Williams Foundation – Winning the Air-Land Battle Seminar
- Chief of Air Force: Air Marshal Geoff Brown AO –
- Air Land Integration in the Maritime Century -
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Introduction

Since its inception as a military tool nearly 100 years ago, air power has played a crucial role in every land operation Australia has been involved in. I would suggest air power is more critical to our operations today than any time in our past, and its impact, particularly in our maritime strategic environment, will only continue to grow.

Land and maritime operations are empowered by the capabilities air power provides and it is the Royal Australian Air Force that delivers this air power for any joint response to a national security crisis. So what does an air force bring to the joint fight? In my opinion we only do four things, and we have been doing these four fundamental things since World War I.

Enduring Roles of Air Power

Firstly, we move things through the air. Air mobility is a cornerstone activity in virtually any military strategy. From the Berlin Airlift to Timor to Cyclone Yasi, the Royal Australian Air Force has a long history of responding to crises that require the rapid movement of people and equipment over long distances at very short notice.

The second thing is to observe things from the air, our ISR capability. The strategic, operational and tactical situational awareness developed from airborne surveillance is fundamental in the conduct of our land, maritime and air operations, as well as in the activities of many other governmental agencies.

Thirdly, we strike things on the land and sea, from the air. The ability to attack prescribed targets with precision and lethality is a critical element of what Air Force brings to the Joint fight.

Finally, the most fundamental thing we do is to control the air environment. Control of the air fundamentally enables all land, sea and air operations.

We have conducted these roles to enable land operations since our beginnings in World War I. It is not surprising, given our origins within the Australian Imperial Force that Air-Land integration has always been at the forefront of our air power thinking.

History

From the outset of World War I, the effects generated through the use of aircraft were immediate and achieved notable success. One of the finest examples of air-land integration from the World War I era is the period of July to September 1918 encompassing the Battle of Hamel to the Battle of Mont St Quentin. The air component was part of the planning process at the earliest stages, enabling the Australian Flying Corps and the Royal Air Force to commence ISR and shaping operations well in advance of ground phases.

Control of the air was essential to allow unrestricted ISR and ground support operations as well as secure ground forces from observation and attack. By the Battle of Mont St Quentin the shared understanding between air and ground commanders regarding planning and integration requirements meant that complex operations could be undertaken with much less planning than previously needed.

From the deserts of North Africa during WWII through to the jungles of Vietnam air-land integration proved to be a critical element in nearly all conflicts.

This is true up to present day. In 2003, RAAF Hornets, operating under the command of the then CO 75SQN now Air Commander Australia Mel Hupfeld, provided close air support to Australian Special Forces as they were engaged with Iraqi forces during the securing of Al Asad air base in western Iraq.

These actions continued a long tradition of Australia air power operating with Australian land forces during times of war. Many of the issues we will discuss today are just different iterations of past lessons, but issues that we must overcome if we are to win future air-land battles

Air Effects across Missions and Phases

I think it useful in discussing what force effects Air Force brings to the scenario that Williams have laid out for us today. I will discuss the air power considerations in each phase in turn and the possible rub points between the services.

Its probably worth stating one more time up front that, while the character of some of the missions we fly have evolved with technology and the changing face of war, the fundamentals of combat air power and its contribution to the joint fight have not changed in nearly a century.

However, the shape of the air contribution will be dependent on the character of the campaign and a number of other variables, and it is worth just briefly touching on these before turning to a discussion of the phases.

Basing

The first variable is basing. The Williams Operation Scenario places the entry force a long away from our domestic bases highlighting the importance of a Forward Mounting Base.

Basing is essential for fixed-wing operations, whether they are located domestically or on foreign soil. The infrastructure on these bases can determine the degree of operational effectiveness that air power can deliver. Securing a mounting base in another country assumes many things and I'd argue places significant complexity into the operation. However, translating assumptions into reality is in many ways as challenging as engaging in combat.

We exercise the full range of combat environments but we rarely exercise the full scale of activities to undertake an expeditionary operation, preferring for fiscal, resource and diplomatic reasons to address these issues in real time. But we despite these issues we must remain focused on addressing the challenges of doing expeditionary operations rather than the issues that constrain us.

Engagement

The second variable is engagement.

To mitigate some of the risk in this strategy, Australia has long relied on a policy of engagement as a means of sustaining regional stability. The importance of this engagement becomes apparent when we seek to locate a mounting base in a foreign country and in securing the huge amount of support required in sustaining deployed operations.

Exercises such as Talisman Sabre and Pitch Black, high-level engagement though airman-to-airman talks, and the foundational partnerships formed in our colleges cannot be overstated in developing the relationships and networks critical to our engagement policy. Engagement, though expensive, is essential.

To turn now to the phases of this campaign and Air force's role in each.

Strategic Shaping Phase

The strategic shaping phase of any campaign reduces the strategic, operational and tactical risk to a level acceptable for the entry and follow-on activities. Even in a permissive environment this may require a substantial level of air activity, but in the scenario where opposition is expected, the full range of air missions will be required.

Strategic Attack

During the shaping phase this would entail the use of strategic attack to diminish the adversary's ability to influence our operations. Alongside degrading his offensive capabilities, a critical objective of this phase will be to degrade the Integrated Air Defence System to a level where there is minimal interference from an adversary. In concert with Special Forces, the primary tool for this activity will be the Air Combat Capability.

Employing weapons such as the Joint Air-to-Surface Standoff Missile and Joint Standoff Weapon, the Joint Strike Fighter will have the ability to undertake strategic strike in the face of an adversary's anti-access or area denial capability. Now overcoming these capabilities will require a coordinated multi-domain approach, but the properties of the JSF will, I'd argue, provide Australia with an asymmetrical advantage in our region.

In land operations it is often been said that he who controls the high ground controls the battle. In the modern air environment, it is control of the electromagnetic spectrum that is the high ground and determines dominance of the airspace. This is why one of the first actions in any operation is to blind the opposition's electronic eyes, ears and voice.

Any asymmetric advantage in this arena is a game-changer in the operational environment. This is why I welcome the announcement of the EA-18G Growler as it is an integrated, airborne electronic warfare platform capable of surviving threat environments as described in the Williams scenario.

Kinetically attacking or non-kinetically jamming an enemy's radar and communication systems fundamentally reduces risk and increases the potential for mission success.

Offensive Counter Air

Offensive Counter Air will diminish the adversary's degree of air capability. Remember the last time Australian solider killed by enemy air was 1943 in New Guinea. Last RAN ship attacked by enemy air was HMAS Australia on 9 Jan 1945 off the Philippines.

We have lived under the umbrella of air control longer than our institutional memory, and this is a significant danger for us. Our adversaries have not and borne the cost in lives and equipment. Even establishing control of the air against an adversary with a low level of air capability will require a large amount of air power, particularly when they hold the advantage of geography.

Near-peer adversaries increase the degree of complexity, time to achieve the desired effect, and the amount of resources to attain, and then maintain, the required level of air control.

The JSF, Super Hornet and Growler will form the central core of the offensive air operation. Battlespace management and some aspects of ISR will be provided by Wedgetail, Airborne Early Warning and Control platform.

Precision is the norm and expected by our governments. Precision in the sense of weapon delivery; in judgement and advice; in timing; in strategy; in intelligence; and in precision of our employment of tactics.

Whilst underpinned by technology, precision is provided through ISR. We must know the location of a target, its pattern of life and pattern of operation. In this way we can achieve the effect we want with the minimal collateral damage. In a complex air-land environment persistent and relevant ISR, can mean the difference between operational success and failure.

The majority of Air Force's platforms contribute to the joint operational ISR capability. Air Force provides this ISR through its Vigilare integrated ground-based air defence command and control system for the Australian approaches. It is fed by 45 air, ground, space and maritime sensors providing more than 245 different inputs.

Air-to-Air Refuelling

A critical enabler for this mission will be the availability of air-to-air refuelers. Tankers have long been the limiting factor in a number of air operations. Given the range from the mounting base for this scenario, the number of KC-30A and coalition tankers will influence the character of operations.

In late 2002, one of the planning determines for when operations in Iraq were launched was air-to-air tanker capability. The campaign had to go in early 2003 because if the coalition waited until the later months the summer temperatures in the Middle East climbed towards 40-50 degrees. These temperatures severely impact the performance capability of aircraft with the amount of fuel tankers can carry for off-load effectively being cut in half. This would have meant double the tankers would have been required to support the operations or the sortie rate would have been halved. Neither was a variable option.

Airlift

Conventional airlift traditionally operates after the shaping phase, however, Special Forces play an essential role during the shaping phase and specially trained C-130 crews are capable of inserting and resupplying them across hostile environments. We will also work towards the C-17 having the capability to insert and resupply Special Forces.

Initial Amphibious Entry

Much focus will be on the entry phase of any amphibious operation. But, we need to be aware of the incredible amount of force protection of a task force during their transit from the mounting port to the staging area.

Of course the threat situation will drive the scale and scope of air commitment. But, if there is even the chance of surface or sub-surface threat, as in the Williams scenario, then you can expect a significant amount of air effort to be applied to the protection of the embarked force. The force protection of the task force will require a continuous coverage across large distance. Anti-surface and sub-surface warfare will require a coordinated effort between Air Force and Navy.

At the sea power conference earlier this year, I recommitted Air Force to the Anti-submarine warfare mission and you can appreciate from this scenario the importance of this declaration. Our AP-3C Orions and by 2020, the P-8 Poseidon alongside Broad Area Maritime Surveillance Remotely Piloted Aircraft will operate with Collins-class submarines, ANZAC and Adelaide-class frigates with their MH-60 Romeos to protect the task force. This commitment will require more air-to-air

refuelers to provide the on-station time required in anti-submarine and anti-surface warfare missions.

As the task Force approaches the staging area, our air combat capabilities and more tankers, in concert with the Air Warfare Destroyer, will protect the force from enemy air attacks. This level of protection will remain extant while in the task force remains in the staging areas.

Here again I emphasise the importance of basing to enable the fixed wing force to maintain persistent coverage over the force.

In the lead up to and during the entry operation, situational awareness of the enemy force posture and oversight of the objective will be essential. Air power, through Wedgetail, Joint Strike Fighter, Growler, ad Area Maritime Surveillance Remotely Piloted Aircraft, as well as space-based assets, will contribute to building and maintaining this picture.

Crucial in this phase will be the requirement for the land command elements and the entry forces to receive the right information at the right time. With the entry force command element embarked, this is where the integration of air, land and maritime is essential to get right.

We must be able to communicate across networks with a degree of interoperability that frankly we lack right now. Delays in information exchange kills people and put at risk operational success. For this reason Air Force will seek to provide persistent battlespace management for air capabilities above the coordinating altitude. This will be provided by Wedgetail, but will require substantial air-to-air tanking to ensure a persistent presence.

Throughout the entry phase, and during any follow on actions, air interdiction will reduce the enemy's ability to move fighting elements towards our forces.

Of course we can never predict the enemy's responses, so to protect our forces we will conduct Close Air Support combat air patrols to support any troops in contact. This will require both our airborne assets and the capability resident in our Joint Terminal Attack Controllers embedded with the ground elements.

To concentrate a force at the objective, an airborne insertion of ground forces through parachute or air land may be considered. This can be conducted through our C-17, C-130 or C-27J and allows the movement of a sizeable force from mainland Australia directly into the operational objective.

And as I discussed earlier, the Growler will continue to ensure any threats to our airborne forces from ground-based defences remain suppressed.

Aside from our aerial assets, Air Force may be called upon to open and maintain an air point of entry. Dependent on the scale of operations at the APOD, opening and maintaining an airfield can take a sizeable force. Air movements, logistics, communications, local airspace management, and security are essential ingredients to sustaining an APOD.

This may require an Expeditionary Combat Support Squadron and their equipment to be part of the amphibious entry force, or if the airfield is secured, be air inserted directly into the APOD. It is worth noting that these elements have a significant logistic footprint of their own.

Numbers

I have often said that quantity has a quality all of its own. Consider how many aircraft would be needed to project a Combat Air Patrol over an amphibious task force, as well as an on-call close air support CAP over a combat team.

To give you an example, during Operational Iraqi Freedom in 2003, just to maintain three Combat Air Patrols 24/7 at 600nm from base required 155 fighters and 32 AWACs, Tankers, Joint

Surveillance Target Attack Radar Systems (JSTARS) and Prowlers. Our single squadron of F/A-18s provided 12 aircraft for 8 hours per day.

Now consider the ramifications of not being able to provide sufficient airborne force protection. What if an adversary aircraft is able to fire a missile at a Landing Helicopter Dock or bomb the entry force or shoot down it Chinooks or Tigers?

Control of the air is a 'numbers hungry' operation, but it is the most important air power contribution to the joint campaign.

It doesn't take much of an extrapolation to develop an appreciation of the potential scale of Australia's fighter requirements. This is why I am so passionate about ensuring we have sufficient numbers to get the right balance of air combat capabilities.

Integration Issues

So what does this all mean in terms of air-land integration? It is worth clarifying that when I say air-land integration, I am really meaning air-surface integration because to accomplish the joint objective we need to work across all domains. Indeed many of the integration issues raised today are as relevant to the air-maritime realm as they are to air land.

Let me turn now to a discussion of the specific issues Air Force needs to address to maximise air-land integration.

Historically, much of our integration problems are not so much technical issues as they are people and process problems. We have seen this time and again in our planning, where each component has conducted their planning almost in isolation. Then, only towards the end of the process sought to coordinate or synchronise their effects.

We have got better at his aspect, but I would argue that many of our air-land problems stem from our command and control processes. My Air Commander, Mel Hupfeld, will discuss command and control in greater detail shortly, but I want to highlight the point that planning must be joint focused not domain led. Air must be integrated into the Joint Task Force and other component planning process, not just coordinated or de-conflicted.

Air land integration Rub Points

Turning now to what I see as the rub points.

Almost without exception, the biggest issue in air-land integration is the level of communication across the domains.

Communications

The ability to convey commands, requests or situational awareness I'd argue is a cornerstone element of all successful operation. This reaches back to the times of Sun Tzu who wrote 'To control many is the same as to control a few. This is a matter of formations and signals.' In battle, timely transfer of information can be as important as the amount of information. We must be able to get the right signals to the right people at the right time.

As we discovered in Afghanistan, mechanisms such as the Military Internet Relay Chat (mIRC) have become the means to transfer tactical and in some cases operational commands. If you are not on, can not access it or not on a similar common net, you are in the dark. This is a combination of technology and procedures. If you get one of them wrong your can be left out on your own.

We also know security of information is paramount and secure voice and data comms has become the norm for many operations. But time and again we have failed to ensure that all users can access the appropriate nets. This is fundamental to both our joint requirements and for

operations with our partners in the region and something we need to solve to ensure we can conduct integrated air-land coalition operations.

We are also well into the age of digital CAS. Variable Message Format is rapidly becoming the baseline method for conveying task information between ground and air. Again this is a mix of technology and procedures.

It is not wholly a Joint Capability Coordination division or Capability Development Group responsibility for ensuring all appropriate users can use VMF. Each service also bears responsibly for working with our domain partners to ensure both operator and end-user equipment and procedural requirements are clearly understood.

Another aspect of modern operations is the increasing size of the operational environment. This imposes limitations on Line of Sight communications and places an increasing strain on SATCOM bandwidth.

Air power offers the ability to expand our line-of-sight capabilities through the use of persistent communication relays platforms. This is an area that Defence has yet to explore in depth.

Common pictures

On equal footing is the issue of working off the same sheet of music. No situational awareness picture is the same; through many look the same at first glance. There is a Common Air Picture, a Local Air Picture and a Recognised Air Picture. They may sound the same but invariably they reside on different systems and the information they provide will vary as priorities change at the various levels of viewing. Who needs what picture, when and in what format might be a tactical issue but it has strategic consequences.

Common language

Forces across the different domains use their own unique languages, and even with each domain, specialist elements have a dialect of their own. Air-land integration requires a greater degree of understanding each other's language. This does not mean we all must speak a common language but we must have a greater appreciation of each others.

We all come with a degree of baggage, from service cultural to professional speciality. But when we merge into a joint operation, there is no mystical 'babel fish' to translate what we say to what the receiver hears.

How do we achieve this? I think the answer at least in part is intuitive and I will discuss this shortly.

Procedures

Because no two conflicts are identical, it's almost a cliché to say but adaptability and flexibility are critical capabilities. We must have practices that can adapt to the current situation.

We must not structure our forces or procedures to the last fight. Too many militaries have fallen into this trap with fatal consequences. The challenge I think is to move from platitude to the practical application of this mode of thinking. Remember, adaptability is inherently good.

You can't mandate flexibility through doctrine. It is learned behaviour, and learning involves practice, exercise, simulation and training as well as education to underpin it all. This is a serious and enduring challenge for all of us.

Humans are the Weakest Link

But when we assess our challenges we should acknowledge that it is humans rather than technology that are the weakest link in the air-land integration equation.

We know this because advances in technology and communication have been the norm since WWI, but air-land integration issues continue to impact our operations. Up-teching to take advantage of these advances requires up-skilling your workforce and has its own risks.

Greater complexity of the systems and incompatibility with current procedures are in many cases a root cause of problems with air land integration. One set of procedures change in response to a new technology causing a mis-match between users.

One size does not fit all and we have to recognise that we all have different operational and tactical needs. Thus a push to establish a common operating system or network can have its own problems.

The cost to develop to a new system as well as the inevitable delays complicates our integration attempts. Common training and shared understanding of disparate may provide a greater return on capability than new tech.

How do we best achieve air-land integration

As I mentioned previously, many of our integration issues are people and process driven. Therefore, it should be no surprise that I believe many of our solutions are found not in technology but in our approach to the joint fight.

Doctrine

At the capstone of our processes is doctrine. Doctrine sets the tone for air-land operations and provides the guiding principles to how we conduct our activities.

To ensure we set the right foundation for integration we must ensure that our service doctrine is shaped towards making our specialist activities work together. We have made much progress in this area but there is a long path still ahead.

Joint Capability Coordination Division

Alongside our approach to doctrine comes our approach to the Joint Capability Coordination Division. This is a relatively new division and its responsibilities include the management of strategic interoperability. I see JCC as pivotal to seeing many of our current and future operational capabilities achieve a high level of integration.

Capability Development Group

Now if JCC has the responsibility for interoperability standards, then we look to the Capability Development Group to shape the future joint war fighting capabilities. I am encouraged by Peter Jones' message that CDG is on the road to achieving this.

So how do we best achieve these aspirations? We cannot afford to achieve them purely through procurement.

Simulation and experimentation

With the advances in simulation and experimentation, there is much we can learn before we get to the execution stage. Integration, be it air-land, land-sea or any other combination is a learned, exercised and practiced capability.

Doctrine, technology, process and policy all play their part, but at heart I believe integration is about practicing together…until we get it right every time. This way we are better prepared for

the unexpected, because it is the unexpected conflicts we always seem to get involved in. Simulation and experimentation clearly are the key factor to success in this enterprise and it is here that I would suggest we need to come together and get it right.

Exercises

As previously mentioned, time is perhaps our biggest obstacle. With our current exercise program we are challenged to achieve our foundational warfighting objectives.

I saw a system in the Royal Air Force Air Warfare Centre, which I think we really need to rive towards. Before RAF elements deploy to Afghanistan they conduct an exercise where they bring in the Brigade command group and the Tactical Air Party. The Centre has the capability to simulate the Joint Terminal Attack Controllers, different types of combat aircraft and operate a simulated complex air-land scenario that replicates many of the challenges the air and ground forces will expect to face during their deployment. The real benefit of this style of simulated scenario is the ability to pause the exercise when problems arise and the both sides can evaluate in almost real-time the issues that are causing them problems. Clearly this opportunity is not available during real-time exercises, or indeed during combat. Simulation enhances our exercise and operational capability, is clearly safer.

Exercises are where we should put it all together only after we have simulated and experimented our issues to death. End-to-end exercises are resource intensive and expensive. Much of the training focus will depend upon available finances and resource availability.

But air-land integration issues are more likely to arise when the conditions of a likely scenario, whatever that may be, are played out over time. We need to look at how we exercise and make them less about certification and more about resolving the air-land issues that will arise.

If I had a mantra to address air land integration issues it would be **'Understanding, Training, and only then Execution'**.

Conclusion

If we are to win our battles we must overcome many of the issues discussed today.

Now we do not start from scratch, and as I discussed earlier, Air Force, Army and Navy have a long history of integrating our operations. The problem is we seem to repeatedly forget many of the hard fought lessons.

The Air Force continues to seek to develop a balanced force that will able to meet deliver the right mix of air power in the appropriate quantity to accomplish the tasks that will placed in front of us.

We cannot predict the future; we can only work together to ensure the force we have in 2020 will win any battles we may face.

I look forward to hearing the views of the upcoming speakers and thank Errol and the Williams Foundation for the opportunity to address you today.

Thank you.