

Second, I would like to look at some potential connections between that defense review and the UK's international partnerships. And then, thirdly, I'd like to offer some thoughts on the "so what" both for the defense review and for the international partnerships for air power.

So looking first, at the strategic defense review, which as I say, will follow our forthcoming general election, which itself must be held by May of this year. Now, the review will obviously take some time to complete. But as Dr. Davis says, preparatory work is already well in hand and we have prepared a consultative green paper. And that will inform discussion of the long term requirement for defense ahead of the review. And that discussion is very much alive at the moment and alive in the media. And that, I have to say, is a relatively unusual thing in the United Kingdom - having that sort of depth of discussion about the role of defense, the affordability of defense—it tends not to be a political issue. Well, it is at the moment and I think that is a very healthy thing indeed.

Now, the defense review will sit within the framework of the United Kingdom's national security strategy, which was published last year. And that, in itself, I think is very healthy in demonstrating that defense cannot exist in a vacuum and we need to look comprehensively across government. The review will give us an opportunity to take stock, following our transition to a training mission in Iraq and against the backdrop of operations in Afghanistan.

It will look at our capacity to respond to the unexpected. And with the current pressure on finances, it will decide how we can live within the means, which any government is able and willing to allocate to defense. The review must chart a course in which our direction and our resources align. And it needs to establish clear aims for our capacity to respond to unforeseen events with defense capability.

But our immediate goals are clear, even before we take a review. We have to succeed in Afghanistan. It is the main effort for the Ministry of Defense and Defense as a whole.

We also have to succeed in any other contingent operations we are required to undertake in the interim. We need to continue to fill our standing tasks, including the nuclear deterrent and defense against direct threats to the UK and its overseas territories. And, again, we need to deliver defense more efficiently and more effectively.

So what does that mean for international partnerships? Well, given that the review has yet even to start formally, I think it would be premature for me to suggest potential outcomes. But some themes are already obvious. We know the world has changed rapidly since the United Kingdom's last strategic defense review, which was way back in 1998. But, equally, many of the principles from that review have proved correct. It was about tackling threats at source, conducting defense diplomacy and working in coalitions.

I have no doubt that these principles will be enduring in our next review. But equally, I have no doubt that the international context for defense has evolved significantly. So the next review will need to acknowledge the fact that Asia will soon rival the US and Europe as a center of economic and political power. More widely, we are likely to face security challenges where unstable or failing states will be the source and arena of conflict or where the sources of tension are very different.

For example, what is the defense contribution to addressing instability and insecurity as a consequence of climate change. Threats and warfare are therefore becoming more complex. There will be many combatants and groups with influence and a wider range of strategy and tactics will need to be employed. There are also new domains of operations such as cyberspace. And in response to this complexity, intervention will be more difficult. Choices will be wider and harder. And we will, therefore, more than ever need to balance competing needs.

Against this backdrop there is no doubt that addressing the causes of conflict and prevention as well as conflict resolution will require us to leverage allied and coalition partner capabilities as well as our own. The question will not be do we need to work in

international partnerships. I think that requirement is already self evident. And it is fundamental to success across the spectrum of conflict. I think also self evident is that we will need to do more in international partnerships. One of the reasons that we will need to do more is that it will be essential to make maximum use of constrained resources across all nations.

So in that light, sustaining and developing interoperability will be one, important key, not only through physical, technical means and the sharing of technology and intelligence—but equally important people based issues, making sure that our doctrine, our training, our tactics and our procedures allow us to work together as seamlessly and as effectively as possible. Self evident, yes. And you might say that that is already at the heart of how we work in international coalitions. But let's come back to that complexity point. If the environment is more complex, then those relationships and how we do business on the people side must become more complex and require us to think harder.

That leads me on to my third area of discussion. The so-what for United Kingdom air power both in terms of the forthcoming defense review and international partnerships. Much of this, I think, will be familiar from our discussions over the last two days. And it's reassuring that those themes are familiar, albeit on a different scale in the United Kingdom's case.

For the defense review, in many senses, air power starts from a very strong position. Afghanistan is the UK defense main effort. And the critical importance of air power is obvious at every turn. I'm the operational commander of the RAF's Air Transport, Air Refueling, I-STAR and force protection capabilities. Today every one of my 18 different aircraft types is either currently deployed in support of Afghanistan operations or has done so in the last 12 months.

In Afghanistan itself that includes C-130, Reaper and Shadow as well as force protection to defend our air fields. In the region, that includes C-17; Sentinel, my Sentinel not US Air Force Sentinel, just to be clear; E3D; tankers; and more C-130's.

And operating our strategic air operations into theater on a constant basis, are Tri-star's, more C-17's. I know that without these air power capabilities and the combat air capabilities provided by my fellow RAF commanders, the UK contribution to the international mission in Afghanistan would fall down in a very short order.

It might at this point just be worth pausing slightly to underline what I've just mentioned about operating in the region as well as in Afghanistan, and the strategic reach from the UK. A critical issue for air power delivery is our dependency in international basing rights and over-flight rights. Sustaining those rights takes work, from the political and diplomatic level right down to the tactical level.

But it is not only a dependency, it's an opportunity, an opportunity to build relationships in regions of interest, which is why often digital posts, such as air attaches can often yield disproportionate effects and influence. I mention the importance of interoperability. We know that air power is already highly integrated across nations at a tactical and operational levels, at the point of delivery and in command and control. Interoperability and international cooperation are also the heart of many of our critical acquisition programs, ranging in platforms from the F-35 through to the A-400M.

And also, in the less headline, but often equally critical, enabling capabilities. So in the air power business we are used to relying on each other. But I've no doubt that we need to address the implications and consequences, political, operational and financial of relying on each other more. And perhaps we need to look at it rather than interoperability, we may need to move into interdependency.

More broadly in terms of our defense, the credit side for air and space power will remain strong in any debate. Flexibility, speed of response and reach will, I'm sure, remain highly valued across the entire spectrum of conflict. Individual air power capabilities, such as ISR, Mobility and Lift have an obvious and enduring utility in support of all joint and combined operations and in support of what the UK terms the comprehensive

approach—ensuring that all levers of government are successfully coordinated and coherent.

But against these credits we have some significant challenges. In the context of increasing constraints on defense budgets, the challenge is not just to prove that air power is necessary but also that it is affordable. Air power can look expensive. And we need to ensure that we simply don't price ourselves out of the market. In this respect, the question is can we afford not to do more with our international partners?

Equally, cost is relative. For example, the UK contributed combat aircraft, tankers, and surveillance aircraft to the enforcement of no fly zones over Iraq for some 11 years. By individual flying hour, by the cost of the platform, the aircraft looked quite expensive. But in terms of exercising containment, with relatively little political and military risk for over a decade, using only air forces, it was a remarkably cost effective way to achieve strategic objectives.

We need to underline the importance of control of the air. It's not a given in Afghanistan. It is far from a given in future conflicts. It's been mentioned in this discussion, the last time US ground forces were attacked from the air was 1953. Well, for the UK, it was 1982 and it was quite an uncomfortable experience at the time and led to significant loss of life.

We need to also understand that control of the air addresses the spectrum of threats. It's not just about fighter aircraft fighting fighter aircraft. We need to be able to argue that, well, perhaps we are not being attacked from the air because we are strong there. The point was made in discussions yesterday that the decisions we make today will shape our future threats. So arguably, where we disinvest may well be where we see the threat arising in the future. We need to be very careful with that.

We also need to be sure that we can mitigate some of air power's traditional limitations, such as persistence and assurance, especially in support of ground forces. Command

and control is an issue. We still, as airmen look to centralize command and control. These are scarce, valuable assets that need to be apportioned in the right way at the right level. Does that fit in a complex operating environment?

There was a discussion yesterday. And one of the quotes was, “We need to get more enablers in the hands of tactical forces on the ground. Does that work against the model of centralized command and control? Will it match the pace that we need to achieve in order to be affective?”

We need, as airman, to consider the balance between kinetic and non-kinetic activity and effect. I think that in future there will be considerably more political and public appetite, certainly in the UK to pursue non-kinetic rather than kinetic options. It doesn't mean we can dispense with the big stick. Non-kinetic options such as Prevent rely on the big stick for their credibility. But non-kinetic options may be more attractive and, therefore, relevant.

Equally, we need to consider the balance between the most likely types of conflict versus the most dangerous—therefore the balance between high end and low end capabilities. And to that acknowledged importance of air and space power we need to add cyber. And I was going to discuss that in more detail but the Deputy Secretary this morning effectively said everything that I possibly could on that subject.

And finally, we need to consider the balance between manned and unmanned air power. UK has Reaper. It delivers a cost effective solution towards the persistent ISR task demanded by operations in Afghanistan. And it's been excellent. For the future, we need to exploit further the potential of unmanned air systems. We need to look at platform development, including survivability across the spectrum of conflict. But we need to synchronize it properly with the development of the enabling capabilities, and the sensors, and the weapons, the real heart of the system.

GENERAL ABRIAL: I'm afraid I don't have the answer yet. We probably have to be patient for a few more months, until the New NATO Strategic Concept is agreed and promulgated. Today, NATO is working hard on cyber issues. I mentioned to you that we do have a Center of Excellence in Tallinn, Estonia dealing with the issue. But we have problems making progress because we are an alliance and not everybody sees cyber in the same way. Not everybody gives cyber the same weight. And we have to acknowledge the fact that cyber is very close to precise national interests. And some nations are not yet ready to make this step forward.

My hope is that we can develop concepts and ideas, which prove the case to the nations so that we can develop a real NATO capability. I cannot guarantee that we will be successful, at least in the short term.

DR. DAVIS: General, just a small clarification on the question if I might. As you discussed and as you described, the debate over the New (NATO) Strategic Concept includes whether cyber should be considered an Article 5 challenge or threat or not. I wonder what your personal views were on that question and how we might bring together the two sides of the debate to get responsible language in the strategic concept on cyber?

GENERAL ABRIAL: It is a very good question. [Laughter] I'm not surprised you asked it. My feeling is that, as contrary as to what had been proposed at the beginning, there is no question any more of modifying Article 5. The people who put together these very few words were very clever. We could never do better today. So my impression is that there will be no change in the wording of Article 5. The very important factor is that all nations have a common understanding of what it means, which I might argue is maybe not the case today.

The other aspect is: what exactly do we understand? Today we have these very easy words. Article 5 deals with an armed attack. What is an armed attack today? Even nations agree that a cyber attack could be considered as armed. If this is the case, then

the logical deduction would be that that is how cyber should be considered within the framework of Article 5. But I don't know whether we can agree.

My feeling is that cyber is not brand new but a new domain, which has not been explored so far. That we have to deal with this phenomenon in ACT-- and its think tank is working hard on this question—is apparent. As an aviator I sometimes think that if you have a bunch of aircraft trying to attack you, it may be better to defeat them by cyber, rather than having to launch a counterforce and using kinetic weapons.

So in my very personal view, yes, cyber is central topic. Now, should it be recognized as an Article 5 issue, I think it is a more political decision.

DR. DAVIS: Thank you. Next question. Right there.

ROGER BRADY: Roger Brady, U.S. Air Forces Europe and Commander Air Component Command, Ramstein. Several of my NATO friends here might take a crack at this but General Abrial, who has discussed air command and control with me on several occasions, will soon host a round of discussions on NATO's New Strategic Concept; it's my understanding, Stéphane, that they will include addressing any need for change in NATO organizations.

As we talk about things like the Allied Ground Surveillance System (AGS) that was mentioned by Brigadier Mans, the heavy airlift wing, a couple of other things that are going to happen, French reintegration—and, also, the latest new child on the block, which everyone is going to get very interested in is ballistic missile defense. Does this provide impetus for a discussion of the more unified air command and control structure? By the way, as most people know, none of these capabilities that I mentioned are part of the NATO air command system.

GENERAL ABRIAL: Thank you, but I should redirect any answer to that question to General Brady. But since he asked the question, I have a problem now. [Laughter] Well

done, Roger! Yeah, we have to consider many possible changes ahead. You just mentioned, rightly, we will be co-hosting the fourth and last strategic concept seminar in Washington, D.C. at National defense University (NDU) next month. And those issues you have been mentioning will be on the agenda. I don't know how the speakers who are going to be in the panels will talk of these issues. And I don't know yet, of course, what the group of experts will take from them, because these seminars are for their benefit (i.e., the Albright group of "wise persons"). Once they have heard the discussion from all of the seminars, and having deliberated on the issues, the Albright Group will issue a report to (NATO's) Secretary General on what should be the strategic concept.

On the "air" side, I do believe that we have a level of integration inside NATO, which is higher than other service components. It is probably due to the nature of our third dimension elements. But I also think that we can do better. I think that we need to integrate more. I think that we need to continue working on how to have flexible, reliable, deployable aspects of our air Command and control (C2) elements, on which we are working very hard as you know. We all work together. We need to have a vision, which will help us face today's challenges in the air domain and prepare for tomorrow's challenges.

My personal experience is that the sooner we envisage all the possibilities to integrate, or at least to be able to have our forces interface with each other in the best possible effective, efficient, and cost effective manner, then we will be on the road to helping the Alliance nations make better progress with respect to national forces development and Allied interoperability. So I hope that these difficult questions will be raised and that we will find some answers next month. And, again, my very personal view will be in favor of more, much more interfacing and as much integration as possible.

DR. DAVIS: Air Vice-Marshal Hillier, do you want to say anything on these points, because the UK, of course, is very deeply involved in the NATO Strategic Concept discussion?

AIR VICE-MARSHAL HILLIER: I mean I'm not personally sort of involved in those discussions ...(inaudible) perhaps offer a personal view. And I touched on it a little bit in my presentation about command and control. And I think it is just making sure that command and control works for us, rather than us working for command and control—and that it is based on what you need to get the job done rather than geography, for example. And we need to make sure that command and control isn't judged as remote from the wars that we are in at the moment.

So I think I would just simply say that, you know, whatever we are looking for, it needs to be that agile, adaptable, and relevant for what we are doing. So that is a personal view. That is to say, it is not something I'm involved in, in terms of the mechanics of how it is going to work through.

DR. DAVIS: Yes. There is a question here.

CAITLIN HARRINGTON: Hi. I'm Caitlin Harrington with *James Defense Weekly*. My question is for Commodore Steele and Vice Admiral Hillier. There has been a lot of talk in the US in the past few days about the joint strike fighter program. It looks like there is going to be some delay on flight testing, which could impact the unit price of the early production orders of that aircraft. And for Australia and the UK, I'm wondering what the sense is in your air forces? Is there any concern there about the unit cost going up? Will that affect how you are thinking about your purchases as you move forward?

DR. DAVIS: Stephen?

AIR VICE-MARSHAL HILLIER: Well, again, I mean I'm not familiar with all the detail of the UK's approach in the F-35 program. But clearly, as a major acquisition program for the UK it's of great relevance. I think what the UK would be looking for is from F-35 that it has got to be capable to do what we require it to do, to be adaptable. It's got to be able to fit the full spectrum of conflict and not just a niche capability.

And it's got to be affordable. I think the affordability works in two ways. It's got to be value for money within the program itself. And it's got to be affordable in relation to defense priorities. And so where does the F-35 sit, again, in the context of the UK's defense review? It will be considered, I'm sure, against those benchmarks of capable, adaptable and affordable. But I wouldn't pick F-35 out and say that, therefore, somehow it is a particularly special focus. Every part of UK defense has to be able to justify itself against those sort of parameters in any defense review. So I don't see it as an exceptional case.

DR. DAVIS: I guess, Stephen, you don't want to wade into the debate that occurred over the weekend, reported in the *Telegraph* and the *Guardian* between our good friend Mark Stanhope, First Sea Lord, and David Richards about aircraft carriers and what they may carry and how many there may be?

AIR VICE-MARSHAL HILLIER: No. Wade into four-star debate. [Laughter] I will perhaps only tip my toe in rather than wade in. But I think I mentioned in my presentation, is that there is a debate going on in the United Kingdom at the moment looking at this defense review. I think that is entirely healthy. And one of the key parts of the debate is, what is the balance between high and low end capabilities? What are the most likely conflicts we will be in? What are the most dangerous conflicts? And what are the risks associated with taking particular courses of action.

And it is just an assessment of choices and risks, which will ultimately be political decisions. So I don't think that we should read in that the UK is going in a particular direction as a result of these speeches, which were made. It is simply healthy debate as part of the run up to the defense review.

DR. DAVIS: Air Commodore Steele?

AIR COMMODORE STEELE: Thanks. I think the Australian government has taken a cautious approach to acquisition of JSF. It was timely, their decision to sign up to

acquiring the first 14. And from the previous government as well, I think the hedging strategy of acquiring the 24 *Super Hornets* as a bridging air capability, combat capability is again, shows that cautious approach.

We, obviously, are very interested in the schedule and cost because our F-111s are going to be withdrawn as our classic *Hornet* fleet is getting old. We want to have a networked, truly fifth generation force early in this 21st century. So we are keeping ourselves apprised of the debate and decisions relevant to the JSF program, particularly as more information about schedule and costs become available.

DR. DAVIS: General Abrial, it is perhaps not fair but I'm going to exercise the prerogative of the Chair, again, to ask you a belated question, with respect to JSF. Because General Schwartz and the United States has a decision to make, which has to do with the nuclear capable variant, wiring the JSF to be nuclear capable, I wonder if you could say something about your thinking about the future of DCA deployments in Europe as you think about the changing deterrence landscape in Europe and globally?

GENERAL ABRIAL: Again, this is an issue, which is part of (NATO) Strategic Concept debate. And it is an issue, which will be dealt with next month, in and around the ACT/NDU seminar. I must say I have not studied this issue in great detail because it is not exactly in ACT's portfolio. The only experience I have is in my previous capacity (as the Chief of Staff of the French Air Force). I'm still somebody who thinks that we do need both visible (nuclear) commitments and capabilities in this field. And the link that we have established through the years is very important to the global position of the Alliance.

DR. DAVIS: Thank you. Next question. Yes. Right here.

General Kehler: Bob Kehler, the Commander of Air Force Space Command. And this is for the entire panel. We have long histories of collaboration between our forces, either bilateral or through our alliance relationships. I think each of you at some level

mentioned about the importance of space to us, both operationally and in terms of our overall national security. Could you comment on where you see opportunities for us to collaborate? I know, General Abrial, you mentioned this specifically in your remarks.

But for each of you, could you comment on where we might have some opportunities to improve our cooperation, collaboration regarding space activities?

DR. DAVIS: General Hokazono, would you like to start?

GENERAL HOKAZONO: Thank you very much for your question. As you know, Japan is one of the leading countries of the space development. But mainly the responsibility is conducted by the Ministry of Education, Culture, Sports, Science, and Technology. And three years ago Japan established a law, the basic space law, which allows us to use space for the defense of the nation. So, it was the start for the Japan Self-Defense Force, to be involved to the space matters.

At this moment, in the Ministry Of Defense, we don't have a specific project. But as the Air Self-Defense Force, we have two main areas to develop. One is space communication. And the second is space surveillance. They haven't been funded officially yet, but we are studying those issues now. Regarding the cooperation with the United States at this moment, the MOD is thinking about sending personnel to your basic space education program in order to gain the knowledge from the United States about space activities. We will go forward step by step. Thank you.

DR. DAVIS: General Abrial, do you wish to add to that?

GENERAL ABRIAL: I can just say that space, as you know, is a very sensitive issue. Not everybody has a similar understanding of what we could or should do in space and the nations have various points of view—which is probably why NATO has not been further than it is today in this domain. It is one of the new domains on which ACT is working on very hard. It's always an issue, which is very close to sovereignty matters,

displaying to others what type of capabilities you need, where and when you need to look at things. It can be very hard to share with others.

On the other hand, maybe communications could be easy to share because your very specific nation's devices can be on the ground somewhere and space could just be the vehicle to make sure that he gets the information he wants or needs. On that matter I think that it will be difficult to get unified a NATO position on space.

However, that said I see some future in multinational initiatives, like the NSCC, which has been briefed here, like the helicopter initiative, like the C-17 initiative—where some nations might want to share with each other, a few of these aspects as just mentioned. And this will also help smaller nations with smaller budgets to jump into the fray. Whereas alone they could never do so.

So I think that the way we should look at the issue is to try to find what are the areas in which groupings of nations in the Alliance could and seek to work together.

DR. DAVIS: Air Commodore Steele, do you want add to that?

AIR COMMODORE STEELE: Thank you. I guess ten years ago I would have said that neither, Australia, nor the Royal Australian Air Force, in particular, and the Australia Defense Force in general is a space force. But that would be patently wrong to say today. Now, though we don't actually put assets on orbit, we are inherently involved in the day-to-day business of the space game. When we think about space, I just think about it as a medium to conduct operations. That's all. It's an asset that we need to use.

The Chief of the Air Force in the Australian Defense Force is the coordinating capability manager for space. But space spreads across the whole spectrum of our defense force. We are investing in wideband global satellite, capabilities to go into orbit. So we are involved in that constellation. We are also involved in UHF SATCOM that is going over

the Indian Ocean. And because of our relationship with the U.S. in particular, space is just another medium for sharing information.

We understand that there are opportunities for us to contribute to the situational awareness of and in space; that we all need to look out of our atmosphere into the other world ahead—as well as look down on the globe. And we believe there are some opportunities that Australia could contribute in the NASA environment as well.

DR. DAVIS: Thank you very much. Unless there is a last burning question—it remains to me to thank our panel members and close this session by showing our appreciation for the panel members and their remarks. .

[Applause]

END OF SESSION