC with their Intel overview it might be a question to pull out in both classified and unclassified sessions.

But I have had some visits with Southern Command when Admiral Stavridis was down there as well, and the development of submarines. The sub kind of thing is, when we are talking about state level capabilities being employed by narco-organizations is sort of a hybrid capability that we are starting to see.

So you see this emerging. It is still somewhat speculative in my mind. But we are now seeing this kind of activity, and the gross acts of violent terrorism to clearly, if not eradicate, just make some of the Mexican government irrelevant in certain areas is a source of concern.

What has been going on with our intelligence sharing and the training from both, I think, SOF and the FBI [Federal Bureau of Investigation], there has, you know, there has been assistance down there that is building partnership capacity that is perhaps on the low end, as David suggested, but it probably has a significant impact. The casualty totals from Mexico, you know, the lowest is 30, the highest is 60,000 dead. This kind of puts to shame the statistics that people are using in Foreign Affairs and big journals right now to suggest that the world is getting rather placid. Those people don't count in the total. They are not considered to have been casualties in a combatant conflict, but clearly these elements, the nonstate actors in Mexico, who are doing this deliberately.

Mrs. HARTZLER. It is devastating. And you are right, I think a lot of people don't think about there is at least 35,000 that I have heard, casualties, there. And I mean this is just south of us. This is a war going on.

But I missed the first part of the hearing. So could you clarify what you just said about submarines? Who is—

Mr. HOFFMAN. Again I am trying to separate my time in the Department of the Navy with the clearances I had in this particular session, in this particular format.

Mrs. HARTZLER. You are saying the drug cartels down there are building a submarine?

Mr. HOFFMAN. Yes, ma'am. I think the total number of captured submarines now is somewhere between 9 and 12.

Mr. BERTEAU. That number is not for public.

Mr. HOFFMAN. I have seen photographs of several that we have and one of them is in fact framed and positioned in front of Southern Command's headquarters. Admiral Stavridis mounted one of these submarines in front of his command post.

Mrs. HARTZLER. In my 24 seconds I have left, what can we do in the United States to counter this? What would you advise? I see you talked about the intelligence sharing.

Mr. HOFFMAN. Intelligence sharing. I believe there is terrorist financing and network analysis that is probably useful to the Mexican authorities. The training. They have done much themselves. They have been rather courageous in facing up to some of this. There has been a lot of intimidation. It is very violent. It is very sophisticated. It is the other southern states in Latin America that have more of the submarine problem where the drug cartels are sourcing the cocaine from for trips up into the United States. And military assets and intelligence is necessary to help defeat that. JIATF-South [Joint Interagency Task Force-South] is part of that, which is an interagency, more of a comprehensive approach. Mixing law enforcement and military assets together is probably the solution.

Mrs. HARTZLER. Okay. Thank you very much, Mr. Chairman.

Mr. THORBERRY. Which makes it even more disturbing that under sequestration the Navy says they are going to pull all the ships out of Central and South America. And so you have got these drug runners with these submarines or semi-submersibles, various things, bringing drugs up and we are not going to have any ships there.

Mr. Gibson.

Mr. GIBSON. Well, thanks, Mr. Chairman. I appreciate the panel being here.

Broader question. Assuming American interest protecting our cherished way of life and a flourishing form of life, thriving economy, in your research, in your reflection, in your perhaps modeling, might there be other strategic approaches beyond the one that we have certainly been engaged in since the Second World War, initially to confront communism and then since that time with regard to hegemony and our presumed responsibilities and roles attendant thereof? Are there other approaches that you have contemplated beyond, say, combatant commands with responsibilities throughout the globe and forward military ground forces? Might there be other approaches that would secure our way of life and advance our economy?

Mr. BERTEAU. If I could, Mr. Gibson, start one minute on that and then ask my colleagues here on the panel to comment. Mr. Johnson raised earlier the idea of soft power. We looked at CSIS about six years ago at something called smart power, which is really an amalgam, if you will, how do you integrate better across the Government all of the capabilities, not just the military and kinetic capabilities or even the intel capabilities.

I think that the question that Dr. Heck raised about the role of technology in coming into play here, the question that Mrs. Hartzler raised about narcoterrorism, points out to a host of seams, if you will, that are inside. And the chairman alluded to the con-

sequence of sequestration will actually exacerbate those disconnects, if you will.

It is a hard thing for the executive branch to work together in a national security establishment, even in good times when everybody has a lot of money. In bad times, when everybody is trying to protect their money, they tend to hunker down around their core business and not worry so much about everybody else.

So what you need is a scheme, if you will, that will let you rise above the core competencies. It is much easier for you, because you can be on one committee and another committee and cross jurisdictions pretty quickly that way. It is much harder for them. And I think that the difficulties are exacerbated in a time of sequestration and budget uncertainty.

I will leave these guys to come up with solutions.

Dr. LEWELLYN. I am reminded of a couple of years ago, when the Navy had an advertising slogan called, "the Navy, a global force for good," that emphasized its role in providing relief in situations after bad weather, tsunamis, protecting the sea lanes to encourage trade, providing a framework of international agreement and law so that economies can flourish. And I think that fundamental mission of alliances and strengthening and supporting economic growth short of war, part of the shaping and deterrence that I talked about in my statement, are critical. And, you know, certainly cheaper than fighting a lot of wars both in terms of cost of weapons and lives. So I think we need to focus on that, the soft power or smart power going forward.

Mr. HOFFMAN. I have been working on a grand strategy approach to try to think through I think what is our need for a balanced and sustainable grand strategy, and I have argued for something called forward partnership. It is in the current issue of *Orbis* and the January issue of the *Naval Institute Proceedings*, and the reason it is in the *Naval Institute Proceedings* is it privileges naval forces. I would declare victory in World War II and would declare victory in the Korean War at this point in time and probably bring back more ground force structure from overseas and maybe reduce that and take a total force perspective on what our ground force requirements are.

We have a million-man land Army today, plus a 250,000-man Marine Corps when you bring in the Reserve into the picture. So I believe we have just postured ourselves differently and we need to stop doing some things we have been doing. And I would use the naval forces and SOF to generate the degree of engagement and partnership that is forward. That I think we should do, but it is going to have to be less static, less vulnerably positioned in one fixed place, and we need more freedom of action to move around the world from crisis to crisis, because we are not going to populate every crisis with brigades or Marine forces, and then leave them there for a decade or more.

So we need some more freedom of action, and the strategy of forward partnership is my solution, which I can provide for the record.

Mr. GIBSON. Thank you. I would be very interested in taking a look at the article. My staff will probably pull it for me, though. But thank you for those thoughtful comments.

What comes to mind is, you know, we certainly saw the rise of China's involvement in Africa, and our response was I would say pretty typical. I am not so sure it was effective. We created another combatant command for it. And I wonder if we might be better served leading with the State Department, certainly using assets from across the Federal Government, to be sure. But when we constantly lead with forward military presence, I wonder if we are not fully achieving what it is we are trying to do and incurring the cost that evidently is difficult for us.

Mr. BERTEAU. The question, the core of the question you raise, sir, is at its heart, what is the boundary of what is DOD's mission and what is the military's mission here? And if there is one important lesson from the last 10 or 15 years, it is that DOD thinks it knows where those boundaries are. But when the Nation needs more in something else and it turns around and looks, okay, where else in the Federal Government is this capability, and it turns out it is not there, then the choice is either let the military do it or have it not be done. And the military will say every time, send me, I will get it done to the best of my ability. That is what happens.

We do need to look at that from a broader perspective. We need to fund it and prioritize the resources so that capability is there, and we need to make sure that at the national level that kind of capability is in place. That is a hard thing to do. The Congress has pushed for that a number of times. Twenty-seven years ago this committee took the lead on creating jointness inside DOD through the Goldwater-Nichols Defense Reorganization Act. However, that is all under one Cabinet officer, and that starts in Title X with subject to the authority, direction, and control of the Secretary of Defense. It is pretty hard to look at the Federal Government and start with that same sentence, because if you say subject to the authority and direction and control of, ultimately we know who it is. It is the President. But to organize and sustain that at a lower level bureaucratically, institutionally, is a much tougher question. And ultimately we turn back to DOD and DOD gets it done.

Mr. THORNBERRY. Let me back up from Mr. Gibson's question I guess one level. And I suspect I know Mr. Hoffman's answer to this because of the article he just referenced. But I guess one question is, do we need a strategy? A lot of what you all have talked about is the incredible amount of uncertainty in the world today. And I think everybody can agree we are not going to be able to predict, you know, this conflict or this situation. And my perception is that largely we lurch from crisis to crisis, making decisions as we go. My perception is we didn't do that in the Cold War. There was at least an outline of a strategy that was generally followed.

And so I don't know, Mr. Hoffman, do we need a kind of larger national strategy in such an uncertain world?

Mr. HOFFMAN. Yes, sir.

Mr. THORNBERRY. Why?

Mr. HOFFMAN. Emphatically.

Mr. THORNBERRY. Why?

Mr. HOFFMAN. You need to communicate to the American people what treasure they are putting up and why to sell it and make it sustainable. You need to shape the instruments of national power relative to those that are either soft, medium, or hard. You need

to articulate to future aggressors what those capabilities are and you need to sustain them over a period of time.

I don't know any way of doing that without a strategy. I had prepared a statement—there is a book I particularly like by an author named Rumelt, which Mr. Marshall in the building and Dr. Krepinevich also likes, *Good Strategy/Bad Strategy* [*Good Strategy/Bad Strategy: The Difference and Why it Matters*], and it has got a couple good lines in there. But particularly this idea that strategy is not a dog's breakfast of everything you want to do just piled up. It is focused effort, prioritized resources, which are tradeoffs. I am not comfortable with some of the tradeoffs in my own strategy. One takes an Army below 500,000 and we start absorbing risk. The Marine Corps goes down to a certain level in the 175s, and for every 5, 10K, we start absorbing risk. But we are also absorbing risk by continuing to borrow the amount of money we are borrowing. Very soon we will have interest debt payments that exceed the Department of Defense's TOA [total obligation authority]. That is the ultimate limitation of strategic action, being constricted by ourselves over time, because we are going to pay off old decisions and choices and tradeoffs that we weren't really willing to make.

When it gets down into force planning and strategy, Professor Colin Gray in Europe, one of my mentors in life, said there are only two principles: Prudence and adaptability. And we need to be very prudent about the risks that we are absorbing and very conscious about those, and maybe perhaps adaptable is a better term than flexibility. Flexibility is a force that can do a lot of things, you are trading off some readiness. But adaptable is somebody that can learn faster than the opponent. It is a football-soccer—or a soccer fullback that finds himself in a football game playing fullback and actually can learn the position fast. And that is the challenge we had in 2003 to 2007 in Iraq. We might have been flexible but we weren't adaptable. We didn't learn fast enough. But I believe a strategy is essential.

Mr. THORNBERRY. Do you all have comments on that?

Dr. LEWELLYN. I would just add, I think, you know, I have spent my career in the business of trying to help the Government develop things the private sector isn't developing on their own. And so I think you need a strategy to guide defense Government investment in technologies that wouldn't naturally flow from the private sector in the dealings in the marketplace. And so to the extent that it is important to develop capabilities unique to the Government, you need a strategy to guide that. And to the extent it is interlocked with a diplomatic strategy so we take advantage of both soft and hard power, I think that is good.

Mr. BERTEAU. Mr. Chairman, I have a predisposition that is in line with the idea that maybe we don't need a strategy. I am ultimately a resources and management guy, and it is my belief and my observation over 35 years that resources drive strategy way more than strategy drives resources. But ultimately much of the debate we have about where we are going to take our national security establishment, and particularly the technology investments for that, is a fight between the past and the future. And in that fight, the past is much more powerful than the future. It has all

the champions, it has all the advocates, it has all the four-stars. They are all lined up. And the strategy is the best hope that the future has to be able to stand up in that fight and make it more of a fair fight. And so I tend to lean back toward, yes, we probably we do need a strategy, even though ultimately it is the budget that matters.

Mr. THORNBERRY. Interesting perspective. By the way, I was on that smart power commission 6 years ago, which I think was very helpful, look at having this full array of tools. The Government is not very well positioned to use them all.

Dr. Lewellyn, I wanted to get back to some things that you talked about at the beginning. And I know this is an interest Mr. Langevin and I certainly share about nonkinetic weapons of various kinds. And you mentioned them.

I would be interested in your evaluation of how well we are pursuing those things. Mr. Berteau talked about that a lot of innovation these days is coming from the global commercial sector, not from Government contracts. You know, I kind of wonder how that applies to development of lasers and the other kinds of nonkinetic sorts of things that you referenced. So kind of give me an evaluation of how we are doing in pursuing those things.

Dr. LEWELLYN. My sense that the effort put into those areas is greatly increased over the past few years as emerging threats in the A2/AD, or anti-access/area-denial area, have grown. A lot more cooperation in research between the Services and their research establishments and reaching out into the private sector to address those things. So I see a lot more effort going into those areas. One of the complicating factors is a lot of the capability is covered by fairly strict classification guidelines, and overcoming those and working within those guidelines is one of the challenges, I think.

Mr. THORNBERRY. Well, is another challenge what Mr. Berteau just said: The past is fighting the future. The past is all about kinetics. They have got an advantage. And aren't there real issues of just in competing for increasingly scarce dollars about what some people will consider pie-in-the-sky sorts of stuff?

Dr. LEWELLYN. My own view is that dealing with some of the emerging threats strictly with kinetics is prohibitively expensive. And so to deal credibly with the threats people are seeing, I think you need the mix of capability. You need to be able to take advantage of all the tools that are out there. Some of them are unproven yet in the real world, and so we need to be sensitive to, you know, backup capability, as I mentioned. One of the great advantages of kinetic systems is you can immediately see their results. And so developing our abilities to understand how effective we have been quickly will be part of developing some of these new systems and tools.

Mr. THORNBERRY. Mr. Hoffman.

Mr. HOFFMAN. Yes, sir, I think you put your finger on something. In the business literature we refer to this as bringing about disruptive change, and the barriers to entry culturally, psychologically, the metrics that are available. In my time during the DON [Department of the Navy] trying to bring around the electromagnetic railgun, to kind of scale the power system is something that basic technology can be developed in the civilian world. But the things

that we really need in the Department of the Navy for the scale of that kind of system, the power generation of 30 million joules or something to launch something, once that technology comes about it is going to go have to be induced by Government because of the scale. But there are some great savings and great strategic utility.

But it is very hard to bring that about. The same thing goes on with the UCLASS [Unmanned Carrier Launched Airborne Surveillance and Strike] with the Department of the Navy trying to bring unmanned systems. We have existing programs in the F-35 [Lightning II Joint Strike Fighter], and we have a future. We have a fair idea what the cost of capability is going to be over time, and we have a program, and we have all the pieces in place, and we have another potential. And when do we shift over from 100%/0% to some mix of manned and unmanned aircraft is a hard thing for military cultures and institutions to bring about.

Mr. BERTEAU. Mr. Chairman, could I add one sentence to that? I recognize the time constraint here. For many of these if we don't figure out how to take advantage of them and incorporate them, somebody else will. And we need to take into our calculus and our calculation as well, because otherwise we will be on the losing end of the asymmetric advantage if we are not careful.

Mr. THORNBERRY. Well, and actually that is what I wanted to ask you. So economies that are more controlled than ours, do they have an advantage in developing some of these nonkinetic systems, as an example?

Mr. BERTEAU. I think there is an advantage. And, you know, you look at the Chinese economy, which has been a remarkable story of economic growth and distribution internally. But much of it has been essentially copying what others have done. I mean, if you look at the ratio of new patents per country, if you will, you know, China still trails far behind. But they are very good at taking what is developed elsewhere and manifesting it and magnifying it considerably. And I think they will continue to get better at that, if you will.

Clearly our relationship with China from a geostrategic point is way more complicated than we can go into in the context of this hearing. And I think we are still looking for the recipe book of how do we get a decent meal out of this? But nonetheless we have to recognize that they can bring critical mass to bear on these kinds of tasks, if you will, in a way that a free market economy often will not do, because it is not just driven by market opportunities, it is be driven by a longer-term view.

Mr. LANVEGIN. Thank you, Mr. Chairman.

And to our witnesses again, thank you. This has been a fascinating discussion. And I would like to maybe turn back again to the discussion we were having about soft power and where we target our resources. And one of the reasons why I thoroughly enjoy serving on the Intelligence Committee and also serving here—and I am very pleased that the committee has decided to roll the intelligence portfolio into this subcommittee—is that good intelligence is always going to be the pointy tip of the spear. You know where to put your resources, you know where the enemies are, you know where your adversaries are, you know where to focus your resources. And that in and of itself becomes a force multiplier.

So what I want to know is how do we get better at predicting and therefore targeting, you know, where the problems are before they arise? It astounds to me that we haven't gotten better at that. In particular, you look at Mali, for example. The enemy there, the universe of the enemy there, if you will, is in the hundreds. You know, we are not talking about tens of thousands of enemy combatants. It is in the hundreds. And yet you have a nation-state like France has to, you know, come in with overwhelming power and rout out the, you know, the enemy there.

It just seems it is such a disproportionate way to use resources, if you will. If we could have gotten better at predicting that something like Mali would have arisen, a lot of these things could be avoided. So how do we get better at that and where do we target our resources in terms of developing that soft power capability so it is both predictive, but also responsive?

Mr. BERTEAU. This is a question we have been wrestling with literally ever since the commission completed its work in 2007 and CSIS issued their report. A lot of effort was focused on an organizational structure, if you will. How do you get a national security infrastructure in line that will wrestle with these questions? But that almost falls into the category of you have got a different tree but you have the same monkeys. The same problem, if you will, are still there. Changing the tree doesn't remove the problems.

Ultimately I think it comes back to an integration across the branches of the Federal Government, and that is both on the executive branch side, where that is very difficult, where every institution is required to take care of itself, and on the legislative side, where there are champions for each of those and the structure on the legislative side is set that way.

The Intelligence Community actually offers an opportunity to offset that, and the creation of the Director of National Intelligence, and that infrastructure, if you will, both to focus the sharing opportunities and to make sure that resource are allocated to the most significant threats or payoffs was a very positive step in that direction. It is a long ways away from being successfully implemented, but it is a core enabler, if you will, to move forward in that regard. You probably need the equivalent infrastructure in other areas of that enabling capability.

You are right about Mali. It is not only—only a handful of people. They didn't sneak up on anybody. I mean, we saw them coming for years and we knew what was going to happen, we knew what happened when it happened. And yet it takes—prevention would have been far easier, if you will, than the cure now has turned out to be. The issue seems to be can we do that for everywhere for everyone? And the answer to that is: Probably not. So then how do we choose amongst those?

We don't have a good structure in place to do that, either inside the executive branch today or on the Hill for that matter. And again the Intelligence Committee is about the only place where those things come together, but the reach from there to the solutions is bounded by the institutional structures that are in place.

I will have to think harder on that question. I mean, I think I have actually helped you define the problem better than helping

you answer it here this morning—or this afternoon. I apologize for that.

Mr. LANGEVIN. I appreciate your thoughts.

Anybody else want to comment.

Dr. LEWELLYN. I would agree that organization is the issue. And this is illustrated by a story I recently heard during a military operation. I heard from someone that they got some very useful information from a former—from a naval officer who had student friends from a former involvement with an overseas university who was getting compiled Twitter feeds from the country of interest, and it was leading in the intelligence by several hours. So, again, taking advantage of all the information that is out there, it is an organizational issue, I think is something we all have to struggle with and understand how we can do that in a Government context and take advantage of all the information that is available to help us.

Mr. HOFFMAN. Very quickly, I am not sure that the solution is technological in nature. It is about investing in people, relationships, understanding foreign cultures, and understanding at a level of detail which I don't think we had in that particular case. And I am always very concerned when I hear the word "predictive" and strategy is based upon some sort of a forecast and some kind of a logic. But the reason some of these people end up where they end up is not because we didn't predict, it is because they are human on the other side, and we are in a competitive relationship and they have gone where we are not or where their greatest advantage is. I don't know if we can anticipate that interaction all the time over a long time. But we can make some forecasts about technologies and investments and move the ball down the field.

Mr. BERTEAU. Could I add one thing to that? The budget cycle that we provide resources is so long and slow. The review board that the Secretary of State put in place after the Benghazi incident made a whole host of recommendations and they were presented up here some months back. One of them was to create a fund that would be available for the 20 most at-risk embassies and consulates so that we could rush security to those when it came time. But if the look at the lead time to put that funding into the budget, for September of 2012, when the Benghazi attack occurred, it would have had to have been in the 2012 budget, which the State Department started putting together in the summer of 2010. So in 2010, somebody would have had to say, okay, let's look at Libya. Well, next year there will be an uprising, Gadhafi will fall, we will be moving in, we will have a consulate in Benghazi, and it will be at high risk, and therefore we have to put the money in the budget right now.

Can you imagine them putting that money? Can you imagine OMB [Office of Management and Budget] actually approving it? And can you imagine the Appropriations Committee leaving it in there? We have a real disconnect between the cycle time from building the resources and the necessity to respond quickly and with agility to evolving dynamics, and that is something that we are going to have to wrestle with very clearly. That is much more than an organizational question as well. It is really a very fundamental process question.

Mr. LANGEVIN. Let me turn to another area that I spend a lot of time on. That is on the cybersecurity issue. And obviously that is—it is an issue that is going to be with us to stay for the foreseeable future and it is going to become more and more challenging and important as we go forward.

So the Pentagon right now is in the process of what could be a major shift in how they are organized and how they defend and also dealing with offensive and exploitation, as well as other things. So how do we rightsize our cyber force, if you will, and our cyber strategy? Obviously, the Pentagon hasn't quite figured that out either, although they are getting there and it is starting to coalesce, if you will, around a structure. But we are not completely where we need to be.

And in addition to that, as we saw on the news lately—and this is something that Mac and I have—the Chairman and I have studied for a while—that we don't nearly have the right personnel, enough of the right personnel in the right places in terms of what we actually need.

Mr. BERTEAU. It is very instructive to look back at Secretary Panetta's speech last October in New York, which was a sea change in the way that the Defense Department was publicly characterizing both its thinking about cybersecurity—he used the cyber Pearl Harbor, et cetera, example—but more importantly about how he saw and how the Department saw its role in this process. Because that statement very clearly said we have wrestling with the—I am paraphrasing—we have been wrestling with the question of, is it DOD's job to defend DOD or is it DOD's job to defend America? And Secretary Panetta came out clearly and publicly stated it is our job to defend America. That was the first time that DOD had publicly laid that out.

The implications of that for the kinds of structure you need, for the kinds of capability you need, for the kinds of people you need, for the kinds of funding you need are still being sorted out. Whether they are going to be reflected in the fiscal year 2014 budget that ultimately finds its way up here remains to be seen. The impact of sequestration just on personnel alone, just as the economy is starting to come back we are going to take all of the people we have been struggling to rebuild the workforce that got gutted in the previous drawdown and have finally started to get it back up, not just in cyber but elsewhere, and now we are going to say to these folks, well, take a day off a week without pay but keep doing 100 percent of your work, just with 80 percent of your pay and then we will get back to you. Anybody who has got a better opportunity to go work this somewhere else is clearly going to at least consider that opportunity more strongly than they did before.

Dr. LEWELLYN. As I said earlier, I have been struggling personally from an intellectual level about how to figure out how you resource cyber? How much do you need for a pound of cyber? I think one of the key issues Mr. Hoffman alluded to is what is the right mix of private sector, Government civilians, Government contractors, and military folks to deal with some of this stuff once you sort out what the missions are going to be and what the responsibilities are, as Mr. Berteau talked to.

So I think—it is not a very satisfying answer—but I think we need to do a lot more work at how we want to sort out those responsibilities and the amount of money it is going to cost to do so.

Mr. HOFFMAN. Sir, Mr. Thornberry and I worked on this particular problem more than a decade ago, kind of struggling with this during the Clinton administration, whether or not certain tasks belonged in the Commerce Department or the FBI. The Clinton administration had gone with the law enforcement model and most of the constituencies in telecommunications, banking, finance, and the computer companies didn't want to participate at that time.

I don't know if we have gotten to the recognition in the country yet that the character and nature of the threat is so severe that this is something we want the Pentagon to do beyond the military sphere, so defending itself. That is a larger strategic issue of what is important to the country and what political values and traditions we want to adapt perhaps to a new reality.

A decade ago I would have been resisting. I resisted the FBI model of the Clinton administration and we tried to create something else I don't think has emerged with the right level of robustness. Most of that comes, however, from the American population and business leaders who are not interested in the Pentagon running airports, running ports, or running networks necessarily. That is a huge strategic issue.

For the committee, however, getting the right size and the structure of the organization, what needs to be a joint entity and what needs to be repeated, and what I have seen is the proliferation of cyber commands in the Services, that is a macro-level mission issue, a Key West II kind of issue that I think does merit, just inside the Department of Defense and your committee, some serious consideration, and from that you will get the right size and the right population mix from that.

But that is an important thing to take on. I don't have an answer for you. I just noticed that we have been standing up something that I don't know can stand up to a management and strategy review right now.

Mr. LANGEVIN. Well, on that point, I think this is an area where you all could make major contributions in helping us to answer these questions of what does the right size of a cyber force and strategy actually look like. And hopefully we can continue our discussion.

With that I will yield back. Thank you, Mr. Chairman.

Mr. THORNBERRY. Mr. Gibson, do you have any other questions?

Mr. GIBSON. Thanks, Mr. Chairman.

While I have you, I am just curious your response on a few things here. China. Given their economy, given their current investments in national security, do you think they are on a trajectory to be aggressive and bellicose towards their neighbors? And how do you think they view the debt that we have to them in relation to any of this?

Mr. BERTEAU. We did take a hard look at that in the study we did on the Pacific and the pivot to Asia last year, and I will be happy to provide you with that report, if you will.

Many of the focuses were aimed at DOD, but obviously we had to look at China as a big part of that.

The U.S. has an enormous opportunity today across the Pacific Rim, in part because China overplayed its hand pretty heavily in 2009, 2010, 2011. It gave the opportunity for a number of countries to encourage more U.S. engagement and more U.S. interaction with them, if you will. We need to be careful, though, that we don't build the strategy on the assumption that China will always be more heavy-handed than we are, because we can't necessarily count on them to play that out over time. So there is a rare opportunity for us as a country to take advantage of building better relationships with partners across the region.

But I think the question of the future trajectory of China is really one that is not predetermined by either the amount of money they are spending—which is huge, they have quadrupled their defense spending over the last 10 years, which has no country in the world has done, and they are on a path to continue building that up. They are a long ways away from being able to be seen as a peer competitor to the U.S., but within the region in which they operate that is not necessarily the standard that they have to aspire to. But it is far from inevitable that that is the outcome that we are going to play.

We became convinced—I certainly became convinced—I mean, I am a cold warrior in the way I think about things because that is the world I grew up in and it is what I was trained in, and it took me a while realize that the old strategy that we applied to the Soviet Union is not going to work with China, you know, and in the long run the whole world may be worse off if we attempt to do that as well as the region itself. But what we replace that with is still evolving, if you will. How do we behave in such a way that it encourages China to become a viable participant in a global economy, which is clearly in their interest in the long run but may not be in the interest of the leadership in the short run, is a challenge we haven't begun to sort out yet.

There is a very strong military side to it, though. Every morning when the Chinese wake up and they ask themselves the question, is today the day that we should go confront the U.S., we want them every day to answer that question, not today. And that is an important part of the equation that I think we have to sustain all the way through the process.

Dr. LEWELLYN. As someone who focuses on science and engineering, I like empirical things, okay, and one of the empirical things about China is something that Mr. Hoffman mentioned, namely the demographics, their aging society and the economic strain that it is going to put on them. So I think in the long term I am not clear where China is going in terms of their ability to put money at the rate they have so far into defense.

To echo what Mr. Berteau has said, I think going forward we need to maintain our edge, but we need to be very sensitive about how the way we use our military force in the area is understood by China. We don't want to do anything in terms of a test of a system or reaction in some way that we don't understand that they might not see it as, I wouldn't say benign, but nonthreatening to them, if it is not aimed at them.

So I think there is a community of people looking hard at how the leadership in China thinks and how the people react to that leadership and we need to be sensitive to that going forward.

Mr. HOFFMAN. It is a crucial issue to try to get our hands around. Again, I am not an Asian expert; I am more of a generalist. But it is important to point out that this is not a monolithic entity, that there are factions in there. The way the military is acting vis-à-vis policy elites or the ruling class is somewhat different. This is a command economy that we are dealing with.

I find military modernization to be significant, but not overly concerned. I think as David pointed out, a peer standard is not necessarily the standard. The investments seem to be smart. They seem to be niched. They seem to be deliberately asymmetric, not, you know, out of complete whack.

Dr. Lewellyn's comment, he has got some good comments in there about strategic culture, I am not sure we understand or have invested enough to the same degree we did for those of us who were Cold War warriors. We thought we understood the Soviet Union and we had Russiologists. I work with a China center at NDU that was created by the Congress and we work at that, but it is a small shop. It is worthy of thinking through.

My one caution with them, in thinking about them—and David pointed out they have been a good strategist for us, they have created more problems for themselves and have brought more of our allies towards us, so that is a really good deal—but they got so aggressive when their economy was one-third of the size of ours, and it is now in the 40s going to about 50 percent, and depends on where we are 5 or 10 years from now. If they got that aggressive when they were one-third, what is it going to be like when they are at half and two-thirds? And this gets to the comments you see in the Japanese literature and the Australian white papers. Those kind of trend lines and the crossover points are being watched by people in the Pacific and it raises concerns to them.

Mr. THORBERRY. Mr. Hoffman, going back to the work you have done on hybrid warfare, it seems to me there is a trend toward states using hybrid tactics, maybe through others or employing others. The country may get organized crime to do their bidding or, you know, that sort of thing. Not direct state action, but kind of working in and through others, using a variety of tactics. Do you think that is a trend that is happening and will we see more of it?

Mr. HOFFMAN. I do believe it is a trend. I do believe we are going to see more of it. But a lot of it is going to come from the bottom coming up. Smaller actors are finding lethal means cheaper, more lethal and more effective for them. So that is kind of bringing the lethality up to what used to be the low end of the conflict spectrum, so Mexico, Latin America, Hezbollah, these other kinds of actors.

But I do believe that states are sending some of this technology to the level. So I see things converging, the nonstate actors getting state-like capabilities because of just the lower cost and the proliferation, and then the Hezbollah, particularly the Iranian export of this and the use of proxy forces by people like in Iran the Quds Force. This is their art form. And they make things like EFP [explosively formed projectile] or they make the tactics and the train-

ing to bear. So when it shows up in Venezuela or shows up in Latin America or Mexico I have a cause for concern.

This is one of the issues with the work in the QDR [Quadrennial Defense Review] and the DSG [Defense Strategic Guidance], is the conversation in the Pentagon is that threats are diverging, we have low-end threats and we have high-end threats. And my perspective is the opposite. We have a convergence in the middle, which is why my statement says—and RAND concurs with me—we need to mind the middle. This is where the future is going in terms of more frequency than we thought of in the past.

Mr. THORNBERRY. Yes. And kind of springing from there, Mr. Berteau, you talked about CSIS' work on internal cost growth within the military. So X number of people are costing us more and more, someday there won't be anything left for investment. And yet we have to look at this full array of challenges. How are we going to—I don't know, this is, I guess, the too difficult question to ask, but you just have to think, how do we get from here to there with the limited amount of investments and this battle between the past, the future, all of that?

Mr. BERTEAU. And that convergence of both state and nonstate. Nowhere is that probably going to be more evident than in the realm of cyber, where in fact not only is it already sort of overlapping, but we have our biggest challenge is identifying and characterizing the source of the activity when it occurs and tracking it back to anybody.

In terms of how do we get our arms around this, you know, it is pretty easy to sit here and say we should be able to defend America pretty darned well for \$500 billion a year. And ultimately if you started from the ground up and built the Defense Department to be able to respond to all these threats, you probably wouldn't build the Department that you have today. So the real question is, how do we evolve to what we need to have from where we are right now? I characterize that as a battle of the past and the future, but it is really more complicated than that. That sounds way too binary, if you will.

I think it comes down to incentives. Where are the incentives lined up that reinforce behavior that strengthens the status quo, or that focuses on looking backwards, if you will, versus the incentives that realigns towards strengthening the agility and the flexibility to deal across the future?

One of the powerful forces of Goldwater-Nichols was it changed the incentive structure, and it changed it at every level, from the individual promotion all the way to the institutional alignments and so on. I haven't manifested that in kind of a portfolio of solutions, but we have been spending some time wrestling with that question of, how do you structure incentives? It would go all the way from the 6.1 basic research at the universities and how do you structure an incentive that will sustain and maintain that capacity independent of return on investment kinds of figures, all the way up to the broader institutional levels of how do you incentivize the State Department, the U.S. Agency for International Development, the Defense Department, the Treasury Department, the Justice Department to cooperate more together in that global interaction, if you will, at the lower end of the spectrum?

So I think those incentive structures are the key, and it is what we are going to try to focus our research on in the coming months.

Mr. THORNBERRY. Well, I think that is something that all of us can work together on. Kind of back to money for just a second, regardless of how sequestration and the CR come out, we are going to having tight defense budgets as far as the eye can see. And yet we can still have this internal cost growth that you are talking about, we have this full array of challenges that are kind of converging, and we have this need to put money into the future. And to me that means we are going to have to figure out ways to get more defense out of the dollars we spend. I think the full committee is going to be doing a variety of things in the future looking at that. And needless to say, we need all the help we can get in trying to sort through the right incentives. A lot of times passing a law doesn't get the job done. It determines the culture and the incentives that go within that culture to really be successful.

So, anyway, I think that is it. Thank you all very much for your testimony and for your statements. It has been very helpful and a good way for this subcommittee to start. So thank you.

With that, the hearing is adjourned.

[Whereupon, at 3:55 p.m., the subcommittee was adjourned.]

A P P E N D I X

FEBRUARY 13, 2013

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

FEBRUARY 13, 2013

Statement of

Francis G. Hoffman

Senior Research Fellow

Center for Strategic Research,

Institute for National Strategic Studies,

National Defense University

On

“Perspectives on the Future Security Environment”

Before the Subcommittee on Intelligence and Emerging Threats and Capabilities,

House Armed Services Committee,

U.S. House of Representatives

February 13, 2012

* The views expressed in this testimony are my own and do not necessarily reflect the views of the Defense Department or the National Defense University.

1

Future Hybrid Threats: An Update

Thank you, and good afternoon Mr. Chairman and Mr. Ranking Member.

It is an honor to have the opportunity to once again appear before this important and now expanded committee. The scope of today's hearing is broad, but it comes at a critical time for the Nation as it approaches another round of strategic decisions with fewer and fewer resources. We need to consider the future security environment holistically if we are to make the risk assessments and hard tradeoffs required if we are to act strategically and secure our Nation's interests.

The upcoming Quadrennial Defense Review, with Congressional oversight, will be a crucial test of our capacity to demonstrate true strategic thinking and determine priorities for resources.

My written statement is provided pursuant to your request and provides a concise background on the research on hybrid threats conducted now by many students of warfare, from Australia to here, and over to the United Kingdom and Europe. This statement contains my personal views and does not represent the official position of the Department of Defense, the Joint Staff, or the National Defense University.

A number of defense scholars and Service chiefs have described the emerging character of modern conflict as *hybrid*. This term attempts to capture the blurring and blending of previously separate categorizations of different modes of conflict. Hybrid threats incorporate a full range of different modes of warfare including conventional capabilities, irregular tactics and formations, terrorist acts including indiscriminate violence and coercion, and criminal activity.

There are various definitions for hybrid wars. Instead of the modes of conflict, some analysts focus on the motivation or classification of a conflict, for example whether it is a civil war or ethnic war. In my view, these definitions add breadth and depth to the debate.

My personal definition of a hybrid opponent is “*Any adversary that simultaneously and adaptively employs a fused mix of conventional weapons, irregular tactics, terrorism, and criminal behavior in the battlespace to obtain desired political objectives.*”¹

The U.S. Army has incorporated the construct in its latest principal doctrinal publication, defining hybrid opponents in terms of the force rather than the modes of conflict. For the Army, hybrid threats are “The diverse and dynamic combination of regular forces, irregular forces, criminal elements, or a combination of these forces and elements all unified to achieve mutually benefitting effects.”² This definition stresses the combination of different types of forces rather than a single force using different means and modes. Hezbollah’s example in the 2006 Lebanon war provides credible evidence to support the Army’s perspective

The Chief of Staff of the U.S. Army has recently employed the term in an essay in *Foreign Affairs*. General Raymond Odierno noted that the Army “will also make sure it firmly embeds one of the most costly lessons it has learned over the last decade: how to deal with the challenge of hybrid warfare. In the future, it will be increasingly common for the army to operate in environments with both regular military and irregular paramilitary or civilian adversaries, with the potential for terrorism, criminality and other complications.”³

I believe the General has captured the essence of the challenge which expands the traditional conception of war and the professional domain of the armed forces. His inclusion of this as one of his

¹ This definition varies slightly from Frank G. Hoffman, *Conflict in the 21st Century: The Rise of Hybrid Wars*. Arlington, VA: Potomac Institute for Policy Studies, 2007, 14, 58. My updated version emphasizing the simultaneity and deliberate fusion of these modes. Additional commentary and assessment can be found in F. G. Hoffman, “Hybrid Threats Defined and Debated,” *Armed Forces Journal International*, October, 2009.

² U.S. Army, *Field Manual 3-0 Operations C-1*, GPO, Washington, DC: February 2011, 1–5.

³ Raymond T. Odierno, “The U.S. Army in a Time of Transition,” *Foreign Affairs*, May/June 2012, 10.

top three lessons from our ongoing operations implies how important it is. Other scholars, professionals and analysts have also identified this aspect of the contemporary character of conflict.⁴

The hybrid threat is not entirely new or original.⁵ However, the term has of late captured the interest of many policymakers and numerous military leaders. The projected hybrid threat was cited by then-Secretary of Defense Robert Gates, and has been repeated by his successor, The Honorable Leon Panetta.⁶ Both the Army and Marines have studied this emerging (or reemerging) threat in the middle of the conflict spectrum for several years. Furthermore, Army and Navy leaders, as well as the Joint community, have incorporated the concept into their estimates of the future security environment.⁷

Our British allies and others in NATO are studying this phenomenon as well, and have incorporated this challenge into their threat assessments and descriptions of future requirements.⁸ The

⁴ Clyde Royston, "Terrorist to Techno-Guerilla: The Changing Face of Asymmetric Warfare," *Joint Center for Operational Analysis Journal*, December 2007; Mackubin T. Owens, "Reflections on future war," *Naval War College Review*, Summer 2008, 61–76; David E. Johnson, *Military Capabilities for Hybrid War: Insights from the Israel Defense Forces in Lebanon and Gaza*, Santa Monica, CA: RAND, OP-285-A, 2010; Nathan Freier, "Hybrid Threats and Challenges: Describe...Don't Define," *Small Wars Journal*, January 2010, accessed at <http://smallwarsjournal.com/blog/2010/01/hybrid-threats-and-challenges/>.

⁵ The earliest scholar in this area is LtCol William J. Nemeth, USMC, *Future War and Chechnya: A Case for Hybrid Warfare*, Monterey, CA: Naval Postgraduate School, June 2002.

⁶ Robert M. Gates "The National Defense Strategy: Striking the Right Balance," *Joint Force Quarterly*, 1st Quarter 2009, 2–7; Leon Panetta, Remarks at the Woodrow Wilson Center, Washington, DC, October 11, 2011. Accessed at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4903>.

⁷ General, James T. Conway, USMC, Admiral Gary Roughead, USN and Admiral Thad W. Allen, USCG, *A Cooperative Strategy For Maritime Security*, Washington, DC, October 2007; Admiral Gary Roughead, USN, Remarks at the Current Strategy Forum, Naval War College, Newport, RI on June 16, 2009; James Conway, *Marine Corps Vision and Strategy 2025*, Washington DC: Headquarters, U.S. Marine Corps, June 2008; ADM J. C. Harvey, Commander, U.S. Fleet Forces, Remarks as written, Surface Navy Symposium, Washington, DC, January 12, 2010, available at www.public.navy.mil/usff/.../hybrid_warfare-sna_speech.doc. On the U.S. Army, see General George C. Casey, "America's Army in an Era of Persistent Conflict," *Army Magazine*, October 2008, 28; General Martin Dempsey, U.S. Army "Versatility as an Institutional Imperative," *Small Wars Journal*, March 10, 2009. For the U.S. Marine Corps, see General James Amos, *Commandant's Planning Guidance*, November 2010.

⁸ In the UK, see General Richard Dannatt, "A Perspective on the Nature of Future Conflict," Chief of the General Staff's Speech to Chatham House, May 15, 2009, prepared remarks; as well as General Sir David Richards's opening chapter, "A Soldier's Perspective on Countering Insurgency," in David Richards and Greg

range of interest and the breadth of studies in this area is quite deep, with different twists and useful insights offered by each participant.⁹

Several students of war, however, find more comfort in the term “asymmetric.” In the 1990s, we explored this term, but it was found wanting and was ultimately dismissed. While it has returned to use by some, it still does not describe what an adversary is actually doing, but merely reflects that he’s doing something different in relation to us. Others find the term asymmetric to be sloppy and without rigor, including Oxford Professor Hew Strachan who concluded that “Much of the debate about asymmetry in war is historically naïve: all enemies try to get under the other side’s guard by using responses that are unpredictable. At one level therefore ‘asymmetry’ is inherent in strategy.”¹⁰ Harvard Professor Joe Nye has made the exact same point in his latest book, and goes on to suggest that the hybrid threat is a more meaningful term to capture what is actually occurring and what is projected to continue to develop.¹¹

Today’s emerging operational demands include both very old and very new domains of warfare, like cyber. They also include both traditional enemies and more advanced forms such as the “High End Asymmetric Threats” cited in the Pentagon’s 2010 Quadrennial Defense Report.¹² But we must consider also an array of adversaries that is prepared to exploit all modes of human conflict including lethal means at the state-level, catastrophic acts of mass terrorism, irregular or guerrilla tactics, and

Mills, eds., *Victory Among People: Lessons from Countering Insurgency and Stabilising Fragile States*, London: Royal United Services Institute, 2011.

⁹ John J. McCuen, “Hybrid Wars,” *Military Review*, April–May 2008, 107–113; and David Kilcullen, *Accidental Guerilla*, New York: Oxford University Press, 2009; and Nathan Freier, *Strategic Competition and Resistance in the 21st Century: Irregular, Catastrophic, Traditional, and Hybrid Challenges in Context*, Carlisle, PA.: US Army War College, Strategic Studies Institute, 2007.

¹⁰ Hew Strachan, *The Changing Character of War*, Lecture Delivered at the Graduate Institute of International Relations, Geneva, November 9, 2006, 18. Accessed at <http://www.europaeum.org/files/publications/pamphlets/HewStrachan.pdf>.

¹¹ Joseph S. Nye, Jr., *The Future of Power*, New York: Public Affairs, 2011, 34-35, 48.

¹² Robert M. Gates, *Quadrennial Defense Review*, Washington, DC: Department of Defense, February 2010, 8.

large-scale, systematic criminal behavior including extortion, kidnapping, and human or drug trafficking. The diffusion of modern weaponry around the world, combined with the lessons learned by our foes in Iraq and Afghanistan, will produce a steadily higher degree of lethality in contemporary conflict. In particular, American military units will have to be prepared for very adaptive or protean opponents with modern technologies.

This is not a hypothetical challenge. Israel faced this problem in 2006 in southern Lebanon when it confronted Hezbollah's admixture of advanced rockets, determined village defense forces, and its Iranian-trained foreign fighters equipped with advanced anti-armor guided-missile systems.¹³ Many excuses have been offered for the Israeli Defense Forces' failure to perform effectively in this conflict, but the most unforgivable is underestimating and misunderstanding one's opponent.¹⁴

Potential Hybrid Threat Scenarios

There are numerous scenarios that could be employed to explore the parameters of the hybrid threat. While American policy makers may be focused on non-state actors, the emergence of hybrid threats at the state level should not be discounted. One could examine the dissolution of Pakistan into chaos, split between armed fundamentalists and existing political elites who may retain the loyalty of a part of the Army.¹⁵ Additionally, one could postulate another Russian expeditionary thrust into a border state like the 2008 invasion of Georgia, where elements of hybrid warfare were manifested by

¹³ Andrew Exum, "Hizballah at War: A Military Assessment," Washington, DC: Washington Institute for Near East Policy, *Policy Focus* #63, December, 2006; Stephen Biddle and Jeffrey A. Friedman, "The 2006 Lebanon Campaign and the Future of Warfare" Carlisle, PA: Strategic Studies Institute, 2008; David E. Johnson, *Military Capabilities for Hybrid War: Insights from the Israel Defense Forces in Lebanon and Gaza*, Santa Monica, CA: RAND, OP-285-A, 2010.

¹⁴ Avi Kober, "The Israel defense forces in the Second Lebanon War: Why the poor performance?" *Journal of Strategic Studies*, 31:1, 2008, 3–40.

¹⁵ For such an example see Andrew J. Krepinovich, *7 Deadly Scenarios, A Military Futurist Explores War in the 21st Century*, New York: Bantam, 2009, 30–62.

mixes of regular and irregular forces, although Russia's combined arms attack was certainly the decisive element.

Mexico's expanding narco-insurgency is another potential scenario, where we have seen extensive civilian casualties and terrorism, as well as a steadily growing degree of sophistication in the use of military hardware. The challenge of gangs as a form of disruptive force inside America and in Mexico portends greater problems down the road.¹⁶ The plot for such a scenario might envision the formation of a supra-cartel displacing the state or at least creating a regional entity, but that may be regarded as a Black Swan scenario.¹⁷ One could postulate a transplanted version of the Revolutionary Armed Forces of Colombia (*Fuerzas Armadas Revolucionarias de Colombia* or FARC). An Iranian-trained, Venezuelan-funded force in South American or Panama is not far-fetched.¹⁸ While it is now isolated, and losing critical leaders, the potential for the FARC to transform itself in the region should not be ignored. A requiem for the FARC is extremely premature.¹⁹

A far more likely scenario is a major stabilization operation in North Korea that is contested by the former regime with a prepared resistance that is well resourced. The potential for a North Korean implosion followed by a long-term resistance movement by ideological fanatics is not beyond

¹⁶ See Phil Williams, "Criminals, Militias and Insurgents: Organized Crime in Iraq," Carlisle, PA: Strategic Studies Institute, June 2009; Robert Killebrew and Jennifer Bernal, *Crime Wars, Gangs, Cartels and U.S. National Security*, Washington, DC: Center for a New American Security, September 2010; David Danelo, "The Border War," *Naval Institute Proceedings*, October 2008, accessed at <http://www.usni.org/magazines/proceedings/2008-10/border-war>.

¹⁷ See also Mike Fowler, "Mexico: A Case of Hybrid Warfare," in Paul Brister, William Natter, and Robert Tomes, eds., *Hybrid Warfare and Transnational Threats, Perspectives for an Era of Persistent Conflict*, Washington, DC: Council for Emerging National Security Affairs, 2011.

¹⁸ Bill Gertz, "Iran boost Qods shock troops in Venezuela," *Washington Times*, April 21, 2010. Accessed at www.washingtontimes.com/news/2010/apr/21/iran-boosts-qods-shock-troops-in-venezuela.html.

¹⁹ Russell Crandall, "Requiem for the FARC?" *Survival*, August–September, 2011, 233–240.

consideration. American policymakers and scholars are aware of the potential chaos that a North Korean meltdown could produce, and are exploring potential “futures.”²⁰

North Korea has apparently taken many lessons from the insurgents in Iraq, Afghanistan, and Hezbollah and adapted its military posture to include more hybrid methods.²¹ Though speculative, a collapse of the North Korean regime could set in motion a series of events that will prove far more challenging than the take down of Saddam Hussein’s regime.²² In such a scenario, Weapons of Mass Destruction (WMD) security or elimination operations will be a high priority U.S. military mission, followed by working with our South Korean allies on stability operations. However, the prospects of a virulent resistance by North Korean special operations forces would increase the costs of these stability operations and increase the risk to any allied forces operating in the north, as well as to any efforts to secure facilities and personnel. North Korea, sometimes referred to as a Soprano State, has proven itself capable of acting as a state-level hybrid threat, including official acts of criminal sovereignty.²³

The most obvious scenario for a real rather than speculative hybrid threat is Iran, which is a state committed to opposing U.S. interests. As such, it has both the will and the capability already of serving as a full hybrid opponent. It is likely that policymakers would try indirect and standoff approaches early in such a conflict. But it is possible that a major intervention of U.S. ground forces

²⁰ Ferial Ara Saeed and James J. Przystup, “Korean Futures: Challenges to U.S. Diplomacy of North Korean Regime Collapse,” Washington, DC: Center for Strategic Research, *Strategic Perspectives* 7, September 2011.

²¹ “N. Korea Swiftly Expanding Its Special Forces,” *Washington Post*, October 9, 2009; “New Threat from N. Korea’s ‘Asymmetrical’ Warfare,” *The Chosun Ilbo*, April 29, 2010.

²² See Bruce W. Bennett and Jennifer Lind, “The Collapse of North Korea Military Missions and Requirements,” *International Security*, Vol. 36, No. 2, Fall 2011, 84–119; Bruce E. Bechtol, Jr. *Defiant Failed State: The North Korean Threat to International Security*, Dulles, VA: Potomac Books, 2011.

²³ Paul Rexton Kan, Bruce E. Bechtol, Jr., and Robert M. Collins, *Criminal Sovereignty: Understanding North Korea’s Illicit International Activities*, Carlisle, PA: Army War College, Strategic Studies Institute, March 2010.

could be required to achieve the significant, even critical, U.S. interests in the region. Dr. Krepinevich suggested such a scenario with what he called the “Streetfighter State.”²⁴

The hope that moderates or pragmatists would gain the upper hand atop Iran’s power pyramid has not been realized.²⁵ The revolutionary clerics have strengthened their hand against the reformers, but did so by allocating more power to their enforcers of the Iranian Revolutionary Guard Corps (IRGC).²⁶ The result has been the rise of the Pasdaran as the ultimate Guardians of the Revolution, creating the potential for a Praetorian Guard or a Praetorian state.²⁷ Future crises could arise in the next decade as the result of succession challenges or in response to crackdowns against democratic and moderate elements.²⁸

While Iran has been developing its strategic nuclear deterrent and a second tier deterrent of ballistic missiles targeted against its regional neighbors, it has also begun to adapt the IRGC and its internal security force cum militia, the *Basij*. This tier seeks to both suppress domestic resistance and strengthen the Guard and *Basij* to better resist internal power struggles or any U.S. intervention. The ideology of these forces has been focused into a culture that emphasizes Islamic virtue, jihad and resistance, and heroic martyrdom.

²⁴ Krepinevich, 20–29.

²⁵ Marc Lynch, *Upheaval: U.S. Policy Toward Iran in a Changing Middle East*, Washington, DC: Center for a New American Security, 2010, 10.

²⁶ Babak Rahimi, “The Role of the Revolutionary Guards and Basij Militia in Iran’s Electoral Coup,” *Terrorism Monitor*, Vol. 7, Issue 21, July 17, 2009; Ray Takeyh, *Guardians of the Revolution: Iran and the World in The Age of the Ayatollahs*, New York: Oxford University Press, 2009.

²⁷ Frederic Wehrey, et al., *The Rise of the Pasdaran, Assessing the Domestic Roles of Iran’s Islamic Revolutionary Guards Corps*, Santa Monica, CA: RAND, 2009; Elliot Hen-Tov and Nathan Gonzalez, “The Militarization of Post-Khomeini Iran: Praetorianism, 2.0,” *The Washington Quarterly*, 34:1, 45–59; Robin Wright, “Elite Revolutionary Guard Broadens its Influence in Iran,” *The Washington Post*, April 1, 2007, A21; Ali Alfoneh, “Changing of the Guards: Iran’s Supreme Leader Struggles to Control Military,” *Middle Eastern Outlook*, No. 1, April 2010; Abbas Milani, “Ahmadinejad vs. The Ayatollah,” *The National Interest*, June 21, 2011.

²⁸ Scenarios over the succession are examined in Alireza Nader, David E. Thaler, and S.R. Bohandy, *The Next Supreme Leader: Succession in the Islamic Republic of Iran*, MG-1052-OSD, Santa Monica, CA: RAND, 2011.

Iranian ground tactics have evolved and reflect insights garnered from Hezbollah's tactical successes against Israel, and the lessons learned in Iraq.²⁹ These lessons were used to update the published and operative Mosaic Doctrine for Iran's defense.³⁰ U.S. analysts who have studied the doctrine describe it as a *hybrid model* of protracted and layered defense in the event of an invasion.³¹ This doctrine should be seen as the third leg of Iran's deterrent and defense strategy, after its nuclear program and anti-access systems. Reports indicate that the IRGC has been systematically equipping, organizing, and retraining its forces to fight this decentralized form of guerrilla warfare with high-tech capabilities in urban areas and along Iran's constricted lines of communication.³² This evolution of Iranian doctrine suggests a distinctly hybrid character.³³

A series of large-scale exercises have been conducted over the past several years including the Great Prophet series with over 20,000 troops employing mixed or hybrid tactics, anti-armor and anti-helicopter defenses, autonomous tactical units, and night attacks in restricted terrain.³⁴

²⁹ Marc Lindemann, "Laboratory of Asymmetry: The 2006 Lebanon War and the Evolution of Iranian Ground Tactics," *Military Review*, May–June 2010, 105–116.

³⁰ On Iranian doctrine changes and strategy see Steve Ward, "Continuing Evolution of Iran's Military Doctrine," *Middle East Journal*, Vol. 59, No. 4, Autumn, 2005, 573; Michael Connell, "Iran's Military Doctrine," in Robin Wright, ed., *The Iran Primer*, Washington, DC: U.S. Institute for Peace, 2010, 5. Accessed at <http://iranprimer.usip.org/resource/irans-military-doctrine>. See also Anthony Cordesman, *Iran's Revolutionary Guards, the Al Quds Force, and Other Intelligence and Paramilitary Forces*, Washington, DC: Center for Strategic and International Studies, August 16, 2007, 5; Eisenstadt, 5; Wehrey, *Rise of the Pasdarans*, 45–46.

³¹ Michael Connell, "Iran's Military Doctrine," in Robin Wright, ed., *The Iran Primer*, Washington, DC: U.S. Institute for Peace, 2010, 5.

³² On the IRGC see Alireza Nader in Robin Wright, ed., *The Iran Primer*, Washington, DC: U.S. Institute for Peace, at <http://iranprimer.usip.org/resource/irans-military-doctrine>. On the Basij see Ali Alfoneh in Robin Wright, ed., *The Iran Primer*, Washington, DC: U.S. Institute for Peace, at <http://iranprimer.usip.org/resource/irans-military-doctrine>; Ali Alfoneh, "The Basij Resistance Force: A Weak Link the Iran Regime?" Washington Institute for Near East Policy, *Policy Watch*, No. 1627, February 5, 2010.

³³ Steven R. Ward, "The Continuing Evolution of Iran's Military Doctrine," *The Middle East Journal*, Autumn 2005; Steven R. Ward, *Immortal: a military history of Iran and its armed forces*, Washington, DC: Georgetown University, 2009.

³⁴ Lindemann, "Laboratory of Asymmetry," 111–112.

Iranian naval assets continue to evolve along the same lines as the land component, exploiting the unique geographical advantage of Iran in the Gulf.³⁵ Constricting if not denying access is possible given the geography of the Gulf, and Iran's diverse means to produce maritime disorder. Iranian military doctrine suggests that they will employ highly irregular or hybrid tactics that exploit the constricted geography of the Gulf and the advanced systems that they have acquired.³⁶

The evolution of the IRGC navy (IRGCN) into a hybrid force capable of conducting a deadly "guerilla war at sea."³⁷ Its force structure includes a small fleet of fast patrol craft and submarines (including *Ghadir* midget boats and *Hahang* littoral subs).³⁸ While it possesses roughly a dozen such submarines today, more are being produced with modest regularity.³⁹ Iran possesses the world's third largest mine inventory, estimated at 5,000 mines.

IRGC naval doctrine applies a hybrid combination of conventional and irregular tactics and weapons to pose a significant anti-access threat to both military and commercial shipping.⁴⁰ The swarming tactics of the late 1980s are now enhanced with modern speed boats and fast attack craft like the low-signature North Korean-built torpedo boats. The IRGCN has upgraded its fleet to include the modern *Peykoop* boats, *Bladerunners*, and *Bavar* stealth flying boats. This hybrid mixture of submarines, midget submarines, mine-laying trawlers, and stealthy fast-attack craft with anti-ship cruise missiles exploits the constricted terrain of the Gulf. The new fleet of highly maneuverable

³⁵ See CDR Joshua Himes, *Iran's Two Navies, A Maturing Maritime Strategy*, Middle East Security Report I, Washington DC: Institute for the Study of War, October 2011.

³⁶ Fariborz Haghshenass, *Iran's Asymmetric Naval Warfare*, Washington, DC: The Washington Institute for Near East Policy, *Policy Focus #87*, September 2008.

³⁷ On the implications of this particular threat from a maritime perspective see Frank Hoffman, "Hybrid Threats, Neither Omnipotent Nor Unbeatable," *Orbis*, 54, no. 3. Summer 2010, 441-455.

³⁸ Caitlin Talmadge, "Closing Time: Assessing the Iranian Threat to the Strait of Hormuz," *International Security*, Summer 2008, 82-117.

³⁹ Associated Press, "Iran's Fleet Adds 3 Submarines," *Philadelphia Inquirer*, November 28, 2011, 6.

⁴⁰ Office of Naval Intelligence, "Iran's Naval Forces: From Guerilla Warfare to a Modern Naval Strategy," Washington, DC, Fall 2009.

attack boats now boast navigational systems and Command and Control assets that allow them to coordinate their attacks and maximize the effects of concentrated missile attacks. They could also function as improvised minelayers in shallow chokepoints along the 500-mile convoy route of the Strait of Hormuz.

In addition to mines, the Iranian naval arsenal includes a modest inventory of improved anti-ship cruise missiles, largely upgraded versions of the Chinese HY-2 *Silkworm*, and the *Noor*, which is an upgraded copy of the Chinese C-802. The introduction of the *Raad* and *Ghader* missile is of interest. With its 1,000-pound warhead and terminal maneuverability, the *Raad* could prove deadly to large warships. The *Ghader* missile represents a slight upgrade to the *Noor* missile perhaps with some extra range (20-40 km). Its low cost makes it ideal for volley firing in swarming attacks.⁴¹

Our forces in the Gulf are well aware of and prepared to address these Iranian developments.

Implications

Hopefully, the potential hybrid threat scenarios discussed here will not come to pass. But their likelihood and shock value are proportional to our ignorance of their probability and impact.⁴² Continuing to overlook the problems presented in this discussion will only increase the risk and penalty.

Our future force structure must remain useful against a wide range of threats.⁴³ We should not flee from reality or race toward our preferred template and technological predispositions. Many would like to shy away from protracted challenges with failed states or irregular wars, but we cannot escape

⁴¹ Galhran, "Iran's New Anti-Ship Missile," *Information Dissemination.com*, September 28, 2011.

⁴² Krepinevich, 7 *Deadly Scenarios*, 285-300.

⁴³ For force structure implications see Frank G. Hoffman, "Hybrid Threats: Reconceptualizing the Evolving Character of Modern Conflict," *Strategic Forum 240*, Washington, DC: Institute for National Strategic Studies, April 2009; F. G. Hoffman, "Strategy and Future Threats," *Infinity Journal*, Fall 2011, 10-15. Structure recommendations are at *Global Strategic Assessment*, Washington, DC: Institute for National Strategic Studies, 2009, 45-48.

them or the reality of hybrid threats.⁴⁴ Of course, we can seek to work by and through others, and we can be more discriminate and disciplined about where and how we apply our force with a broader range of operational approaches to insurgencies.

Forces postured to respond across the full spectrum of conflict in the 21st century will have to be ready against a demanding mixture of opponents. In the words of former Army Chief of Staff General George Casey some will be “neither fish nor fowl”.⁴⁵ A force prepared to address these hybrid threats must be “brilliant in the basics”, with both a flexible doctrine and a modular force structure that can mix and match interagency and combined assets from U.S. Government and allies.

While the hybrid threat construct has been most valuable in terms of force posture debates, there remain numerous issues involved in the area of operational art.⁴⁶ That area is ripe for research, and it may substantially counter the effects of our limited appreciation of irregular warfare. The complexity of such hybrid conflicts will demand extremely strong, adaptive and creative small unit leadership and improved tactical skills. It requires a more decentralized command and control philosophy, one that allows junior officers and well-trained sergeants to take the initiative and effectively respond to challenges and opportunities that appear suddenly without recourse to hours or days of delay. This in turn places a premium on cognitive skills to recognize and quickly adapt to the improbable or unknown as the Chairman of the Joint Chiefs of Staff has stressed in his guidance for the development of Joint Force 2020. Leaders must be trained and educated to conduct decentralized missions and make rapid decisions under the highly ambiguous and complex conditions of battle. Effective leadership has been

⁴⁴ Nathan Freier, “The Defense Identity Crisis: It’s a Hybrid World,” *Parameters*, Autumn 2009, 82.

⁴⁵ Chief of Staff of the U.S. Army, General G. Casey, Jr., dinner speech, Center for a New American Century, April 1, 2010.

⁴⁶ Major Brian Fleming, “The Hybrid Threat Concept: Contemporary War, Military Planning and the Advent of Unrestricted Operational Art,” Monograph, Ft. Leavenworth, KS: School of Advanced Military Studies, 2011.

and will continue to be central to success in conventional or irregular forms of warfare, and everything in between

The future also requires r general purpose forces to integrate with Special Operations and law enforcement units. It will also call for rapid decisionmaking and the immediate application of lethal force when needed, often in close proximity to noncombatants in densely populated urban environments.⁴⁷ Heavy- or well-armored forces will have a role in this environment, as well as infantry.⁴⁸ Hybrid threats focus extensively on denying freedom of maneuver to intervening forces, while simultaneously presenting a low signature themselves. Finding and identifying these elusive elements is part of the daunting challenge presented by hybrid threats, as close engagements under prepared conditions work to the defender's advantage. This mandates very close combined arms coordination to generate precision and tight "kill chains." It also suggests that we need to go a lot further with force protection for our ground forces, and that the dawning of the robotics age has come just in time.

Conclusion

The hybrid threat construct was developed based on history, research drawn from foreign sources, and recent combat experience. Building upon concepts like General Charles Krulak's "Stepchild of Chechnya" with historical case studies and prudent projections, this sort of research and foresight has fostered much innovative thinking about future threats and challenges. These projections, in turn, have been borne out partially in the Middle East, especially Hezbollah's actions in Lebanon. The hybrid construct, has been further refined by subsequent gaming and analyses directed by the most senior Joint and Service leadership. By being introduced into the lexicon of the debate

⁴⁷ Richard J. Norton, "Feral Cities," *Naval War College Review*, Autumn 2003, Vol. LVI, No. 4, 97–106.

⁴⁸ See also Dr. David E. Johnson, "Minding the Middle: Insights from Hezbollah and Hamas for Future Warfare," paper presented at the Naval Post-graduate School, Monterey, CA. At http://www.nps.edu/Academics/Centers/CCC/Research-Publications/StrategicInsights/2011/Oct/SI-v10-FoW_pg124-137_Johnson.pdf.

over the character of future conflict, the concept of hybrid threats should help avoid the erroneous belief that we face only the straightforward choice between optimizing forces for counterinsurgency or just conventional conflict. That would be a false choice, and it misses the “messy middle” of the conflict spectrum where some if not many adversaries will seek to gain an advantage. In the words of Dr. Dave Johnson from RAND, we should “mind the middle.”

Thinking about the future is not impossible, nor is it easily done. The complexity of this problem is not to be underestimated, but must be faced. Evaluating trends and prospective challenges of performance against potential enemies is an acutely difficult problem of defense planning, but it is not insolvable.⁴⁹ The alternative approach, of waiting for events to unfold and then adapting afterwards, is not without potentially high costs. A nation like ours— with global interests and a leadership position—has a large “in box” of possible contingencies to prepare for. We cannot fulfill our role or secure our interests with our eyes blinkered.

The hybrid threat is neither ten-feet tall nor a hypothetical boogeyman of epic martial proportions. Opponents seeking operational or tactical advantage by blurring various conflict modes are not necessarily a new challenge. Just as clearly, they reflect a challenge with growing frequency and lethality that we have not yet created a solution for. Nor do I think hybrid as a category or threat doctrine sows confusion, quite the opposite.⁵⁰ The enemy does “get a vote” and has little incentive to meet us on our own terms. We can and should exploit history, including our own, to examine and decisively address this threat.

⁴⁹ Williamson Murray and Allan R. Millett, eds., *Calculations: Net Assessment and the Coming of World War II*, New York: Free Press, 1992, 1.

⁵⁰ Colin Gray, “Categorical Confusion,” Carlisle, PA: Strategic Studies Institute, April 2012.

Over time, our country as a whole has not been very good at predicting the next fight.⁵¹ We can and must do better at anticipating the evolving character of modern conflict. While we cannot predict or prepare for every contingency, expanding our scenario set to incorporate the hybrid threat appears necessary for the Nation's overall strategic readiness.

⁵¹ Antulio Echevarria, Jr., "Anticipating Contemporary War: How Well Did We Do?" Carlisle, PA: Army War College, Strategic Studies Institute, September 11, 2011.



Mr. Frank Hoffman

Senior Research Fellow, Institute for National Strategic Studies

National Defense University

Mr. Hoffman is serving at the National Defense University as a Senior Research Fellow with the Institute for National Strategic Studies. He directs the NDU Press operations which includes the journals *Joint Force Quarterly* and *PRISM*. From August of 2009 to June 2011, he served in the Department of the Navy as a senior executive as the Senior Director, Naval Capabilities and Readiness. He retired from the Marine Corps Reserve in the summer of 2001 at the grade of Lieutenant Colonel.

In addition to his formal duties, he has lectured extensively at institutions here in the United States, the Middle East and Europe. He has authored one book (*Decisive Force; The New American Way of War*, Praeger, 1996), over 100 essays and articles, and frequently contributes to *Orbis*, *Joint Force Quarterly*, the *Journal of Strategic Studies*, *Parameters*, the *Naval Institute Proceedings* and *Marine Corps Gazette*.

58

Statement to the Subcommittee on
Intelligence, Emerging Threats, and Capabilities

Dr. Mark Lewellyn, National Security Analysis Department Head,

The Johns Hopkins University Applied Physics Laboratory

February 13, 2013

Chairman Thornberry, Congressman Langevin, and Members of the Subcommittee. Thank you for inviting me to provide my views on the important trends that will shape the national security environment looking out to 2030 and how they might affect the path set by the 2012 Defense Strategic Guidance. In addition, you asked for an assessment of the guidance whether there are threats or missions that are not adequately addressed and require greater attention. The opinions stated are my own and do not necessarily reflect those of The Johns Hopkins University Applied Physics Laboratory or its sponsors.

It is more than two decades since the U.S. concluded Operation Desert Storm. Since that time – and especially since 9/11 – the U.S. has been involved almost continuously in combat operations. Our involvement in these operations is now

winding down. At the same time, the economic constraints on the investments we can make in our military forces are increasing. The 2012 Defense Strategic Guidance flowed from an assessment of how this changing security environment along with changes in future threats would shape the U.S. defense strategy. The strategy is intended to transition “our Defense enterprise from an emphasis on today’s wars to preparing for future challenges, protect the broad range of U.S. national security interests, advance the Department’s efforts to rebalance and reform, and supports the national security imperative of deficit reduction through a lower level of defense spending.”

Will this strategy get the military capability we need in the near term – especially in the context of declining funding for defense? The strategy attempts to be comprehensive. However, there are some areas where we may be falling short, and we must think through an integrated response to address them.

The strategy identifies a range of missions that U.S. forces need to address with the resources that are available and the threat environment in which the missions must be executed. The resources needed to deal with the threats include the ships, aircraft, ground vehicles, sensors, weapons, communications equipment, cyber and space assets, and other materiel used by soldiers, sailors, airmen, and

marines.

A starting point for determining the resources we need is the existing force structure, which changes relatively slowly over time. Much of our technical effort focuses on improving the capabilities of the sensor, weapon, communication, cyber, and space systems that will be used to address emerging threats. Our work indicates there are gaps in the capabilities we need to defeat emerging threats identified in the strategy – particularly the anti-access and area denial threats posed by Iran and China.

For example, maintaining our access to space is a real issue, but there are few viable backups to counter attacks on our satellite communications networks close to a denied area and quickly reconstitute the capability they provide. This includes the need to identify methods to operate in environments where the Global Positioning System (GPS) is denied. Also, the kinetic weapons we are developing to counter threats launched against our forces, while capable, should be supplemented by “non-kinetic” systems to insure we can deal effectively with large, coordinated attacks. Non-kinetic means to defeat these threats include netted electronic warfare systems, integrated cyber attack capability, lasers and other directed energy systems. In addition, we should explore creative uses of existing weapons to counter threat systems. We must also continue to explore

ways to use electromagnetic weapons with their promise of large magazines of relatively inexpensive “bullets” to counter threat kinetic weapons. We have an edge in the capability of our submarine force relative to potential threats, and we must work to maintain it. The ambiguity posed by the unseen presence of a capable submarine can be leveraged to our advantage. Exploring ways to operate unmanned systems autonomously will allow the proven capability of these systems to be used in new ways. Finally, we must insure that our special operations forces have the technology they need to perform their critical missions.

U.S. strategy calls for forces to deter and defeat aggression, project power despite anti-access/area denial challenges, operate effectively in cyber space and space, and provide a stabilizing presence, therefore, we must consider the capabilities we need in peacetime (to deter and provide presence) as well as in wartime (to defeat and project power). While we work to improve the ability of our systems to defeat those of the threat in war, we must also consider how we can better use these systems to deter potential threats and “win without fighting” much as we did during the cold war. (In the cold war, we did this by outspending the Soviet Union. Given our current economic environment, we do not have this luxury against today’s emerging competitors.)

The following figure shows the phases of a notional operations plan (OPLAN) and the relative level of military effort corresponding to each phase. Phase “0” corresponds to shaping, which includes developing alliances, security cooperation, and security assistance plans through diplomacy to support U.S. goals in the area of interest. Phase “1” corresponds to deterrence. Deterrence includes an element of responsiveness, and prepositioned and/or forward-deployed forces help reduce the response time. Space and cyberspace assets provide especially quick response with their persistence and speed-of-light performance, respectively. As the figure shows, shaping and deterrence in a particular theater demands a continuous, but relatively low, level of military effort.

In the event deterrence fails, subsequent phases 2 through 5 demand increasing levels of military effort to seize the initiative, dominate the threat, and provide post-conflict forces to stabilize the area and enable the return of civil authority. We saw this increase in the demand for military effort and its eventual decline clearly during Operation Iraqi Freedom.

To limit the level of military effort in a time of decreasing resources for defense, it makes sense to focus our efforts to “win” through shaping and deterrence.

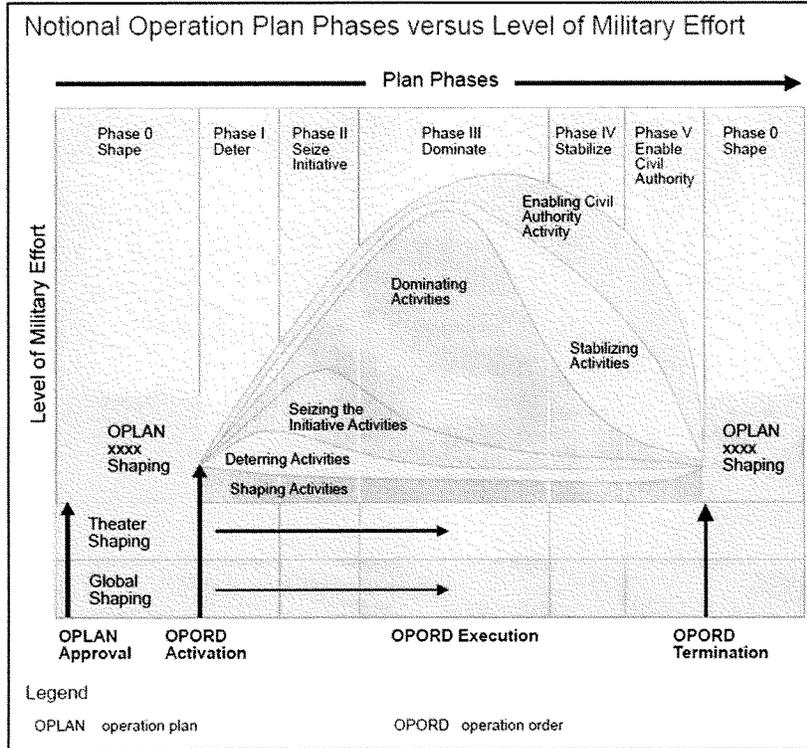


Figure V-3. Notional Operation Plan Phases versus Level of Military Effort

Source: Joint Publication 3-0, *Joint Operations*

The defense strategy calls out two countries by name – China and Iran – for their efforts to develop asymmetric means to counter U.S. power projection capabilities indicating areas of the world where we will need to maintain

responsive forces to deter and, if needed, defeat potential threats. The defense strategy further calls for a rebalance toward the Asia-Pacific region in the context of overall contribution of U.S. forces to global security.

Because of this rebalance toward the Pacific and, in particular, a focus on China, we recently completed a small internally-funded research effort to understand better how shaping and deterrence in the Western Pacific might work for naval forces. Our interest was in figuring out ways to use the available military effort to keep potential conflict from shifting from operations in Phases 0 and 1 to Phase 2 and higher where the demand for resources might outstrip our ability to provide them.

Our work focused on the pre-conflict dimensions of the emerging competition between the U.S. and China in the Western Pacific. It was motivated by a concern that understanding the capabilities needed to defeat a potential threat, i.e., succeed in Phases 2 and 3, may not be sufficient to understand how these same capabilities can deter that threat and shape the environment in which our forces operate to support broader U.S. strategy.

In China, the United States has a competitor with a coordinated, whole-of-government strategy for achieving its national objectives in the Western Pacific

without needing to resort to war, i.e., to win in its version of Phases 0 and 1, as evidenced by its development of anti-access, area denial capabilities. In turn, to deter China effectively, the U.S. must employ an effective countervailing strategy informed by an understanding of the implications of divergent U.S. and Chinese perspectives. In short, the U.S. and China view the world through different lenses. These affect how we: view each other; view other states in the region; conduct diplomacy and commerce; develop and implement policy, strategy, and plans; and conceive of conflict and wage war. We must include an understanding of these differing views as we operate our current forces in the Pacific and as we develop, test, and employ new capabilities to insure that the “messages” we want to send to China are received as we intend. The “message” China sent by demonstrating its ability to shoot down a satellite several years ago was received clearly by us.

How can we do this? Our initial work suggests the following.

At the strategic level, we must ensure a continued whole of government strategy for the Western Pacific that: coordinates the application of all elements of national power to ensure that our peacetime policy goals are not undermined by China’s “win without fighting” strategy; minimizes the risk that misperceptions

will exacerbate crises; and balances the competing imperatives of shaping, deterrence, and war-fighting. We must also broaden our investment in learning about Chinese strategic culture, military culture, service cultures, and operational cultures (including acquisition practices). Further, we should consider the use of “cultural red teaming” to review the way our forces plan to operate in proximity to China’s and develop consistent methods to understand how our actions are perceived.

As an example the Navy is starting to deploy its new small combatant the Littoral Combat Ship (LCS) and plans to forward base the first of these ships in Singapore. The LCS will therefore be a new Phase 0 – 1 asset available for use in the Western Pacific. How will we use the LCS, and what messages to we want to send with it?

We must also ensure that our intelligence collection efforts remain strong and that as a government we encourage openness and transparency drawing on insights gained from social media and other information technologies.

Information is critical, and there is already evidence that in the cyber world operations may already be shifting from Phase 1 into more direct competition.

We must ensure that our cyber forces are equipped with the appropriate technologies and rules of engagement to win.

What does all this mean for Congress? You should support the development of capabilities that contribute to “winning” in Phase 0 – 1 including continued development of warfighting capabilities that contribute to deterrence such as the aforementioned efforts to compliment our kinetic systems by developing complimentary non-kinetic means to defeat threats. These include netted electronic warfare systems, integrated cyber attack capability, lasers and other directed energy systems, as well as electromagnetic weapons able to fire larger magazines of “bullets” to counter threat kinetic weapons. In addition, we need to maintain our edge in submarine warfare, cyber operations, and special operations capability. The latter will be critical to address continued threats from terrorism, which are not directly aligned with emerging threats like China. And because communications and intelligence are critical for operations in Phase 0 – 1, we must work to maintain our access to space and identify ways to improve resilience in our space systems.

Thank you for the opportunity to provide my comments. I am prepared to address any questions you may have.

Dr. Mark T. Lewellyn

Head, National Security Analysis Department

The Johns Hopkins University Applied Physics
Laboratory



Dr. Mark T. Lewellyn is Head of the National Security Analysis Department (NSAD) at APL. Dr. Lewellyn assumed leadership of NSAD in April 2011 and heads a multidisciplinary department of more than 200 staff tasked with defining emerging national security challenges; identifying future system capabilities and requirements; characterizing the operational context for future systems; and assessing the effectiveness of new technologies, operational concepts, and integrated systems on joint force effectiveness and national security policy.

Before joining APL, Dr. Lewellyn served as Vice President and Director of Advanced Technology and Systems Analysis at the Center for Naval Analyses, an operating division of CNA. During a 33-year career at CNA, he led numerous technology and acquisition studies for the Navy, Marine Corps, and Coast Guard; served as Scientific Advisor to Navy and Marine Flag and General officers charged with developing and acquiring new systems; and held middle- and senior-management positions of increasing responsibility.

In addition to his responsibilities at CNA and APL, Dr. Lewellyn served as a member of the Defense Science Board Task Force on Early Intercept Ballistic Missile Defense from May 2010 to May 2011.

Dr. Lewellyn holds a Ph.D. from the University of California (Berkeley), an M.Sc. from the University of East Anglia (as a Fulbright-Hays grant recipient), and a B.A. from Hamline University, all in the physical sciences.

Dr. Lewellyn is a recipient of the Department of the Navy Meritorious Public Service Award.

**DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION**

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(5), of the Rules of the U.S. House of Representatives for the 113th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Committee on Armed Services in complying with the House rule. Please note that a copy of these statements, with appropriate redactions to protect the witness's personal privacy (including home address and phone number) will be made publicly available in electronic form not later than one day after the witness's appearance before the committee.

Witness name: Mark Lewellyn

Capacity in which appearing: (check one)

Individual

Representative

If appearing in a representative capacity, name of the company, association or other entity being represented:

FISCAL YEAR 2013

*All values in thousands

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
N00024-03-D-6606	Navy	\$97,535	IDIQ for Essential Capability
HQ0147-12-D-0004	MDA	\$63,902	IDIQ for Essential Capability
NNN06AA01C	NASA		IDIQ for Essential Capability
11-G-2402	Federal Gov't	\$15,583	IDIQ for Essential Capability
08-G-4030	Federal Gov't	\$9,881	IDIQ for Essential Capability
FA8803-13-C-0004	Air Force	\$8,844	MSIS SENSOR - AF WEATHER FOLLOW-ON
HQ0006-07-D-0001	MDA	\$4,926	IDIQ for Essential Capability

FISCAL YEAR 2012

federal grant(s)/ contracts	federal agency	dollar value	subject(s) of contract or grant
N00024-03-D-6606	Navy	\$590,583	IDIQ for Essential Capability
NAS5-01072	NASA	\$71,069	IDIQ for Essential Capability
NNN06AA01C	NASA	\$64,820	IDIQ for Essential Capability
HQ0006-07-D-0001	MDA	\$62,107	IDIQ for Essential Capability
11-G-2402	Federal Gov't	\$29,102	IDIQ for Essential Capability
10-D-0001	Federal Gov't	\$49,903	IDIQ for Essential Capability
NAS5-97271	NASA	\$39,206	IDIQ for Essential Capability

FISCAL YEAR 2011

Federal grant(s)/ contracts	federal agency	dollar value	subject(s) of contract or grant
N00024-03-D-6606	Navy	\$514,658	IDIQ for Essential Capability
NAS5-01072	NASA	\$86,707	IDIQ for Essential Capability
HQ0006-07-D-0001	MDA	\$57,529	IDIQ for Essential Capability
11-G-2402	Federal Gov't	\$37,768	IDIQ for Essential Capability
10-D-0001	USSOCOM	\$29,102	IDIQ for Essential Capability
11-C-1351	Federal Gov't	\$23,943	IDIQ for Essential Capability
09-D-0040	Federal Gov't	\$21,826	IDIQ for Essential Capability

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2013): _____ 93 _____ ;
 Fiscal year 2012: _____ 188 _____ ;
 Fiscal year 2011: _____ 177 _____ .

Federal agencies with which federal contracts are held:

Current fiscal year (2013): Same as Above;
 Fiscal year 2012: Same as Above ;
 Fiscal year 2011: Same as above.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2013): RDT&E ;
Fiscal year 2012: RDT&E ;
Fiscal year 2011: RDT&E .

Aggregate dollar value of federal contracts held:

Current fiscal year (2013): \$317,612 ;
Fiscal year 2012: \$1,210,021 ;
Fiscal year 2011: \$1,060,818 .

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2013): 48 _____;
 Fiscal year 2012: _____ 166 _____;
 Fiscal year 2011: _____ 158 _____.

Federal agencies with which federal grants are held:

Current fiscal year (2013): _____ Primarily NASA _____;
 Fiscal year 2012: _____ Primarily NASA _____;
 Fiscal year 2011: _____ Primarily NASA _____.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2013): Science and Technology _____;
 Fiscal year 2012: Science and Technology _____;
 Fiscal year 2011: Science and Technology _____.

Aggregate dollar value of federal grants held:

Current fiscal year (2013): _____ \$6,772 _____;
 Fiscal year 2012: _____ \$22,331 _____;
 Fiscal year 2011: _____ \$19,622 _____.

**Statement before the House Armed Services Committee,
Subcommittee on Intelligence, Emerging Threats and Capabilities**

**Perspectives on the Future National
Security Environment:
Technological, Geopolitical, and
Economic Trends Affecting the Defense
Strategic Guidance**

A Statement by

David J. Berteau

**Senior Vice President & Director, International Security Program
Center for Strategic and International Studies (CSIS)**

February 13, 2013

Room 2118, Rayburn House Office Building

The Future National Security Environment:
Technological, Geopolitical, and Economic Trends Affecting the
Defense Strategic Guidance

Statement of David J. Berteau
Senior Vice President and Director, International Security Program
Center for Strategic and International Studies
Before the Subcommittee on Intelligence, Emerging Threats and Capabilities
of the House Committee on Armed Services

February 13, 2013

Mr. Chairman, Congressman Langevin, and Members of the Subcommittee, I thank you for the opportunity to appear before you this afternoon as part of this distinguished panel to offer my views on the future national security environment and on some of the key issues that will affect the Defense Strategic Guidance. My statement draws on a number of recent studies of the Center for Strategic and International Studies, but both my written and oral statements are my own. They do not necessarily represent the views of CSIS.

Strategic Framework

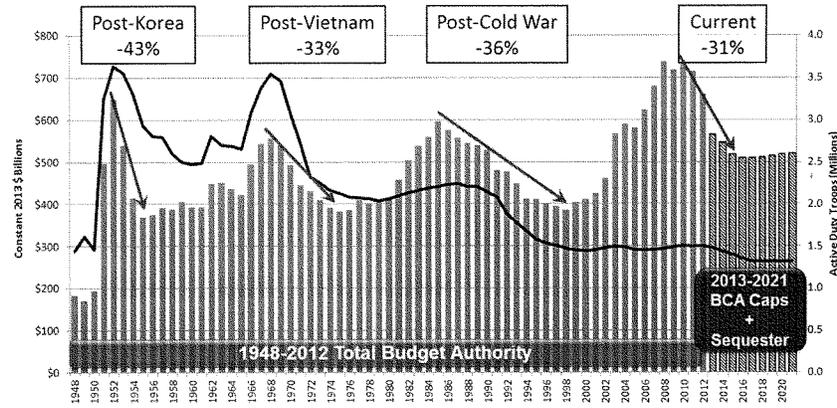
The issues of the moment, of budgets and deficits and sequestration and debt ceilings, dominate our conversation. Just this morning the full committee heard from the Deputy Secretary of Defense and the Joint Chiefs of Staff on the potential impact of the sequestration under the Budget Control Act of 2011 (BCA). The immediate consequences – particularly as described by senior defense officials – seem dire, but it is even more important to view the current situation through a broader strategic framework. If I may, I would like to step back a bit and take that broader view.

In 2010, Admiral Mike Mullen, then-Chairman of the Joint Chiefs of Staff, stated unequivocally that the single biggest threat to U.S. national security is our national debt. Others have made similar remarks, including at public events held last September at CSIS under the auspices of a bipartisan coalition of former Members of Congress, ranging from Sam Nunn and Pete Dominici to Dave McCurdy and Bill Frenzel. Our task this afternoon is not to fix the nation's fiscal and economic challenges but rather to examine what they might mean for defense, especially for the technology and economic drivers and industrial base issues that this subcommittee will face in the coming months.

The nation is entering its fourth major drawdown in defense spending in the last 60 years. As you can see from Figure 1, all of the previous Department of Defense (DoD) drawdowns – following the Korean War, the Vietnam War, and the Cold War – reflected higher percentage reductions than the current projected drawdown. In addition, the lowest point for each of those

three drawdowns were far lower level than current projections, even after sequestration and the new caps on defense spending from the BCA.

Figure 1: Defense Drawdowns Compared



Note: Topline in out-years includes the Congressional Budget Office (CBO) estimate of overseas contingency operations (OCO) based on a phased drawdown to 30,000 troops in 2017 and remaining flat thereafter.

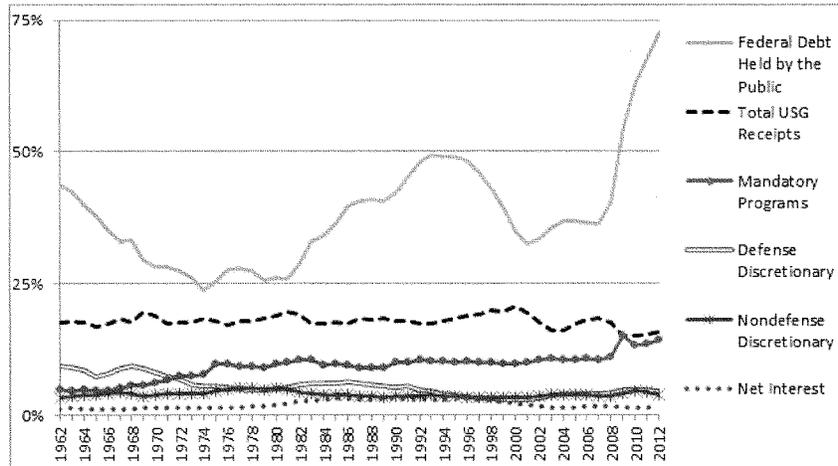
Sources: Department of Defense, *National Defense Budget Estimates for Fiscal Year 2013 (Green Book)*, Office of the Under Secretary of Defense (Comptroller), March 2012; Congressional Budget Office, *Long-Term Implications of the 2013 Future Years Defense Program*, July 2012. Analysis by CSIS Defense and National Security Group.

That last point bears repeating: in constant-dollar terms, the projected floor of the current drawdown will be markedly (roughly 25 percent) higher than the three previous drawdowns (i.e., roughly \$500 billion per year, including the Overseas Contingency Operations accounts, compared to approximately \$400 billion per year in the past).

Budget Figures Over Time

It may be that the cuts from sequestration and the impact of caps from the BCA will be replaced, avoided, or mitigated through future legislation, but long term fiscal challenges will remain. The growth over time in mandatory spending and in the publicly-held portion of the total federal debt is reflected in Figure 2. This chart reflects the annual percentage of U.S. Gross Domestic Product (GDP) since 1962 for six categories: defense spending, domestic discretionary spending, net interest on the debt, spending for mandatory programs, total receipts of the U.S. Government, and publicly-held federal debt.

Figure 2: Federal Government Spending, Revenue and Debt (as a % of GDP)



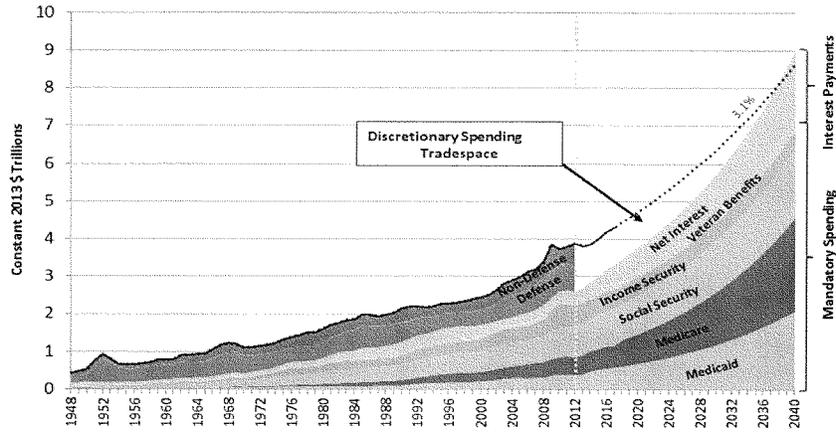
Source: Office of Management and Budget, *Historical Tables*, Tables 8.5 and 8.7, available at <http://www.whitehouse.gov/omb/budget/Historicals/>; Congressional Budget Office, *Budget and Economic Outlook: Fiscal Years 2013 to 2023*, February 5, 2013, available at <http://cbo.gov/publication/43907>

There are two points worth highlighting from these particular data. First, the share of GDP devoted to defense and domestic discretionary spending has been relatively flat roughly since the end of the Cold War. Second, the growth in mandatory spending over the past five years has been matched by a reduction in the percentage of total government receipts. In other words, U.S. expenses have gone up as a percent of GDP while the percent of GDP paid to the government has gone down. In fact, in 2008, total receipts covered only mandatory spending, as shown in Figure 2.

Of course, Figure 2 addresses past spending, revenue, and debt. But what will the situation look like going forward?

Figure 3 shows that, based on projections from the Congressional Budget Office and the Office of Management and Budget, by 2040 there will be no funding available for any expenditures other than mandatory programs and net interest on the debt.

Figure 3: Pressure on the Defense Topline



Note: Topline assumes that total federal spending from 2018 to 2040 grows at 3.1 percent above GDP (the average annual growth rate planned for 2013–2017 in the FY2013 budget request).

Sources: Congressional Budget Office, *Budget and Economic Outlook: Fiscal Years 2011 to 2021*, January 2012; Office of Management and Budget, *Historical Tables*, February 2012. Available at <http://www.whitehouse.gov/omb/budget/Historicals>; Department of Defense, *National Defense Budget Estimates for Fiscal Year 2013 (Green Book)*, Office of the Under Secretary of Defense (Comptroller), March 2012. Independent analysis based on CBO federal spending projections from 2022-2040.

What does this mean for DoD? What actions can this subcommittee take to affect these pressures? As compelling as the long-term problems are, today's challenge is to deal with the immediate budget problems, the fiscal year (FY) 2013 impact of sequestration and the BCA caps for fiscal years 2014 through 2021.

Sequestration for FY 2013 will reduce DoD spending by \$46 billion over the remainder of this fiscal year, using the priority-free approach of equal percentage reductions to every account. Those cuts have projected impacts which are becoming more apparent as DoD officials have refined, and reported to Congress, planning and preparation for sequestration.

However, for the purposes of protecting future technology and preparing for future threats, one must recognize that the post-sequestration BCA caps will take an additional \$438 billion from fiscal years 2014 through 2021. Those reductions are in addition to the \$487 billion from the initial August 2011 BCA caps.

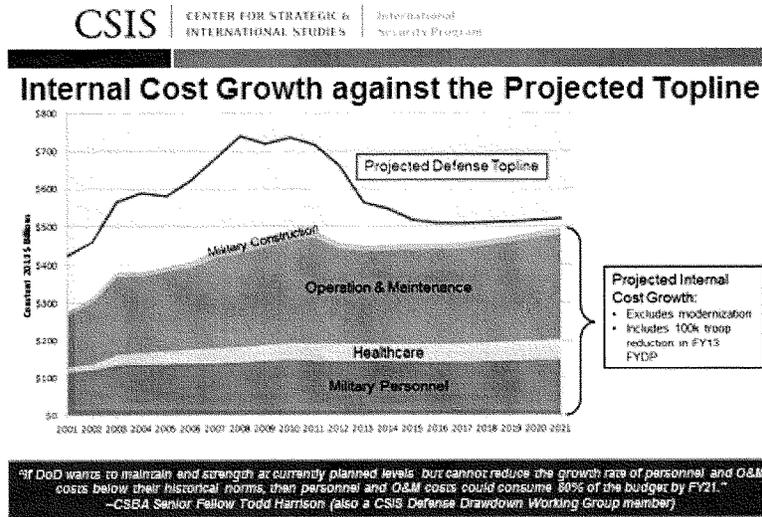
Internal DoD Cost Growth

As stated earlier, the defense budget is not going down as far as it has in the past, and on the surface, that looks like good news. With 25 percent more funding, DoD should be able to afford 25 percent more capability.

However, CSIS research indicates that this may not be the case. In a “Preparing for a Deep Defense Drawdown” briefing released on February 8th, we found that for the past decade, cost growth in Operation and Maintenance (O&M) and Military Personnel accounts has far exceeded inflation.

As you can see from Figure 4, if those growth rates continue at their present pace, they will adversely impact investment in Procurement and Research and Development (R&D) accounts: by the start of the next decade, there will be almost no funding available for investment, including in Science and Technology spending. It is important to note that this outcome would happen even if FY 2013 sequestration is avoided and if BCA caps are lifted.

Figure 4: Internal Cost Growth and the Defense Topline



In other words, even while sequestration and the BCA are drawing down the defense topline, cost growth in O&M and military pay and benefits is reducing internal value of remaining defense dollars. My CSIS colleague, Dr. Clark Murdock, has proposed a way to tackle this

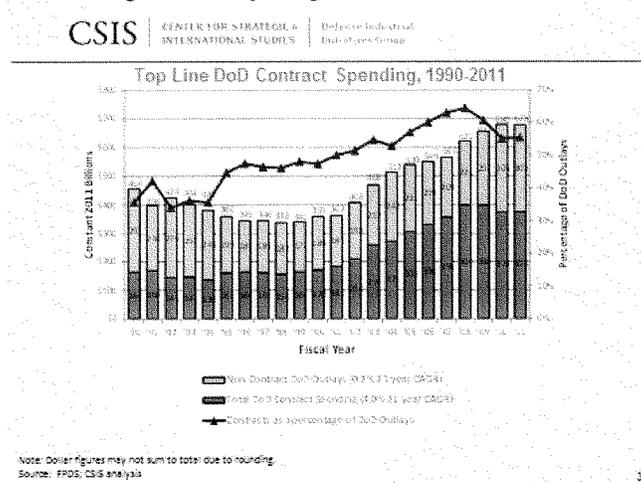
issue; we will be glad to provide to the subcommittee the document for that approach when it becomes available later this month.

Impact on Defense Contracts

Those are projections for the future, but we can see the impact already of defense reductions from the past three years. Since 2008, the total amount of defense spending has declined slightly, and most of that decline has been in spending on contracts. CSIS produces an annual report on Defense Contract Trends, and the charts below are excerpted from the most recent such report. Because of the delay in access to data, our report goes through FY 2011, but we expect to have an updated version for FY 2012 by April, and we will be glad to provide it to the subcommittee when it is available.

Figure 5 shows total DoD spending from fiscal years 1990 through 2011. The vertical bars for each year divide total defense spending into two categories. The bottom of each bar is total obligations on contracts, as reported by DoD in the Federal Procurement Data System that is run by the General Services Administration. This is the best public source of government-wide contract data, as certified by each agency’s procurement officials. The top of each bar is non-contract spending, which is principally pay and benefits for military and government civilian personnel. The chart reports all spending in constant FY 2011 dollars, so inflation is taken out of the data.

Figure 5: DoD Spending on Contracts and Personnel



This chart clearly demonstrates the effects of the rising personnel costs. In FY 2011, total DoD non-contract spending was \$303 billion (mostly personnel). This is nearly the same as the \$297

billion in FY 1990, but the total force in 2011 (active military personnel and federal civilian employees) was more than one third smaller than in 1990. We are paying the same amount for one third fewer people.

Much of the growth in defense spending since September 11, 2001, has been in contract obligations. In 2001, 50 percent of total defense spending was on contracts. That number rose to about 62 percent by 2008, but it has fallen to 55 percent in 2011 and is expected to decline further when we update this report in two months. (Note: The apparent flattening in 2011 is largely the result of a one-time boost in Navy shipbuilding contracts, which we do not expect to be repeated.)

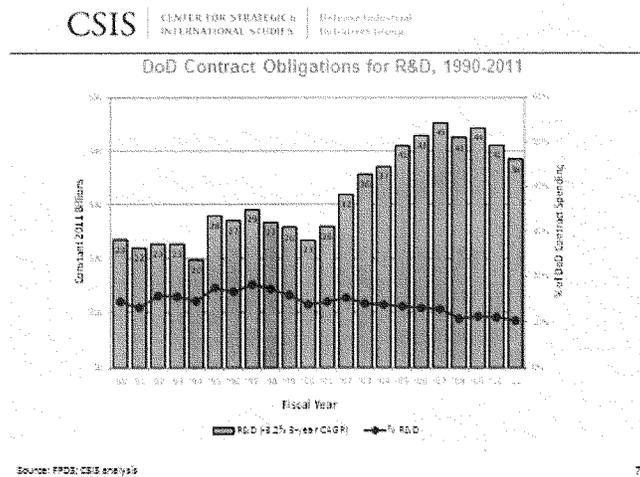
Recent reports from the Commerce Department show that contract spending declined dramatically in the fourth quarter of 2012, both from DoD and from across the federal government. Obviously, if sequestration hits, these numbers will not go back up.

Impact on R&D

CSIS research breaks down these data into numerous categories. We look at spending by military department, we look at the types of contracts and the level of competition, and we look at the nature and size of the companies that are awarded these contracts.

We also look at contract spending on products, services, and R&D. Because of data limitations, we cannot easily break down R&D spending into the Science and Technology (S&T) portions covered by 6.1, 6.2, or 6.3a funding, but it might be useful nevertheless to examine the trends for R&D (see Figure 6).

Figure 6: DoD Contract Obligations for R&D



This figure shows that total DoD contract spending on R&D rose steadily after September 11, 2001, but it has declined in three of the past four years and is expected to decline further in 2012.

More importantly for this subcommittee, the percentage of total DoD contract spending on R&D declined steadily even as the budget went up. In FY 2002, 15 percent of defense contract spending was on R&D, but by 2011 that percentage had fallen to 10 percent. [This can be partially explained by the growth in OCO, which had little R&D funding, but the reduction of OCO does not seem to have reversed that trend so far.] As R&D spending on major platforms migrates to procurement accounts [and OCO levels continue to decrease], we expect that trend to continue.

I should note that the numbers in these charts do not include classified contracts, because such contracts are exempt from reporting in the Federal Procurement Data System. Our independent assessment of other data shows that the trends would be roughly the same even if classified contracts were included in the data.

Spending trends for S&T portions of the R&D budget do not necessarily follow the overall R&D trends for any given year, and DoD officials have stated that they will try to protect S&T spending in future budgets. Our expectation, however, is that over time, the budget pressures on the overall R&D budget will likely drive S&T spending in the same direction. This is an issue worthy of the subcommittee's attention in the coming months.

Impact on the Industrial Base

Let us turn now to the Defense Strategic Guidance and its relevance to the impact of the defense drawdown on the industrial base. Shortly after the guidance was issued on January 5, 2012, CSIS conducted a conference on that issue. Let me summarize our views on that impact.

The U.S. defense industry depends on projections from DoD in order to invest, hire and retain skilled technicians, and develop and sustain technology and supplier networks for future demands. In other words, industry relies on DoD for its demand signals.

For the past few years, those demand signals have been absent. This has resulted from a combination of two wars, a decade of supplemental funding (including Overseas Contingency Operations), and a weaker long-term program from DoD (i.e., the Future Years Defense Program, or FYDP).

The Defense Strategic Guidance of 2012 provided some initial indications of future demand signals, and industry welcomed those. There are four key priorities in the Defense Strategic Guidance:

- Counter the threats of violent extremists.
- Contribute to security globally but rebalance toward the Asia-Pacific region.
- Continue military presence and support in the Middle East.
- Evolve and rebalance the military in Europe.

The Defense Department stated that the President's FY 2013 budget request was aligned with that Guidance, and there were some decisions that reflected that alignment. However, in some cases, as revealed in the budget justification material provided to the Congress, the implementation of the Defense Strategic Guidance was deferred to the FY 2014 budget and the FY 2014-2019 FYDP. Because of budget uncertainty, we have yet to see that budget and FYDP, so we cannot assess its implementation of the Guidance. What we do know is that the execution of sequestration does not appear to permit the application of the priorities of the Defense Strategic Guidance to the distribution of the reductions.

Industry is in that same situation: they cannot assess DoD's priorities and therefore cannot know where to invest or which workers are most important to hire or retain. The impacts of the FY 2013 Continuing Resolution and the potential impacts of sequestration, which was the subject of hearings today and earlier this week, have made it harder for industry to make decisions.

For the DoD major prime contractors, this uncertainty, while hard to deal with, is manageable. In their earnings calls with Wall Street, chief executive officers for major defense contractors all expressed confidence in their ability to survive this uncertainty.

Smaller firms, including technology companies, have less confidence. Their cash position is sometimes less favorable than the major prime contractors, and they are more dependent on subcontracts for future work. The subcommittee could usefully pay close attention to the survivability of such firms.

Impact on Innovation

Given the reductions in both total R&D spending and the share R&D has in the overall DoD budget, a clear demand signal on how DoD will generate innovation is also needed. In words that have been oft repeated: "We have run out of money. Now we have to think." This is especially true today. The identification, development, adoption and dissemination of innovation of all types – technological but also budgeting, contracting, management, etc. – that would result in improved national security capabilities will be critical if the U.S. national security enterprise is to continue to meet its current and emerging missions on a tighter budget.

Fortunately, innovations for the warfighter can increasingly be generated outside the traditional R&D/6.1-6.5 process. Unfortunately, as an upcoming CSIS report shows, DoD is not positioned well to take advantages of innovations occurring within the Department, let alone in the commercial world and overseas. DoD needs to better articulate who it will turn to for future innovations and what mechanisms it will use to do so. This too could be a topic worthy of the subcommittee's consideration. I think there is much room for improving how innovation is identified, disseminated and adopted in the defense/national security enterprise.

Impact on the Workforce

My final point is that the future development and application of science and technology for national security depends on a skilled technology workforce. It is bureaucratically straightforward to use furloughs for cutting costs in FY 2013 to meet sequestration targets.

Similarly, industry will lay off workers and may soon have to issue notices (called WARN Act notices) to employees.

The long-term impact of workforce caps and cuts are less obvious. The lesson of the last drawdown is that it is far easier to get rid of workforce than it is to rebuild it. DoD has been rebuilding the acquisition and technical workforce for 12 years now, and it is still not back to the sustainable demographic balance that was present at the end of the Cold War in 1989. I would suggest that this subcommittee could usefully pay attention to this issue in the coming months.

Conclusion

Mr. Chairman, Congressman Langevin, Members of the Subcommittee, there is much more to discuss and assess on all of these issues. The information presented above provides the highlights of our work at CSIS over the past two years on these issues. We are happy to provide you with additional material on these and other related issues, should you desire. Thank you for the opportunity to appear today before the subcommittee, along with the other panel members. I welcome your comments and questions.

David J. Berteau

Center for Strategic and International Studies
Senior Vice President and
Director of International Security Program

David J. Berteau is senior vice president and director of the CSIS International Security Program, which encompasses the entire range of national security programs, including defense policy and resources, homeland security, nuclear arms issues, the development-security interface, security economics, and defense and military strategy. He is also director of the CSIS Defense-Industrial Initiatives Group, covering defense management, programs, contracting and acquisition, and the defense industry. Recent projects include the CSIS study on U.S. forward presence in the Asia-Pacific region and presentations on the impact of sequestration on national security. In addition to CSIS, Mr. Berteau is an adjunct professor at Georgetown University and at the Lyndon B. Johnson School of Public Affairs, a director of the Procurement Round Table, and a fellow of both the National Academy of Public Administration and the Robert S. Strauss Center at the University of Texas. Prior to joining CSIS, he was the faculty director of Syracuse University's National Security Studies Program, and he has 15 years of senior corporate experience. He held senior positions in the U.S. Defense Department under four defense secretaries. Mr. Berteau graduated from Tulane University in 1971 and received his master's degree in 1981 from the LBJ School of Public Affairs at the University of Texas.

**DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION**

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(5), of the Rules of the U.S. House of Representatives for the 113th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Committee on Armed Services in complying with the House rule. Please note that a copy of these statements, with appropriate redactions to protect the witness's personal privacy (including home address and phone number) will be made publicly available in electronic form not later than one day after the witness's appearance before the committee.

Witness name: David J. Berteau

Capacity in which appearing: (check one)

Individual

Representative

If appearing in a representative capacity, name of the company, association or other entity being represented: Center for Strategic & International Studies

FISCAL YEAR 2013

federal grant(s)/ contracts	federal agency	dollar value	subject(s) of contract or grant
Cost Label System	DoD DoD	\$96,000.00	CSIS
System of System Acquisition	DoD DoD	\$90,000.00	CSIS
Future of Ground Force	DoD	\$274,091.00	CSIS
DoE Benchmark Study	DOE	\$148,210.75	CSIS

FISCAL YEAR 2012

federal grant(s)/ contracts	federal agency	dollar value	subject(s) of contract or grant
DAACM Study	DoD	\$676,554	CSIS
Econ Strat of Abandonment	DoD	\$389,354	CSIS
Transition Plan	DoD	\$372,772	CSIS
ARCA Business Case	DoD	\$199,943	CSIS
Services Contract needs	DoD DoD	\$120,000	CSIS

FISCAL YEAR 2011

Federal grant(s)/ contracts	federal agency	dollar value	subject(s) of contract or grant

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2013): 2;
 Fiscal year 2012: 4;
 Fiscal year 2011: _____.

Federal agencies with which federal contracts are held:

Current fiscal year (2013): DoD and DoE;
 Fiscal year 2012: DoD;
 Fiscal year 2011: _____.

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2013): studies and analysis;
 Fiscal year 2012: _____;
 Fiscal year 2011: _____.

Aggregate dollar value of federal contracts held:

Current fiscal year (2013): \$422,244.75;
 Fiscal year 2012: \$1,288,623;
 Fiscal year 2011: _____.

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2013): 2 _____;
Fiscal year 2012: 1 _____;
Fiscal year 2011: _____.

Federal agencies with which federal grants are held:

Current fiscal year (2013): DoD _____;
Fiscal year 2012: DoD _____;
Fiscal year 2011: _____.

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2013): Studies and Analysis _____;
Fiscal year 2012: _____;
Fiscal year 2011: _____.

Aggregate dollar value of federal grants held:

Current fiscal year (2013): \$180,000 _____;
Fiscal year 2012: \$120,000 _____;
Fiscal year 2011: _____.

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

FEBRUARY 13, 2013

RESPONSE TO QUESTION SUBMITTED BY MR. NUGENT

Mr. HOFFMAN. Sir, as I understand the context behind your question, given the disparity in relative national power between Pakistan and India, what do we expect Pakistan to do?

As I noted before the committee, I would expect Pakistan to continue its nuclear modernization program. By most expert accounts it is the fastest growing nuclear weapons stockpile in the world, but admittedly, this is coming from a smaller baseline than the major nuclear powers. Nuclear weapons have been and will continue to be Pakistan's principal strategic deterrent against what its military-intelligence leadership views as an existential threat from its larger neighbor.

At the same time I would expect Pakistan's military to continue developing a broader range of capabilities to address the proximity and potency of an internal militant threat that has already caused it to move a large amount of its conventional military forces structure away from India and into its western border territories. While Pakistan's civilian leadership periodically labeled the internal threat as the nation's most severe, it remains unclear whether Pakistan's senior military and intelligence leaders view the problem similarly. Nonetheless, I expect Pakistan's military will continue to improve its training and operations against military groups in the west who formally oppose the state while retaining as much capacity as it possibly can to counter India.

I do not expect Pakistan's military-intelligence leadership will extend or expand its longstanding practice of employing proxy forces or terrorist activities against those neighbors it feels threatening. I am not aware of any evidence that Pakistan's security agencies have broken its links or financial support to select militant groups it believes provide to the defense of Pakistan in some manner but have been labeled as terrorist organizations. I would expect that Pakistan's military-intelligence leadership will continue to use all the tools it has to keep India off balance and safeguard its interests inside Afghanistan. [See page ??.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

FEBRUARY 13, 2013

QUESTION SUBMITTED BY MR. FRANKS

Mr. FRANKS. 1) I would like to know from your perspective, do you feel the Nation is currently facing a threat from an EMP attack? Do you feel that the Nation is prepared to address this threat? And if not, how would you address mitigating this threat. Further, do you feel the threat is grave enough to be reflected in our National Strategic Guidance?

Mr. HOFFMAN. Sir, an EMP attack is an example of the sort of asymmetric approach we can anticipate from states or reasonably well-resourced nonstate actors. I believe that the most likely contingencies would be overseas rather than a massive attack in the homeland. Such attacks should be anticipated by our combatant commands and the Services in their preparations and in the hardening and redundancy of our various military C2 or ISR systems.

Such attacks could be large scale in nature, by a country that detonates a nuclear-like system in the atmosphere to attempt to negate our intelligence and communications links that confer such an advantage to us. I could also imagine more tactical EMP devices being used near bases where U.S. forces are operating or providing ground-based missile defenses to disrupt our access into a region at ports or airfields or to try to weaken our support to a coalition member or partner nation.

National guidance should reflect the nature of this threat consistent with its probability and consequence among all other contingencies. Both the Department of Defense and Department of Homeland Security should consider this threat grave enough to incorporate into planning and acquisition requirements. Because of this threat and other cyber threats, the ability to operate under degraded C2 levels after an EMP attack is something we can and should train for. Enhancing network system resiliency is a must.

Mr. FRANKS. 2) I would like to know from your perspective, do you feel the Nation is currently facing a threat from an EMP attack? Do you feel that the Nation is prepared to address this threat? And if not, how would you address mitigating this threat. Further, do you feel the threat is grave enough to be reflected in our National Strategic Guidance?

Dr. LEWELLYN. In principle, EMP (electromagnetic pulse) attacks could arise in two cases. First, a nuclear conflict between regional powers could affect U.S. military forces and U.S. citizens, allies, and commercial interests in the area. Second, a nuclear attack aimed at U.S. forces or territory would have a direct effect on military forces or the homeland. The EMP effects of a nuclear detonation could damage electronic and other equipment including satellites, mobile and line communications, consumer electronics, and power distribution systems. The magnitude of damage from EMP would depend on the altitude of a nuclear weapon when it detonates, its yield, the distance of the area of interest from the weapon at detonation, any intervening geographical features such as mountains, the local strength of the Earth's magnetic field, and the level of protection or hardening from EMP of potentially vulnerable equipment. I believe the likelihood of such attacks is small and is mitigated by our deterrence posture to include missile defense.

Although not attacks per se, geomagnetic storms resulting from solar activity can cause effects similar to those resulting from a nuclear detonation. Solar activity occurs in cycles, and we have seen an increase in solar activity over the past year. Prior to this increase, the most recent significant activity occurred in 1989 when a severe geomagnetic storm caused the collapse of a Canadian power grid. This predates the tremendous increase in the use of smart phones, tablets, and other electronic devices we see today, and it's likely that a storm of similar magnitude in the future would have some effect on these systems.

In my view, the Nation is not prepared fully to address this threat. Our military forces are working to harden critical systems against the effects of EMP. Some systems developed originally during the Cold War retain some level of hardening. However, the aforementioned proliferation of modern electronics—especially in systems using commercial-off-the-shelf (COTS) technology poses a problem. Some militarized COTS have some hardening and/or reside in metal ship hulls, for example, that provide some degree of protection. Nevertheless, I do not believe we have a full understanding of the vulnerabilities of these systems to EMP attacks of various mag-

nitudes. We need to develop this understanding and improve the resiliency of these systems. At the same time, we should plan for alternative concepts of operation for cases when the use of all or some of these systems is denied. In addition, we should work to keep our deterrence posture strong to include our missile defense capability.

The Strategic Guidance includes countering weapons of mass destruction and maintaining a safe, secure, and effective nuclear deterrent among the primary missions of the U.S. Armed Forces. EMP would be just one of the effects resulting from a nuclear conflict between regional powers or a direct nuclear attack on the U.S. forces or the homeland. For this reason, I believe countering EMP threat can be considered as a component of these primary missions.

Mr. FRANKS. 3) I would like to know from your perspective, do you feel the Nation is currently facing a threat from an EMP attack? Do you feel that the Nation is prepared to address this threat? And if not, how would you address mitigating this threat. Further, do you feel the threat is grave enough to be reflected in our National Strategic Guidance?

Mr. BERTEAU. [The information was not available at the time of printing.]

