

THE BROOKINGS INSTITUTION

AIR-SEA BATTLE DOCTRINE:
A DISCUSSION WITH THE CHIEF OF STAFF OF THE AIR FORCE AND CHIEF OF
NAVAL OPERATIONS

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P R O C E E D I N G S

MR. SINGER: Hello, I'm Peter Singer, Director of the 21st Century Defense Initiative at Brookings, and it's my pleasure to welcome you to this session today. In the mid 1970's, a range of U.S. military thinkers and leaders, from U.S. Army General Donn Starry to Air Force Colonel John Boyd, began wrestling with the problems presented by the feared -- by a fear of massive conventional war in the Cold War of Europe, as well as the new opportunities presented by emerging technologies like precision weapons.

The concept that emerged emphasized deep attack, the extended battlefield, and aggressive defense. Ultimately known as Air Land Battle, it was adopted in U.S. military circles in 1981 and became NATO's primary battle plan in 1984. It shaped everything from the weapons that were researched, developed, and then acquired to the training programs conducted of an entire generation of officers, to the political and strategic relationships, both between America's allies inside NATO, as well as relationships with potential adversaries in the Warsaw Pact.

Indeed, it's arguable whether Air Land Battle's greatest achievement was in its partial application in the '91 Gulf War or the fact that it was never actually used in Europe; that it's very success was keeping the Cold War cold. Today, the only tanks that are ready to pour across the Fulda Gap between East and West Germany are the ones depicted in the museum at Operation Post Alpha near Fulda that commemorates a Cold War flash point between two nations that no longer exist. And the so called smart weapons of the 1970's and '80s that amazed us back then seem pretty dumb right now.

We face a very different world with very different policies and technologies and very different threats and very different opportunities. Yet as Mark

Twain once wrote, history doesn't repeat itself, but it does rhyme. The U.S. and its allies today face tough problems of how to maintain deterrents in conventional settings, of how to project military force into an operational area and sustain it in the face of armed opposition, an objective that has become more difficult as potential enemies' resources have grown increasingly sophisticated and multidimensional.

And just like Air Land Battle doctrine back then, a new joint battle plan has emerged, emphasizing areas like power and potential of advanced technology, improving power-projection, and most importantly, the human factor, enabling close coordination across service and alliance boundaries. And this new doctrine holds the potential to be just as important in shaping everything from U.S. training and acquisitions to the relationships both with our allies, as well as potentially adversaries.

This emerging Air-Sea Battle concept might end up winning wars, but even more so it might help keep wars from ever happening. As two writers put it in a recent article in the journal of *The American Interest*, the concepts that are being worked out may not be a "silver bullet solution" to America's security challenges, but they will be a "critical line of effort" that the nation must pursue to sustain its military advantage, security, and prosperity.

Studying these changing forces and warfare, politics, and technology, is what we do here at Brookings' 21st Century Defense Initiative and that's why we're so excited today to host the two writers of that article in *The American Interest*, who also happen to be two of the nation's most senior military officers, Chief of Staff of the Air Force General Norton Schwartz and Chief of Naval Operations Admiral Jonathan Greenert.

Rather than giving their individual biographies, as they're sharing the stage, I thought the opportunity to note their combined accomplishments and responsibilities would be more appropriate, and as you will soon see, all of the more impressive.

Since graduating from their respective service academies, they have accumulated over 80 years of combined service for the nation. Over the course of their 14 command tours and 27 other assignments, notably five of which have been in the Pacific theater, they've earned 40 awards, metals, and commendations.

They currently oversee 659,000 active duty airmen and sailors, in addition to another 244,000 guard and reservists; they manage over 9,000 aircraft, 280 ships, and nearly 310 billion of the base defense budget, plus another 31 billion in overseas contingency operations. And they have a shared think tank link.

We're actually welcoming both leaders back to Brookings. General Schwartz spoke here two years ago about the Air Force's strategic and operational role in a irregular warfare, while as a one star, Admiral Greenert was a student in the Secretary of Navy's Executive Leadership courses here.

So we're absolutely honored and delighted that they're joining us here, all the more so for doing so together, which as you all know, is quite rare in these occasions. So with that I'll turn it over to the -- to General Schwartz and then Admiral Greenert for their remarks and then after that my colleague, Michael O'Hanlon will conduct a moderated discussion and Q and A. Thank you.

GENERAL SCHWARTZ: Actually, I think you all will have a chance to see whether longevity matters this morning. Good morning, everybody. Thanks, Peter,

again for the kind introduction. And Peter and Michael, thank you both for what you do, both for having us here, but importantly for being among the elite of those military thinkers here in this town and in the country that we breathe, that we -- whose advice we honor, and certainly appreciate your having us again today.

I think this is a well suited setting for a discussion, ladies and gentlemen, on Air-Sea Battle. It's a very important topic that I think needs some further illumination in order for professionals like so many that are here in this room today, and certainly elsewhere, to gain a better understanding of what it is that we have in mind, with respect to the Air-Sea Battle concept. And with our time today, we hope to clarify the concept in its many dimensions.

I'll begin with a few selected thoughts on Air-Sea Battle and then turn the podium over to Jon for his opening remarks and he'll no doubt be more insightful than my own as we move forward. We then, of course, will open the floor and be happy to take any questions that you might have.

The watershed events of 1990 and 1991, mainly the dismantling of the Berlin Wall and the collapse of the Soviet Union, represented not only tectonic shifts in the geostrategic environment, but it was also a major realignment of our nation's military strategic posture.

The transformation from a largely static garrison-based force structure to an expeditionary structure that could deploy and rapidly project combat capabilities and effects whenever and wherever America interest require them was catalyzed by the immediate need to meet the requirements of Operation Desert Storm and then the post-surge rotational requirements in the years and in the decades that follow.

But more importantly, and to great effect I think over the longer term, we sustained the shift to an expeditionary and a power-projection military. In facilitating this ability to project global military power for the following two decades was largely unfettered access to the global commons of air, sea, space, and cyberspace.

And I only point to a few major operations, Deliberate Force, Allied Force, Enduring Freedom, Iraqi Freedom, and of course, most recently Odyssey Dawn as examples that bear witness I think to our overall success. Indeed the U.S. power-projection capability in the post-Cold War era has provided the foundation upon which the credibility of our security commitments to allies and partners substantially rests.

This includes where necessary operating and operations by friendly land and amphibious forces, emphasizing the fact that in modern warfare, we must maintain air and maritime control if we are to put ground forces in a position to perform their essential function. And because the security commitments often directly underlay our political and economic leverage, anti-access and area denial strategies and capabilities that threaten access to the global commons and our ability to project power also challenges security, the political stability, and economic prosperity of the United States and its allies and partners.

If aggressors, potential aggressors, are permitted to slow the deployment of U.S. and friendly forces in the theater, if they can prevent us from operating from a desired location within that theater, it must be a -- that's right, this is (off mic) playing games with us. But if they can again prevent us from operating with -- from desired locations within the theater, or if they can cause us to operate at distances larger than that would be operationally advantageous then each potential aggressor potentially can

separate us from our partners, driving our partners either to seek accommodation with potential aggressors or to develop alternate potentially less stable means of self defense, including the use of weapons of mass destruction. Clearly, any outcome stemming from diminished U.S. credibility of its security commitments, anywhere in the world is detrimental to our strategic interests, including in the political and economic spheres.

Indeed, free access to the commons is fundamental to the global marketplace and world economy on which U.S. prosperity relies. For example, a majority of petroleum and a vast majority of intercontinental trade by weight, 90 percent, by some accounts travels by sea. More than 2 billion passengers, over 35 percent of the international trade by value, transit international airspace annually. And from the Cape of Good Hope or through the Straits of Hormuz roughly half of the world's shipping container traffic and some 70 percent of the petroleum products, those shipments transit through to tanker routes along the Indian Ocean rimland and eventually through the Straits of Malacca and into South and East Asia and the Western Pacific.

We therefore certainly have compelling reasons to ensure our continued access to the commons and transit through critical lines of communications. These are few of -- a few of the high level examples that suggest they're truly global, not just regional use of the air and the maritime commons, and therefore why we need to preserve our access in order to secure our strategic interest.

The Air-Sea Battle concept therefore, is a genuinely global concept consistent with the globalized environment in which we operate. It is not the design for any particular region of the world, but rather it is to ensure that U.S. forces remain able to project power, to support combatant command requirements worldwide.

Simply put, Air-Sea Battle is agnostic with regard to specific regions of the world and is intended to assure access wherever, wherever our wide ranging strategic interests are located. What now makes anti-access and area denial threats a more urgent matter is that in the two decades since the 1990, '91 era, our access to key areas of strategic interests, as well as the relative permissiveness of selected operating environments, has been and continues to be threatened by the proliferation of advanced technology, and importantly, computing power facilitating modernization efforts of potential adversaries.

Many of these anti-access and area denial capabilities and strategies are specifically designed to challenge the U.S. military's power-projection capability.

Ballistic and cruise missiles, the advanced submarines, fighters, and bomber aircraft, enhanced electronic and cyber warfare capabilities, and over the horizon surveillance and modern air defense systems, as well as the improved ability to network and integrate these capabilities; these all present significant challenges that will contest our access to and freedom of action, freedom of movement in strategically important areas.

And in vital areas such as the Hormuz or the Malacca Straits, even low technology capabilities such as rudimentary sea mines and fast attack craft or shorter range artillery and missiles can turn vital free flow movements in the global commons into maritime choke points to be exploited by aggressive or coercive actors.

These capabilities, both the more advanced and the less exquisite, are increasingly available, effectively affording modestly resourced actors, including some non-state entities with the ability to shape outcomes in regional operating environments

and perhaps even on the geostrategic environment indirectly. And the ability that was once the exclusive domain of only well funded and well endowed nation states.

It makes sense, therefore, that potential adversaries would pursue capabilities and so far as they provide an alternative to direct confrontation with the conventionally strategically and materially superior American Armed Forces. Through anti-access and area denial capabilities and strategies, potential aggressors can circumvent America's traditional military strengths, thereby blunting U.S. military power.

One of the imperatives in order for the Air-Sea Battle concept to reach its potential is moderated parochial tendencies amongst the services and enhanced cooperative efforts, particularly in the fiscal -- fiscally constrained environment we face.

In our increasingly globalized world, the scoping complexity of our geostrategic interests have been on an upward trajectory and will remain necessarily global, even as our material and financial resources to safeguard these interests decline. Consequently, we as service chiefs, and consistent with the new defense strategic guidance, we intend to lead our forces toward an unprecedented level of joint integration.

And at the institutional level, a pre-integrated joint force, if you will, that enjoys comprehensive and habitual relationships across operations, training, acquisition, and modernization functions. And not just ad hoc or piecemeal partnerships that form when the need is apparent or in a particular circumstance, with this deeper integration of complementary and cross-domain capabilities as their foundation, we then can adopt flexible approaches to developing tactics and techniques and procedures to meet emerging operational challenges.

The ultimate goal is interoperable air and naval forces that can execute

networked, integrated attacks-in-depth to disrupt, destroy, and defeat enemy anti-access area denial capabilities and in turn sustaining the deployment of U.S. joint forces; air, maritime, land, amphibious, and special operations wherever and whenever they are needed to help counter potential aggression or hostile actions against the U.S. or its partner nation interests.

Our testing last year of an F22 in-flight, retargeting a tomahawk cruise missile that was launched from a U.S. Navy submarine, is an example of how we are moving closer to this joint pre-integration under our Air-Sea Battle concept.

Another implication of ongoing budget pressures is the need for well considered and disciplined prioritization of required capabilities. As air sea battle initiating concept evolves, garners support and gains traction, we cannot allow every innovation or a potential program to fall under the Air-Sea Battle banner for a concept that will prove to be complex in its many dimensions, its litmus test really is fairly simple.

If an initiative does not demonstrate sufficient potential to improve the integrated ability of air and naval forces to project power against anti-access and area denial threats, then it ain't -- it ain't Air-Sea Battle.

In short, ladies and gentlemen, our ability to project global power underwrites our nation's ambitious and complex strategic posture. Accompanying this posture are more numerous and increasingly robust engagements with global partners, and certainly across the wide range of interests, commercial, financial, diplomatic, legal, military, and others.

Our nation's ability to project military power, therefore is vital not only to secure our own interests and importantly not only to underwrite our grand national

interest, but to the extent that our global partners depend on U.S. participation in the global economy on U.S. diplomatic leverage and on U.S. security assurances to defend shared interests, our power-projection capability is important to a larger degree for regional stability and global economic prosperity as well.

I'd like now to turn the podium over to Admiral Greenert so he can elaborate further on this concept. Thanks very much.

MR. O'HANLON: Thanks, Norton.

ADMIRAL GREENERT: Thank you very much, General Schwartz. Ladies and gentlemen, you saw this morning an anecdote of the importance of Air-Sea Battle. General Schwartz was attempting to communicate with all of you and you saw something came up to try to eliminate that. We worked together; I gave a little head nod, we went in there, a little cyber control of the EM spectrum, and things worked out.

So I don't know what more I can -- how much better we can explain how this works. General Schwartz gave us a nice description of the history and really the mandate of the compelling need for Air-Sea Battle.

I'd like to talk just a little bit about why we think it's important, what it can do for us, how we think it can be a good enabler and an enhancer for threats to access, and what our efforts will be to implement this concept. Also, what's been going on so far and what are we going to do here in the future?

We think there's a good strategic operational, tactical, and institutional value for Air-Sea Battle. The anti-access area denial is not the only challenge to naval and air forces, but it's probably the defining challenge today and as we view it in the near future.

Strategically, Air-Sea Battle can help us deter adversaries, reassure our partners and allies by demonstrating the ability to honor our security commitments and, as necessary, to act, to be able to act, worldwide, anywhere for humanitarian assistance and disaster relief. It's a spectrum of values.

It's not about a particular country, as General Schwartz indicated. Anti-access area denial is proliferating. The Arctic is opening is an example. Climate changes take place around the world and we have to get where we need to get in order to act, to provide the effects that we're asked to do.

Operationally, Air-Sea Battle provides us the ways and means to assure access. Some argue that look, we're not going to fight those kinds of wars anymore in the future, but it's not always a big war scenario. It might merely be a contingency. And it's not always about conflict.

There are some natural or nature born or originated anti-access area denial that are a growing concern; earthquakes, the far north, fires on the West Coast, if you remember that. We had to get in there and it wasn't easy to find those sources. And a nuclear disaster that about a year plus ago we had to figure out how do you get to the source of this problem. And we were being denied that.

Institutionally, the integration between the Air Force and the Navy staffs is a great opportunity. We need to gain efficiencies, build appropriate redundancy where it makes sense, and the means by which it will preclude an advisory from finding really the one way to develop a solution to preclude or to enable them to provide that anti-access and area denial.

Now the how. The Air-Sea Battle leverages the enduring U.S.

advantages that we know well, especially in our two services; the initiatives and skill of our sailors and our airmen, the value that we have under the sea, the ability under the sea, the stealth, the global reach, the cyber capability, and the advantage we have in our networks and networking capabilities.

The central idea here, ladies and gentlemen, is a tightly coordinated operation across warfare domains. Air supporting land in the Cold War, General Schwartz mentioned it and Pete mentioned it in the opening, that was there and some of that is in our current plans. It's maritime supporting the land, which took place in World War II, it took place in the Korea conflict, in the West Coast operations, and in amphibious operations.

Electronic warfare supporting air in suppressing air defenses took place in Libya, jamming. These examples, though, either were put together in the past sort of ad hoc or they were included as part of a particular operational plan; not really part of the concept of operations. And it's really taken what we have and adjusting is what we did in the past.

What we'd like to do is make this cross-domain operation more an assumption for the future. We'll build the concept of operations so that as we organize, as we train, and as we equip and do operations in the future we'll think about electronic warfare defeating radars to protect surface and air operations, both.

We'll talk about submarines defeating air defenses, maybe kinetically and maybe non-kinetically, cyber attack against command and control needs to enable air and surface operations or stealth global strike on an anti-air warfare destroyer as an example, to enable air ops. There's a whole panoply of it. The idea is to broaden the

aperture in these and make that the standard approach as we think about the concepts of the future.

To do this we're going to need real time coordination across these domains. We do this now, as threats improve, tighter coordination will be needed in the future. One example is we've got to be faster thinking about anything from an anti ship cruise missile, the faster coordination of electronic warfare kill, a non-kinetic kill.

Today our maritime component commander and our air component commander, sometimes they come together at the headquarters, at the task force headquarters. We need to think about that and see if there isn't a faster way to do that.

I'm taken back to my own personal experience in 2005. I'm working with General Deptula who's the Air Combatant Commander on the maritime combatant commander. We're doing an operation and I've got a submarine out there who's saying 'hey, I'm detecting a radar out here through my periscope and my ESM mask that it's over the horizon. And I vaguely have this acoustic contact and I know that it's a threat out there. So how do I get this to the JFACC and then get this back to the air task in order to get it out there?' It takes too long.

So we worked through -- we need to get people on the same net, and General Schwartz mentioned that earlier in that exercise; to getting that faster turnaround, get inside that loop. That's the future. That's what we need to think about. Cross domain coordination requires a new approach. Our links need to be similar or minimally compatible.

Our F-22, F-35, our F-18 Hornets, our RA 2-Ds, navy integrated fire control counter air, NIFC-CA, and our ships; right now some of these links are different.

We need to look at coordinating that. Communications between submarines and unmanned underwater vehicles or unmanned aerial vehicles and aircraft; we need to get there. Unmanned aerial vehicle based comms and links can be the gateways to bridge the domains and we need to get there. We need to have a visibility of the operations that are taking place in the EM spectrum.

Now on operational planning on our cross-domain actions are going to have to be more centralized. Command and control today, as I mentioned, you've got the JFMCC, the Joint Force Maritime Component Commander, the JFACC, the Air Component Commander, the Land Component Commander, and they're in a structure of domains to deal with the problem.

In the future we need to look at should we be looking at missions, should we be looking at strike, at cyber, as something that crosses these domains in a command and control operation. And I say yes we do and our folks are. Air-sea battle provides that means to do that.

It's providing -- it's building cross-domain capability to improve our effects change and gives us more options. We can use an Air Force AWACS or an E-2 with cooperative engagement and share the tracks, what a concept, with our Aegis, with our Hornet, with the F22, with the Raptor, and other TAC air to engage. And it adds the redundancy, in some cases, to be more efficient and we can eliminate eventually some of that duplication as we work through this.

Air-sea battle uses integrated forces for what we like to think as three main lines of effort. It's integrated operations across domains to complete, as I said, our kill chain, but it's also Air-Sea Battle lines of effort to break the adversary's kill or effects

chain. We want to disrupt the C4ISR piece of it; decision superiority.

It may be good enough alone if they can't communicate or if something is causing an effect, if some signal is causing a nuclear disaster -- our reactor to operate, how do we go in there and shut that down if the place is empty. How do we get into that information superiority area? Defeat of weapons launch, get to the archer, or defeat the weapon kinetically to defeat the arrow. And so looking at those three lines of effort, kind of summarizes how we approach that.

Now what we're doing to implement Air-Sea Battle. We've got more than 200 initiatives that our respective teams getting together with the Marine Corps and with the Army put out there. A third of them are non-material, from policy to the concept of operations in comonency that I mentioned earlier, data link, protocols, information sharing, and the majority of these are in progress.

We've stood up the Air-Sea Battle office last November with Army representation and Marine Corps representation, and of course, our respective services. We've championed initiatives out there. We're pursuing more exercises that -- you've seen an example that General Schwartz -- how do we get more of that? What training opportunities are we not investing in that we really should?

We've weighed in on the investments. Where can we -- why should I be buying this if the Air Force is buying it? Well, maybe we should buy it together. Maybe we should let them operate, or the Army, or the Marine Corps. Where does this make sense?

We're pursuing the relevant scenarios that may be -- that we may be using sooner than we think. Homeland defense, humanitarian assistance, disaster

response, support of civil affairs in the homeland, natural disasters, just some -- a few that I mentioned earlier. And we're investing in Pres Bud 11, we've invested, Pres Bud 12 we've invested, particularly anti- submarine warfare, electronic warfare, air and missile defense, and information sharing.

Our Pres Bud 13, the one on the Hill today, sustains these investments and really provides more resilient C4ISR investments. We have accepted less capacity in some cases, in order to enhance capability to get better capability out there.

Going forward, we will jointly evaluate naval and air investments together through the office, looking at the long range bomber, the data links, like I said, looking for the common or the compatible data links; looking at SSN capability and capacity, looking at tankers, anti surface weapons, surface to surface delivered or air to surface delivered. What's the best way? Cyber, electronic warfare, including electronic attack.

So Air-Sea Battle is a framework for us to organized, to train, and equip our efforts. We will continue to refine it and we'll continue to apply it. And at this national security inflection point, that the defense strategic guidance has laid out for us, it's essential that we have an effective and an efficient way ahead. We think this is one means to get that. Thank you for your time and I look forward to your questions.

MR. O'HANLON: Thank you, Admiral. Thank you, General. Thank you all for being here. What we'd like to do now is spend about half of the remaining time on a discussion with the three of us and I want to ask the General and Admiral to flesh out a few of the concepts with Air-Sea Battle and then we'll turn to you for your questions. So please get them ready and be thinking ahead. We'll come to that at about 10:00.

In the interim, gentlemen, thank you very much for these excellent

presentations and intriguing concepts. And I wanted to probe a little bit on some specific areas of technology, also some specific scenarios, and also begin with, if you don't mind, this is sort of for the general layman in a sense, the "so what" question.

What's really different about Air-Sea Battle that you wouldn't be doing otherwise? Because your services are both known for excellence in thinking about many of the individual aspects of Air-Sea Battle, whether it be technology under the sea, above the sea, in the air, whether it be space, whether it be net centric warfare, if we think back to Admiral Cebrowski's concept.

Some of these ideas have been around for a while so what's new about what you're doing now? Is it primarily programmatic; that we can look to certain areas of acquisition in the budgets that are really different?

You mentioned C4ISR a second ago, Admiral, or is it more in how we're thinking about war fighting concepts where the war plans are trying to take advantage of some capabilities? And in a sense your role is important, but perhaps even more important is the combatant command's role in thinking of how to use Air-Sea Battle in an actual plan. So if I could turn that question over to each of you, maybe starting with you, General Schwartz.

GENERAL SCHWARTZ: Sure. I think the answer to your question is yes. The, you know, it happens on three levels. It happens at the institutional level where the cooperation, the collaboration, and the teamwork that exists between two members of the JCS needs to permeate the institutions, where the real good ideas come from. Rarely do they occur at our level, frankly.

And so it is very important that the sort of ad hoc and occasional

collaboration, which has been the norm, we transform that into something that is much more routine, that we normalize that activity in order to assure that those who understand the technology, who understand how to employ it, partner in a way that is routine and not the exception. That's at the institutional level.

At the concept of operations level, it once again introduces additional options for those who employ the joint forces. And this is not about new stuff. This is about making sure that we are making the best use of the existing capabilities that we possess in a much better way.

And then finally, there's a material aspect to this and that has to do with, as Jon mentioned -- what we want to do is assure that we approach acquisition, and procurement, and our system development in a systematic collaborative way. For example, when it comes to a new missile for the Air Force and the Navy, we will probably work this in a way where the Air Force does the air-to-air piece and the Navy pursues the air-to-ground effort and there will be a leader-follower arrangement in this undertaking. These are the kinds of ways that -- Global Hawk is another example; a platform, essentially common platform, different sensor.

We have an arrangement where we're going to make the best use of our infrastructure to support that weapon system globally. The bottom line is then it's institutional, it's operational, and it's material, and if we do this on a routine basis we will be a much better joint force as a result.

ADMIRAL GREENERT: Well put. I think put the war plans, the campaigns aside is what we told folks to do, and think about you need to get access. Well where? Well think about that; around the world in all of the different situations, in all

of the domains.

Episodic access; do I need to just get in and get out? Yeah.

Continuous? Well, maybe, maybe not. Or just go in for a little bit and then get out. So how do you want me to do that? Do you want me to just push back whatever is stopping me? Do you want me to work around it? Just thinking conceptually about this was an advantage. And then, okay, what do we have to enable us to do that? All right.

The cross-domain part, I think, is pretty darn important because they have Nortie's and the Air Force have amazing skills that we haven't given great thought to in capabilities. They already exist and in some cases it's in their DNA and how they think it through. Why are we inventing something like that as we look toward the future? And then both of us turn and say this ought to be done by cyber. Why would we want to do this or build such a thing?

So it helps us look across that whole concept of operations and that eventually got us into doctrine and it got us into thinking about task force commander of construct as I kind of alluded before when Dave Deptula and I were saying why are we doing it this way, why am I going back to headquarters and waiting; I've got to wait about 12 hours before we turn this thing around. Can't we just do this? Well, of course we can. But we need to have a way to think about it and then you've got to get all of the other tribes to think in a similar manner. And there has been some pretty good advantage coming to this just in the way to approach the problem.

Once you get the concepts then you can kind of pick it up and move it toward all kinds of things. Now, it's not the be all to end all things. It's a different way to approach things that has a logic to it and is more efficient. What do you think?

MR. O'HANLON: Let me, if I could, now also broaden the aperture a little and talk strategically about, in specific terms, how this affects our relationship with China, because obviously there are advocates of this concept who think that whatever new offensive capability it may bring to bear is desirable at a time when we want to send a strong message of commitment to the region. But there are others who worry that that could actually be provocative or confrontational, vis a vis, China. Should we think of this concept to the extent it applies to China?

I realize it applies globally to many other countries. Should we think of it primarily as gaining new offensive capabilities that are intended to be somewhat, not threatening, but assertive, or should we think of it largely defensively as trying to cope with China's new abilities to impede our freedom of maneuver?

I realize the answer is undoubtedly a little bit of both but I'd still like to put it to you in those terms because I think the way in which we message this, vis a vis China, is probably important for our broader foreign policy. And maybe I can start this time with you, Admiral.

ADMIRAL GREENERT: Well, I think it would be a mistake to apply it to any particular campaign. I think it would be short-sighted, honestly. And I would want my folks to think more broadly because there are a panoply. I've laid out some of the missions and challenges that we've had that are real and that are probably emerging and I don't want this concept limited to just that.

GENERAL SCHWARTZ: Right. And I would agree. This notion should not be hijacked by any particular scenario. The reality is that access is an important strategic aim for the United States in many dimensions, but certainly in the military

dimension and that's what we're responsible for. So we will continue to collaborate in ways that will assure that civilian leadership -- that they have options both to secure and maintain either temporary or longer term access to pursue our interest.

MR. O'HANLON: What I'd like to do now with the next couple of questions and in each case I'll direct one question to each of you. The other can comment if you wish, but I want to explore a couple of areas of technology, important areas of technology where I'd like to sort of break down the concept, apply Air-Sea Battle more specifically, and General Schwartz, I want to ask you about space and fighter technology, and Admiral Greenert, about missile defense and submarine technology.

And so if I could, the way I'd like to pose this is again, to just ask you to reflect on where we are in sort of the evolution of military technology in regard to space and in regard to fighter aircraft and what do you see as the most important vulnerabilities that you've got to deal with, that this concept may help you deal with? And correspondingly, what are the most important opportunities? I'm not asking for a comprehensive list; maybe a good example of each, a vulnerability that you hope that Air-Sea Battle can help you redress and an opportunity that you hope we can exploit.

GENERAL SCHWARTZ: Well, again, you know, space has been over the decades a prime area -- primary area of American advantage. But it is becoming an increasingly contested and congested domain. And so in order to retain that advantage it is important to recognize what it provides for the joint force and it's everything from communications and warning to secure communications, so on and so forth.

The bottom line is that space provides a venue to do the multi domain applications we're talking about. Remotely piloted aircraft is a case in point. You can

operate remotely piloted aircraft on line of sight or you can do it as we have been doing it for some years now from a distance. And space enables that capability and it will enable Naval capability as well, from whatever platforms they operate.

So space is a key enabler and it is vitally important, in my view, that we maintain our awareness of the space environment and be able to attribute threats to our platforms in space so that we can deter potential aggressor actions in that respect.

You know, with respect to fighter aircraft, I think that the key thing here is that given that the environments are becoming more demanding, particularly the air defense environments are more sophisticated and more demanding and you need platforms that can survive. There are those who have argued, for example, that you know, remotely piloted aircraft are clearly the ascendant capability, and it is. But the reality is that at least in the current genre, a remotely piloted aircraft cannot survive in contested airspace.

And so the kinds of capabilities, the generation five capabilities that the F-35, the B-2, and its successor platform represent, and likewise, the versions that the Navy will operate, will allow us to operate within contested airspace and assert our access, which is a fundamental tenant of Air-Sea Battle.

ADMIRAL GREENERT: I'd like to comment on that one. A very good point about cross-domain, again. I don't want to stomp my foot too much on that but it's kind of a big deal. For example, missile defense -- we've been sort of addicted to saying 'well, let's shoot this thing down, shoot the bullet down with a bullet. well, that's pretty cool because it really makes good video. I'm not making fun of that but that's the way we're wired.

But, something has to detect something. So how is that happening? Space, our radar, a visual, what? So you have to figure that out and you want to defeat that. Then you have to have a good enough solution so you have to kind of have confidence, or do you, in your targeting capability. And then you might want to launch something. When you launch it, can you detect it soon enough from space? Actually, you can detect some things from under the water. All kinds of things as they're flying by; can you detect and track. Or, of course, you know, your radar.

So you walk your way through that as anything that is coming towards you in missile defense and can you defeat that and then you're into the opportunities to shoot it down, which we spend a lot of time and money on, or you may just want to deceive it or jam it or spoof it at the end, or shoot it down.

We're walking our way through that and say what domain is the best source of this? Who has the best whatever to do that? And there are technologies -- you probably don't want me to go through all of that. Your eyes are saying don't do that.

MR. O'HANLON: No, it's okay.

ADMIRAL GREENERT: But there are technologies in all of those; some more expensive and more mature than others, some with a risk level that is lower, that we're finding we're able to pursue in that. In the underwater domain, -- undersea domain, acoustics, I don't know if we are reaching kind of the knee in the curve on acoustics.

In other words, looking for some breakthrough to go further; sensors are good, processors we've been working on the pool as much as we can out of that signal. But I would tell you that autonomous underwater vehicles, to me, are an important future.

Let me give you an example of a -- sort of a non-kinetic. In the problem

with Fukushima, we were looking at, hey what do we do if the contamination had gone water born? How do we figure that out? We're not going to send a ship out there; you get the ship contaminated. What aircraft is going to fly in the plume? We needed an unmanned vehicle if we were going do that; go take the water samples or maybe the air sample.

So there are other things. How are you going to get into -- well, how are we going to shut the thing down? We were looking at that. That might be cyber. If you have an earthquake, who's going to go in -- how are you going to get in there? You've got no roads, you've got no railway. What are the means to do that? So -- I'm sorry, I'm off missile defense and I'm off --

MR. O'HANLON: That's okay.

ADMIRAL GREENERT: -- but, or underwater, but it does provoke, if you will, that domain, all of the domains, that you do that in all of the potentials to get the effect --

MR. O'HANLON: I'm going to follow up on the technology with one question to each of you and I guess I'll be a little more specific on this one as well because you've done a nice job of portraying the overall situation. General, if I could ask you about two specific questions. With all of these trends in space, and recognizing we need to stay very effective in space, in a more complex time, should we nonetheless be assuming that space is not going to be the sanctuary for us that it once effectively had been, and therefore we need more air breathing backups in whatever realm of intelligence and communication that we're talking about?

And also, one more question. On the fighter survivability matter, is there

a case that the Air Force should be thinking about buying some F-35Bs of its own on the argument that air fields are becoming more vulnerable, not just airspace, not just growing enemy capabilities in the air, but the enemies' ability to curd our runways and therefore make it harder to use a full mile long runway space to get an F-35A into the air? Is there a case for a mixed buy for the Air Force itself?

GENERAL SCHWARTZ: Well, on the first part, I think that the important thing is that the space domain, you know, is contested. There's no question about that. And it's likely to remain so. And so we have to do a number of things here; build in resiliency to our space platforms and also improve our capacity to surveil and understand the -- what is occurring in the space domain to identify threats, and if possible, to attribute them.

With respect to use of building resiliency through other domains, clearly we are doing that with communication gateway capability. And it doesn't necessarily need to be air breathing, Michael. It can be lighter than air, for example, is a possibility.

The basic approach here is to think more broadly across the domains and yes, we will have high flyers that will do things that communication satellites do. But I do not see them supplanting that fundamental synoptic view that the overheads provide.

With respect to F-35B, this is a question of mission and the larger requirement. The F-35B is well suited to support of the Marine Air-Ground Task Force; from very austere locations and forward locations to support marines in battle. But the reality is that that scenario is not a high sortie generation scenario.

What we think, and this is true on the carrier decks as well, what we think is needed is high sortie generation in order to provide persistence over the target and to

engage the variety of targets that may exist, not in a confined battle space, but more in a theater basis.

And so my personal view is that the B is interesting and that there was interest at one point in replacing the A10s with a B like airplane, but I think given the fiscal constraints that we face and our need to generate sorties as an underlying imperative for maintaining air dominance, it requires the A model from established runways with the weapons, stocks, and the sortie turn capability that comes from expeditionary, but still forward bases.

MR. O'HANLON: And Admiral, if I could turn to you once again, missile defense and submarine technology, one more specific question about each. On missile defense, how would you describe the overall balance of offense and defense in conventional terms?

We've all had a lot of debates in this country at a high political level about national missile defense or European missile defense, vis a vis, a limited long range nuclear threat from a North Korea or Iran. We probably have less general high level debate, at the broad level, about conventional short range missiles. How do you see the trends going? Because, you know, it's been said for a long time that the offense tends to have an advantage.

Now we see that China, they're maybe developing anti-ship ballistic missiles. Do you see the offense as ultimately, in the ascendant here, and defense having, you know, its work cut out for it at best and probably losing the battle on balance in the end?

And then on submarine technology, if I could ask you to assess how our

competitors, rivals, or potential enemies are improving their submarine capability, are you going to have a harder and harder time finding enemy assets in the future and is the trend there just to make our big assets more vulnerable because there are going to be more submarines out and about by the enemy that we don't know how to find with high confidence and therefore, we're going to have to assume higher vulnerability for our own fleet?

ADMIRAL GREENERT: I think that if you want to resolve or solve ballistic missile long range, medium range, or short range kinetically, then you -- you're at a disadvantage in the defense until you continue -- until technology catches up. Again, a bullet shooting a bullet. And then you've got an evading or maneuvering bullet in end game that you're trying to shoot, or the bullet.

So I think because you asked about the balance and I think the balance is getting pretty good from the perspective of the non-kinetic approaches to ballistic missile defense; short range, medium range, long range. And I think Air-Sea Battle has contributed to this but it's not the answer alone. So from that perspective, I think there's a pretty good balance that we're headed toward.

In the undersea domain cueing is probably -- if you look through the concept of finding things, if you will, in the undersea domain, you need to be cued and then you needed a tech, track, localize to figure out what you've got. Cueing is the most important. Wide area ASW is what we call it. And that's the more difficult; as things get quieter, you just can't hear them for as far away.

So you need to get cued so you can vector things in quickly. That's where error delivered, you know, acoustic capability is significant in this regard. That can

then, working together, quickly network down and if you want to find out what this is you can send a submarine over, a helicopter over, a surface ship, whatever. But cueing is probably the biggest challenge, I think, that we have going. But I'm comfortable with where we're going on, you know, the cueing capabilities.

GENERAL SCHWARTZ: Can I mention one thing?

MR. O'HANLON: Please.

GENERAL SCHWARTZ: Just to elaborate on the balance on missile defense. It's not just a bullet with a bullet. Using Jon's metaphor earlier about the archer, you know, part of the balance in missile defense is engaging the archer. And that is something we both do well.

You can either do that with tomahawks, you can do that with strike capability from either of -- or any of our aviation platforms. That's part of the balance as well. I would call it interdiction counter air capabilities against missile defense; is also a valid approach, in addition to getting the arrow.

MR. O'HANLON: Thank you; excellent discussion. I really appreciate all of the insights you both provided. Now let's go to the audience. Please wait for the microphone. We'll start with Jonathan Pollack in the middle on the aisle here.

And -- so please -- of course, I've just identified you, Jonathan, but if you could set the good example by mentioning your name and you're invited to address a question to both of these gentlemen, but if you can address in, you know, whatever possible to one or the other that will help us get through more questions. Jonathan is right here, please, to start things off.

MR. POLLACK: General and Admiral, thank you very, very much for

your being here this morning to have this candid discussion with us. Given that we're really talking about concepts that are, dare I say, gestational at this point, evolving in all kinds of ways, my question is really something that I didn't hear either one of you address and that is the question of where do allies fit in this process.

Notionally, this is supposed to be, in order to reaffirm and extend our security commitments, yet the sense I get from both of your comments is that we're really talking, at this point, about dare I say, U.S. standalone capabilities, rather than something that directly affects the interests of allies and security partners. For that matter, how are we discussing with others, including with China, the relevance and the goals of what we now have underway? It seems to me that these would be very, very -- more than messaging, it's something more fundamental if this is going to have sustainability over time. Thank you.

GENERAL SCHWARTZ: Well, it's fundamentally a question of interoperability and clearly, you know, we need to deal with what's inside the fence, our own purviews first. But to the extent that others operate systems similar or the same as ours, key allies, clearly that will have a role in this as well and the notion of interoperability and the netting that Jon talked about earlier, is something that we share with our closest allies and they too are interested in how we will evolve across domains.

The Japanese, the Brits, the French, those who have multiple capabilities in their own armed forces, air, naval, and so on, have -- certainly have expressed interest and this is, in my view, this is facilitated by the use of common tactics, techniques, and procedures, and ultimately either similar or highly compatible systems.

ADMIRAL GREENERT: I think information sharing will be big in this.

What we find the advantage of information sharing and where they are would be big. We have integrated Air-Sea Battle, the concepts of it, into our coalition joint -- I'm sorry, coalition force maritime component commander course, where we meet with our maritime allies and sit down and say okay -- and this is where we work through tactics, techniques, procedures, and operational approaches to problems. So I would say, therefore, doctrinally, operationally, we are melding this in. When you get into the technology and the materiel you, of course, have the protocols for sharing all of that and so we've got to walk our way through how we would do that.

MR. O'HANLON: Let's stay in the middle section here. Right across from Jonathan, gentleman in the shirt and tie.

MR. ACKERMAN: Thank you. Spencer Ackerman with *Wired*. Air-sea battle sounds pretty bandwidth intensive. What, you know, particularly from a distance, how much bandwidth are you really talking about in terms of allowing ships, subs, bombers, UAVs, UUVs, et cetera, to communicate with one another? How integrated do they have to be?

What's the state of your current levels of integration? And as you go forward with buying all of these new platforms in the future, how much do these capabilities have to be sort of baked into the cake so that they can talk to each other, particularly over long distances?

GENERAL SCHWARTZ: The point you make, Spencer, is a good one in that -- that data links is a foundational element here of what we're talking about. And you know, we are working on the next generation data link on exactly how much data that the link should carry, whether it is low probability of intercept, and so on, its qualities in that

regard. So the bottom line is that this is a fundamental aspect that collaboration, you know, will serve the country well because we're not thinking about this in the airmen's or the sailor's stovepipe any longer.

We will come to a decision on what exactly those interfaces should look like; how we -- what their specifications are and to which platforms they'll be integrated. I think that the last thing that's important here is before legacy platforms, which are more difficult to deal with, we do have alternatives, gateways for example, that allow translations from one format to another and that is how we will deal with it going forward.

ADMIRAL GREENERT: I don't want to know everything that the air component commander knows. The air component commander doesn't want to know everything I know. We're all ready, almost overloaded, from that perspective. So link management, common operational picture management, we want to share what the contact of interests are and the critical contact of interests are, cross-domain, and be able to, if you -- to clarify that, you know, we're looking at the same thing. I have that contact of interest.

The ways and means of doing that; some will be easy, some will be complicated, to your point. But I don't want to know everything they know. That would be overload and the filtration and all of that stuff, probably not necessary. We'll need to continue to develop that to the concepts.

MR. O'HANLON: We'll stay in the middle and then I'll work up to the front. So the gentleman in about the fifth or sixth row here on the aisle.

MR. HAMMES: T.X. Hammes, National Defense University, sir. Clearly, Air-Sea Battle is a concept that's needed, an operational concept that's needed. I would

be interested in tying it to strategies. In the past, excellent operational concepts, say Blitzkrieg, were very good against France, and not such a great idea against the Soviet Union.

So as Peter said when he started, we're talking about using this for procurement, training, et cetera, but to do that you have to tie it to a single enemy. Would you care to talk about how we tie this to a strategic approach for specific enemies?

GENERAL SCHWARTZ: No. I mean we've made the point. Again, I think fundamentally this is about preserving access, wherever it may be challenged. And that in itself is a strategic imperative. So you know, the new defense strategic guidance - there are 10 specific missions outlined in the new guidance, one of which says, project American military power in anti-access and area denial environments. It's explicit. It's tied to the strategy. So this inclination to want to sort of narrow down on a particular scenario I think is unhelpful. What you want is versatility in our Armed Forces. You should be teaching that at NDU. We're not looking at overly focusing in any particular area or domain.

ADMIRAL GREENERT: Well put. I would say the other way around. If you have -- if you have a mission, even a strategy, you say well, does it require this access. Do I have to have a short access? Yes, no, maybe so.

Then, how do I do that and I think it's the other way around. It's broadening the aperture of thinking about the things that we have and what they can do and if access is a part of it, what's the best way to do that.

MR. O'HANLON: The gentleman over here in the second row to the far

side, please. Here comes the microphone for you.

MR. SWEETMAN: Thank you very much for being here and addressing this subject; Bill Sweetman from Defense Technology International. What -- when you start building up a capability in this way, refocusing, what as a service, what as the Pentagon do you start doing less of? Does this point towards an Air Force that is more focused on long range capabilities? Does this, you know, change the balance between land and air and sea forces? Because I heard we can do everything at once. I think that's not viable. And when we look out to the early 2020's where the plans call for a 13 1/2 billion in procurement alone per year for one tactical fighter program, is that sustainable? Is that a balanced approach?

GENERAL SCHWARTZ: The strategy clearly moves us away from what has been a more at land intensive focus over the last 10 years to one that is more maritime and air focused. And that was one of the major themes of the new defense strategic guidance. So yes, we're making choices. And if Ray Odierno or Jim Amos were sitting here today they would acknowledge that because there's a reduction in 90,000 ground forces anticipated in the next upcoming budget cycle.

So there are choices being made and certainly we are doing that in the Air Force, with respect -- what we've chosen to do is to get smaller to maintain quality. What -- we reduce capacity and that -- that is the approach that we have taken in order to make sure that we can both maintain readiness for the inventory which remains, and to continue to modernize in the form of tankers, fighters, and long range strike aircraft.

ADMIRAL GREENERT: I think you need to understand the EM spectrum much better; we do, than we thought about before because it provides great

opportunities as well as vulnerabilities. I think we need to think about payloads more than we have in the past rather than just platforms because -- and networks or netting because somebody else may have the very information I'm pursuing that I might have the proclivity if I thought within my own bounds, my previous bounds, that I've got to go build something to go get me that information and maybe produce the effect, when another domain can provide it for me if we work together and can work through this conceptually.

MR. O'HANLON: Right here, please. And then after that we're up to the front row.

MR. FULGUM: Dave Fulgum, Aviation Week; General you're off of the hook. Admiral Greenert?

ADMIRAL GREENERT: Greenert.

MR. FULGUM: Greenert; yeah. You mentioned subs, the possibility of subs defeating IADS, non-kinetically, and I was wondering if you could give me a bit of an idea about how you would do that and perhaps at the same time, you might be able to say what submarines were able to do with IADS in Libya. Was it just -- well, I shouldn't say just, but was it putting together an electronic order of battle or was there more to what they were able to do submerged from submarines?

ADMIRAL GREENERT: Well, submarines travel under the water and they have antenna and they distribute energy into their the electromagnetic spectrum and we can kind of take it from there. So what's available out there; and that's within the confines and the classification of this -- all I'll mention about that. You can take it from there.

MR. FULGUM: So you think you could develop an energy beam,

sticking to algorithms you need and be able to put it into enemy IADS from a submarine, under the water?

ADMIRAL GREENERT: I'm not going to comment any further. You know, I'll let you write what you want about that because I'm not sure where you're going with it. But I think you get my point. Your second point was the contribution on enemy IADS, submarines in Libya?

MR. FULGUM: My assumption was that they were able to put together an electronic order of battle of the Libyan IADS, but I was wondering if they were able to do more than that.

ADMIRAL GREENERT: No, they contributed to the overall suppression, the kinetic suppression of anti-air, of Libya's anti-air.

SPEAKER: So they did no EOB work --

ADMIRAL GREENERT: I don't have in my mind all of the order of battle and all of the activity that was done by the joint task force commander so I couldn't comment on that specifically.

MR. O'HANLON: Here in the front row, please, ma'am.

MS. SHALAL-ESA: Good morning, Andrea Shalal-Esa with Reuters. I wanted to follow up on a couple of key words, tribes, duplication, and then of course, the inevitable, sequestration question. On the issue of tribes, to what extent are you getting some further buy in from the Army and the Marine Corps? I know you said they participated and I know they have people at the office. Can you talk about that and how important that is?

And then on the issue of duplication, I think the question that we're all

looking for, and let me just frame it directly, I mean in the current budget environment, companies are looking to try to figure out what do you need and where to put their scarce dollars in terms of where to put their energy for investments.

But also, you know, investors are trying to find out whether companies are going to live or die or whether they're going to get smaller because -- and when you say that, you know, you're talking about eliminating duplication, can you elaborate on that? Is it true that the Global Hawk decision was in fact an outgrowth of Air-Sea Battle? And then finally, if you could just if you could just comment on what the threat of additional budget cuts means to this concept.

ADMIRAL GREENERT: I'll address the tribes. I was referring to, within the Navy, so you know we have folks that put together undersea platforms, surface platforms, and air, and bringing that together and say, you know, you may not need to put an integrated system up for a common mission in all three. So let's all get together and see if there isn't a better means to do it because they involve the domains that I was referring to. So that's my reference to the tribes. And your second question was duplication --

MS. SHALAL-ESA: But I talked about the Army and the Marine Corps --

GENERAL SCHWARTZ: Yeah.

ADMIRAL GREENERT: Sure. When you -- in some cases when you gain access, you have to hold access and it could involve a land or expeditionary piece. So they're very much a part of the over arching view and approach in this concept of access.

GENERAL SCHWARTZ: This is about getting the shooters to the fight in

whatever dimension and that certainly includes ground forces like the Army and the Marines. I think that with respect to, you know, your question, if I had advice for industry it would be to vector away from proprietary architectures, that things that allow interoperability, common ground stations between the Army -- or the Navy and the Air Force, the Global Hawk ground station might be a case and point. Those kinds of things, which obviously are economic and prudent, would be areas where I'd put IRSNT if I was on the other side.

And then finally, as we have both testified, sequestration is unwise and it would be truly unfortunate to see that unfold because the adjustments we made in capacity will not be nearly enough if we go to sequestration.

MR. O'HANLON: The gentleman in the third row here, second person in.

MR. GRYTTHING: My name is Joel Trond Grytting, defense attaché to Norway. I would like to get back a little bit to the allied perspective. Thank you very much for a very interesting session; truly an interesting doctrine in the Air-Sea Battle. In Norway we are -- we have now -- we are now operating AEGIS frigates and we are in the process of acquiring F-35s.

Could you go a little bit deeper into how you would like to actually partner nations to appreciate the Air-Sea Battle doctrine and would you like some statements or some doctrinal wording also to be added to the concept as far as urging partner nations to join the doctrine? Thank you.

ADMIRAL GREENERT: Well, you can call it doctrine if you choose, but that tends, for us, that would limit it to what we put in doctrines. So we look at it as a concept, a way of thinking things through, a conceptual approach to establish an access.

And I think step one, staff talks, sit down and we describe how we are thinking this through and I think when we do that, as they say, the Venn diagrams, the overlap where there's a commonality of desire for access and need, I think will come very clear to us and we can work that through. We have, as you know, terrific info sharing already in place by virtue of NATO and by virtue of our bilateral relationship.

MR. O'HANLON: Yes, sir; here in the second row.

MR. CLARK: Colin Clark, AOL Defense; good morning.

GENERAL SCHWARTZ: Morning.

MR. CLARK: I think we're beginning to get the beginnings of an understanding of what you're talking about. It's not a doctrine. We know a lot of things it's not. It sounds as if Air-Sea Battle fundamentally is a tool for you to ensure that your people are talking to each other and trying to find ways to reduce duplication and to do things better.

How is it going to persist as people change, because people are policy?
How are you building it in since it's not a doctrine, it's not a strategy?

ADMIRAL GREENERT: The Chairman's joint concept for a joint access is the umbrella into which we will put this. So when one goes to address joint access in that document, that capstone document, you will find Air-Sea Battle and the ways and means to utilize it.

GENERAL SCHWARTZ: And I think importantly, you know, we've got the youngsters where the imagination really resides, interacting now, whether it be at Fallon and at Nellis, or whether it be through the Maritime Operations Center in Italy and the Air Operations Center in Germany, and or the two commanders in the Gulf, you

know, Goldfein and Fox and now his successor. This activity is occurring well below our level, as it must.

And the key thing is that we, as a senior uniform leadership, have to empower our folks to pursue it, to incentivize them to do it and the potential, I think is really substantial. And if we're going to maintain our military advantages that had been largely based on technology to date, we can do that by taking advantage of how we interoperate now to a much greater degree.

MR. O'HANLON: I'm going to take one more question from the audience in a second and it'll be the gentleman along the aisle, but first I'm going to follow up on sequestration because it's such an important question. And I know you're not being asked to plan for it specifically, but we're now in the middle of May and -- so the question, in simple terms, is the prospect or the specter of sequestration kicking in in January already affecting either of your services in any way right now?

ADMIRAL GREENERT: No.

GENERAL SCHWARTZ: No. But it's apparent that it's affecting others in industry and elsewhere. So, you know, people making long range plans on investment are obviously considering the circumstances. But with respect to specific program builds, I think for both of us the answer is no.

MR. O'HANLON: It's not slowing down your ability to think about entering into new contracts?

ADMIRAL GREENERT: No.

MR. O'HANLON: Not yet at least?

GENERAL SCHWARTZ: Not yet.

ADMIRAL GREENERT: Not yet.

MR. O'HANLON: Well why don't we go to the gentleman here, yes, and then we'll wrap up in just a second.

MR. REUTER: Stewart Reuter, Navy League. One thing that hasn't been mentioned is the strategic forces that you both have control over, to some extent. Just yesterday I saw an article by an air space STRATCOM commander saying that we should have the number of nuclear weapons we have and take them off of alert; to be 24 to 72 hours before they could be used. Where does that fit in with the concept we're talking about today?

GENERAL SCHWARTZ: No place I can think of. And I'd be --

MR. REUTER: Do you agree with that article?

GENERAL SCHWARTZ: No, I'm saying that I think that General Cartwright's supposition is farfetched and introduces the likelihood of instability in the deterrence equation, in which is not healthy. Here's the reality. Why do we have a land based deterrent force? It's so that an advisory has to strike the homeland. We have a sea based deterrent force, which is largely invulnerable to detection and has the ability to move in ways that enable potential employment with considerations for over flight of third parties.

This combination, and the air breathing element, which is the way one provides extended deterrents to others, is the triad. And, you know, I respect Haas' view. He certainly has credibility. I just have to say that I don't agree with his assessment, or the study that apparently was produced by Global Zero.

MR. O'HANLON: Well, I think we have time for one more. So let's see.

Ma'am, in the far back right there; yeah, sorry for the long distance commute by the microphone.

MS. ODELL: Hi, I'm Rachel Odell from the Carnegie Endowment for International Peace. And this question is primarily for General Schwartz. You discussed engaging the archer when it comes to missile defense and I guess one concern that has been raised perhaps with a scarcity battle is that in engaging either missile or C4SI -- C4ISR targets there is a potential concern that our adversaries may not be able to distinguish whether we are targeting targets that are relevant to conventional or strategic domains. So how -- could you speak a little bit to that concern?

GENERAL SCHWARTZ: This is the art of targeting. During the Cold War we exercised considerable discretion about targeting command and control capabilities. And that is still relevant in my view. And so it depends on the nature of the campaign, what -- obviously what the objectives are, but the question is if you need a rational actor on the other side, you need to exercise care in how you target so that not only do you retain a rational act -- potentially, but that you do not foreclose his opportunity to exercise command.

This is the art of warfare and targeting, of understanding the goals, of understanding the objective and clearly, employing one's capabilities in a way that achieves the outcome at the least cost and with the most predictability.

MR. O'HANLON: Admiral, would you like to comment also?

ADMIRAL GREENERT: I think he nailed it.

MR. O'HANLON: Well, please join me in -- before we thank them, but also let me add in an opportunity to thank General Schwartz for his distinguished service

to our country. He's got a long summer ahead of him. He's by no means out of uniform yet, but it may be our last opportunity to say thank you here. Let's say thank you to both of them.

* * * * *

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