THE IMPERATIVE FOR COST EFFECTIVENESS IN MULTIDOMAIN OPERATIONS

THE SIR RICHARD WILLIAMS FOUNDATION SEMINAR, 22 MAY 2025

ROBBIN LAIRD



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INTRODUCTION

The first seminar of 2025 for the Sir Richard Williams Foundation was held at the National Gallery of Australia in Canberra on May 22, 2025.

The seminar was entitled: *The Imperatives for Cost Effectiveness in Multidomain Operations*.

The program for the seminar laid out the basic aim for the seminar as follows:

The 2025 seminar series will identify and discuss strategic themes which impact the Whole of Australian Government, Defence and industry, as well as international partners in a multi- domain context. Given the increasingly complex set of threats and operational risks, it is also set within the context of the emerging issues aligned with the development of NDS26 and beyond.

The seminar series will address the need to balance near-term decisions in air and space capability to ensure Defence and industry investment also provides the sustainable foundations for future force structure planning and growth.

In recognition of the increasing pressures on Defence spending, the aim of the May 2025 seminar is to examine the imperative for cost effectiveness in multi-domain operations.

The Chairman of the Sir Richard Williams Foundation, Air

Chief Marshal (Retd) Mark Binskin, provided the opening remarks for the seminar. He underscored that "the global rulesbased order that we've relied on and benefited from for many decades is now gone" and warning that it "won't be back in its form that we were used to."



The Chairman of the Sir Richard Williams Foundation speaking on 21 May 2025.

He highlighted that the international system is transitioning from one governed by the rule of law to one dominated by "rule of strength and rule of threat."

"This fundamental shift places enormous pressure on likeminded nations to actively shape the evolving order through "strong national power, trusted alliances and partnerships and collective will."

As Binskin emphasized, the required response is needed "now, not 2040," highlighting the immediate nature of the strategic threat facing Australia and its allies.

The seminar's central theme — the imperative for cost-effectiveness in multi-domain operations — reveals a critical paradox facing modern defence planners. As Binskin noted, "an affordable force may not actually be an effective force," particularly when the strategic benefits of military capabilities are poorly understood or misapplied.

This challenge manifests in several concerning ways:

- defence forces risk focusing on single capabilities with limited employment options while neglecting those that could provide government with broader response options at lower operational, strategic, and political risk.
- High-end, exotic capabilities across all domains can distort the cost-effectiveness of military forces, potentially drawing resources away from essential but less glamorous core enabling capabilities.
- Fixed defence budgets combined with unexpected cost pressures create a cash flow problem that inevitably affects force preparedness.

Australian defence planners face the complex task of maintaining two distinct but interconnected focuses.

- The first involves long-term strategic planning extending to 2040, anticipating how threats and capabilities might evolve over the coming decades.
- Simultaneously, they must ensure that current personnel are properly equipped and prepared for immediate challenges. As Binsken pointedly noted, the men and women serving today need to be ready to "compete this afternoon, fight tonight, survive and win."

The seminar's strong industry sponsorship underscores the critical role of public-private partnerships in addressing these challenges.

International cooperation remains equally vital, with speakers joining from the UK and the United States (including

one virtually due to airline disruptions), reflecting the interconnected nature of modern defence challenges and solutions.

The Sir Richard Williams Foundation seminar represents more than an academic exercise — it's a critical forum for addressing one of Australia's most pressing national security challenges. How to build and maintain military forces that are both affordable and effective in an era where traditional strategic assumptions no longer apply?

The collapse of the post-World War II international order, combined with the emergence of new threats and the constant pressure of fiscal constraints, requires defence leaders to make increasingly difficult choices about capability development and force structure.



Sir Richard Williams Foundation Seminar The Imperative for Cost Effectiveness in Multidomain Operations

Thursday, 22 May 2025, National Gallery of Australia

Aim

The 2025 seminar series will identify and discuss strategic themes which impact the Whole of Australian Government, Defence and industry, as well as international partners in a multidomain context. Given the increasingly complex set of threats and operational risks, it is also set within the context of the emerging issues aligned with the development of NDS26 and beyond.

The seminar series will address the need to balance near-term decisions in air and space capability to ensure Defence and industry investment also provides the sustainable foundations for future force structure planning and growth.

In recognition of the increasing pressures on Defence spending, the aim of the May 2025 seminar is to examine the imperative for cost effectiveness in multi-domain operations.

Background

The May seminar considers the need for a balanced view across NDS planning epochs to ensure the Future Integrated Force is fit for purpose, not least in its ability to survive to operate in an increasingly complex and contested national security environment.

Epoch 1, end of 2025 – the Enhanced Force-in-Being will focus on immediate enhancements that can be made to the current force.

Epoch 2, 2026 to 2030 – the Objective Integrated Force will see the accelerated acquisition of critical capabilities.

Epoch 3, 2031 and beyond – the Future Integrated Force will see the delivery of an ADF that is fit for purpose across all domains and enablers.

The intent is to inform and contribute to the ongoing development of the NDS based on an objective, evidence-based consideration of the assumptions that address the realities of a future war. As described in the recently released United States Air Force Unclassified Force Design Review, there is a need to consider the operational capacity, range, and density of increasingly capable network-enabled long-range fires—such as ballistic missiles, cruise missiles, and attack unmanned aerial vehicles (UAVs). Furthermore, the USAF Review highlights "conflicts in Ukraine and the Middle East highlight the growing effectiveness of smaller, less-costly systems that in sufficient quantities create quality of their own".

Strategic Themes 2025

The Sir Richard Willaims Foundation strategic themes for 2025 cover mass, depth, agility, industry involvement, and redundancy.

The intent of the themes is to provide an objective consideration of those measures which balance combat effectiveness with an increasing demand for efficiency in a fiscally constrained national security environment. While all themes are relevant across the NDS planning epochs,

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prioritisation of near-term effort is in Epoch 1 and 2 and generating and exploiting depth in air power:

Building Combat Mass and Depth Across Domains: How can new technology be applied to the extant force structure to enhance a focussed force and achieve critical mass and depth. The ability to mass power, plus sustain and replace it includes consideration of force protection and generation requirements for sustained operations across multiple rotations in a high threat environment where success is by no means assured. This could involve reliance on international partnerships. The focus of this theme relates to Epochs 1 and 2.

Generating Tempo Across Domains: How can the ADF respond at speed and scale across a vast geographical area in strategically relevant timeframes and remain survivable. The main focus is Epoch 2 and 3.

Enhancing Industry capability and the National Support Base: How can industry be more involved in planning to mitigate key replenishment, sustainment and preparedness risks not least in relation to cost, and the broader demand for increased capacity and workforce integration. Growing the industrial base to keep pace with the need for increased combat mass across domains will involve more detailed consideration of risk tolerance, and attritable equipment and weapon systems. The focus is Epoch 1 and 2.

Survive to Operate: How does the ADF build redundancy to sustain integrated operations across multiple domains and critical nodes in the face of an increasingly complex and lethal threat. Beyond the ADF there is the broader need for an objective assessment of industry competencies, workforce preparedness, and national will. Moreover, a central question emerges around whether the nation is ready for the realities of a future war? This is predominantly an Epoch 1 and 2 effort.

Seminar Agenda

The May seminar will focus on enhancements to the focussed force, and the gaps and risks emerging from the Integrated Investment Program. The seminar will seek to support the transition to a Future Integrated Force that is fit for purpose across all domains and enablers that considers the rapidly accelerating threat and the need to prioritise investment in capability, which is operationally relevant, survivable, lethal, sustainable, and delivered with the lowest political risk.

The proposed industry focus is: How can industry be more involved in planning to mitigate key sustainment and preparedness risks in the integrated force, and introduce new technology to add mass and depth plus the ability to sustain and replace it?

Cutting across each of the strategic themes are policy, process, technology, infrastructure, and workforce considerations including, but not limited to:

- Operational Risk Management: Balancing Lethality and Survivability
- Workforce: Management, Automation, and Development
- Training System Effectiveness & Mission Rehearsal
- Future Technologies and Collaborative Combat Systems
- Accelerating Capability: Minimum Viable Capability and Minimal Viable Product
- Preparedness, Basing, Logistics & Supply Chains
- Assuring Value for Money in Force Development



Williams Foundation Seminar

The Imperative for Cost Effectiveness in Multidomain Operations

22 May 2025, National Gallery of Australia

Program Updated 20 May 2025

Time	Торіс	Speakers
0800-0830	Registration and breakfast	
0830-0835	Welcoming Remarks	ACM Mark Binskin AC (Retd) Chair, Sir Richard Williams Foundation
0835-0840	Introduction and MC	WGCDR Sally Knox Sir Richard Williams Foundation
0840-0915	Keynote – USAF Transformation Challenges	Gen. (ret) T. Michael Moseley, KBE 18th Chief of Staff, United States Air Force
0915-0945	Strategic Risks and Opportunities in Australian Multidomain Operations	AIRMSHL Rob Chipman AO, CSC Vice Chief of Defence Force
0945-1030	Adversary Threat and Allied Airpower Capability Trends in a Multidomain Context	Prof Justin Bronk Senior Research Fellow/Editor, RUSI Defence Systems
1030-1100	Break – Morning Tea	
1100-1130	Future Cost Effectiveness Considerations for the Integrated Force	Dr Marcus Hellyer Head of Research, Strategic Analysis Australia
1130-1215	Cost Per Effect Panel Discussion: Facilitator: AIRMSHL (Retd) Darren Goldie AM CSC	AVM Glen Braz AM, CSC, DSM Air Commander Australia Prof Justin Bronk Senior Research Fellow//Editor, RUSI Defence Systems
1215-1300	Industry Perspectives: Industry Panel Facilitator: Kath Ziesing	Kendell Kuczma, Lockheed Martin Nick Leake, Optus Bradley Thompson, Phantom Works Australia AVM (Ret) Robert Denney AM, Northrop Grumman Jim Gardner, Raytheon Australia
1300-1400	Lunch	
1400-1425	Operational Opportunity Costs	Chris McInnes, Executive Director, Air Power Institute
1425-1455	Deceive. Disrupt. Defeat: Integrating non-kinetic effects for (cost-effective) battlefield advantage"	GPCAPT Marija Jovanovich AM, CSM Chief of Staff, Vice Chief of the Defence Force
1455-1535	Chief of Air Force in Conversation with AIRMSHL (Retd) Geoff Brown AO	AIRMSHL Stephen Chappell DSC, CSC, OAM Chief of Air Force AIRMSHL (Retd) Geoff Brown AO Deputy Chair, Sir Richard Williams Foundation
1535-1545	Formal Close	ACM Mark Binskin AC (Retd) Chair, Sir Richard Williams Foundation

CHAPTER 1 ENHANCING THE READY FORCE: A KEY IMPERATIVE FOR AUSTRALIA IN THE EVOLVING STRATEGIC ENVIRONMENT



A Royal Australian Air Force F-35A Lightning II aircraft flies alongside a KC-30A multi-role tanker transport after air-to-air refueling during Exercise Cope North 25, Guam. February 10, 2025. Credit: ADF

THE SEMINAR DISCUSSION highlighted the challenges facing the ramping up of the ready force in operating in the rapidly evolving strategic environment.

After the seminar, I discussed with Air Marshal (Retired) Geoff Brown his takeaways from the day's seminar regarding key themes raised during the seminar by the speakers from the Australian Defence Force and by the various speakers and panelists who spoke at the seminar.

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In many ways, what was addressed during the day was how to deal with what the question raised by the Chairman of the Sir Richard Williams Foundation, Air Chief Marshal (Retired) Blinkin in his opening remarks: "An affordable force may not actually be an effective force,"

- What then is an effective force for the evolving strategic situation?
- How to augment the fight tonight force and to find ways for an affordable path for a sustainable and effective ready force?

In other words, a central challenge facing Australian defence planning is the gap between the "fight tonight" force and the promised "future force."

Current strategic circumstances demand a fundamental shift in thinking from building capabilities for future conflicts to maximizing the effectiveness of existing platforms and systems.

Australia faces a critical challenge common to smaller defence forces: modernization requirements that temporarily reduce operational capability. For example, upgrading F-35s to Block 4 standard, while essential for meeting current threats, requires taking 8-10 aircraft offline from a fleet of only 72 – nearly an entire squadron's worth of capability.

This paradox underscores the need for larger fleet sizes to maintain operational capability during transition periods but also highlights why strengthening existing capabilities must take priority over wholesale platform replacement.

Autonomous systems represent a significant opportunity, but only if approached correctly. Rather than treating drones and unmanned systems as standalone platforms, they should be viewed as tools – similar to missiles – that enhance existing capabilities.

Brown cautions that Australia's historical reliance on U.S. weapons stockpiles has become a critical vulnerability. The

assumption that American arsenals would be available in crisis has proven false, as U.S. stockpiles have been depleted by ongoing global commitments and aid to Ukraine.

This reality demands urgent investment in domestic weapons production and regional partnerships. South Korea's combat vehicle manufacturing in Australia provides a model – building more capacity than Australia alone requires while serving regional allies' needs.

Creating a truly ready force requires addressing unglamorous but essential capabilities: increased crew ratios, enhanced maintenance capacity and robust logistics support. These investments lack the political appeal of major platform acquisitions but form the foundation of sustainable military capability.

The discussion reveals a fundamental tension in Australian defence planning: the gap between political narratives about future capabilities and military realities about current threats.

If conflict occurs within five years – a possibility that cannot be dismissed given current strategic trends – Australia must fight with existing capabilities enhanced through focused modernization and realistic operational planning.

This doesn't mean abandoning long-term capability development but rather ensuring that the transition period between current and future forces remains strategically viable.

The "fight tonight" force cannot simply hold ground until future capabilities arrive – it must be capable of decisive action.

Air Marshal (Retired) Brown argued that Australia needs a defence strategy grounded in strategic realism which means:

- Maximizing existing platform capabilities through focused upgrades and training.
- Developing autonomous systems as force multipliers rather than replacements.
- Building sustainable logistics and maintenance capacity.

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- Creating domestic and regional weapons production capabilities.
- Treating the current force as operationally decisive, not merely transitional.

The strategic environment has fundamentally changed, and Australia's defence planning must change with it. The luxury of long development timelines and gradual capability transitions no longer exists.

For Brown: "Success will depend on how effectively Australia can enhance its ready force while building toward future capabilities – because in the current strategic environment, ready forces matter more than future promises."

CHAPTER 2 AIR POWER IN AN AGE OF STRATEGIC UNCERTAINTY: THE PERSPECTIVE OF GENERAL MOSLEY

GENERAL "BUZZ" Moseley spoke via video link to the May 22, 2025 seminar held by the Sir Richard Williams Foundation in Canberra, Australia.

General Moseley was the 18th Chief of Staff of the United States Air Force. Mosely was a distinguished war fighter who lived in the world as it is rather than the world we hoped to see. His entire service was focused on how the USAF could contribute to the deterrence of conflict but win it if you must fight.

I knew him when I worked for the Secretary of the Air Force, Michael W. Wynne, and the two of them formed one of the most remarkable pairings of defence leaders in my lifetime.

They were fired by the then Secretary of defence, Robert Gates because of their opposition to the path Gates preferred which was to move from the way ahead for an air force built around air superiority to one that was not.

The significance of their firing was historic, a fact not lost on the late Senator Molan, whom I had the privilege to know and to discuss many things with him, including this event with him.

This is what the retired Australian General and Senator Jim

Molan in his 2022 book on the need for Australia to deal with the China challenge:

"The U.S. is surfacing from decades of war in the Middle East with worn-out equipment, understandably having allocated a lot of its funding to 'today's wars' rather than investing in the future. During the Iraq War, for instance, Secretary of defence Bob Gates wanted more drones to carry on the day-to-day fight in Iraq and found himself in conflict with the U.S. Air Force, which wanted to continue building the fighters and bombers that it thought would be needed in the future.

"Gates sacked the chief of the U.S. Air Force and restricted the production of aircraft such as the stealth F-22 fighter and the B-21 bomber, in order to build the drones and other aircraft he needed.

"The result was that only a limited number of the extraordinary F-22s were built and the B-21 is still not in production. The impact of diverted spending and focus will be felt for a long time to come.

"The likely war with China, if it is ever fought by weapons of this type, is going to be fought by a very small number of modern stealth fighters, but mainly by U.S. fighters and bombers that are 20 to 30 years old.

"The result of all this is that the U.S. will not be able to marshal sufficient military power to deter China in the Western Pacific, possibly for years."¹

I have written about this and many other items related to shaping an effective force for the strategic age we are in in a book about the work of Secretary Wynne entitled: *America, Global Military Competition, and Opportunities Lost.*

The point is we are playing catch up in the face of the rise of he multipolar world, a world in which airpower matters even more than when Mosely was the Chief.

In providing the opening remarks to the seminar, General Moseley began his analysis by contrasting today's threat landscape with the relative simplicity of the Cold War era. "Think about 50 years ago, 60 years ago, there was a major threat. Now there are multiple threats," he observed, highlighting the emergence of what he sees as an unprecedented coalition of adversaries.

Unlike the bipolar world of the past, today's security challenges involve China's assertiveness, Russia's aggression, Iran's support for global terrorism, and North Korea's unpredictable behavior. More concerning, according to Moseley, is that "these folks seem to be collaborating and cooperating with each other, sharing munitions, sharing munition stocks." This cooperation represents a fundamental shift that complicates traditional deterrence strategies.

The general's assessment extends beyond state actors to include transnational criminal organizations affecting border security, particularly along the U.S.-Mexico border. This multifaceted threat environment, he argues, requires a robust and capable air force to maintain the rules-based international order that has underpinned Western security for decades.



General Mosley taking a question during his talk with the Sir Richard Williams Seminar, May 22, 2025

Perhaps the most startling revelation in Moseley's presentation was the current state of U.S. Air Force readiness. The statistics Moseley presented are concerning: ten different aircraft types that first flew over 50 years ago still comprise approximately two-thirds of the Air Force's total fleet of 2,600 aircraft. The KC-135 tanker, a workhorse of military operations, began delivery during the Eisenhower and Kennedy administrations.

This aging fleet problem is compounded by nearly four decades of continuous deployment. Since the early 1990s, when the first aircraft deployed to Saudi Arabia's eastern province, American air power has maintained a persistent presence in the Middle East. The cumulative effect has been devastating to equipment readiness and personnel morale.

THE BUDGET REALITY

Moseley's analysis of defence spending reveals a fundamental mismatch between mission requirements and available resources. With defence budgets hovering around 3% of GDP, he argued for a baseline of 4-4.5% under normal circumstances, and closer to 5-5.5% given the current recapitalization needs across all services.

The budget structure itself presents challenges. Approximately 50% of Air Force funding goes to personnel costs – necessary and appropriate but leaving limited resources for modernization. After accounting for infrastructure, operations, and maintenance costs for aging aircraft, the investment account that funds new capabilities consistently bears the brunt of budget cuts.

Moseley revealed that since 9/11, the Army has received \$65 billion annually from Air Force and Navy budgets – representing over a trillion dollars in shifted priorities that he suggests weak-ened air capabilities during a critical period.

Central to Moseley's argument is the primacy of air and space superiority as the Air Force's fundamental mission. While the service has five core mission areas – air and space superiority, intelligence/surveillance/reconnaissance, rapid mobility, global strike, and command and control – he emphasized that the first enables all others.

"What happens to those service components inside those strategic commons, or those operative domains, if the Air Force does not get air and space superiority?" Moseley asked rhetorically. "What happens to freedom of movement on the surface? What happens to movement to place? What happens to the logistics baseline?"

This perspective challenges recent discussions within Air Force leadership about whether air superiority remains affordable or achievable. Moseley's response is unequivocal: it's not just affordable, it's essential for all joint operations.

THE DRONE DEBATE: PROMISE AND PERIL

While acknowledging his role in pioneering unmanned systems – he commanded the first drone wing with minimal resources and a squadron commander who had "no people, no money," just "a folding card table and a blender" for making margaritas while figuring out operations – Mosley expressed concern about current enthusiasm for replacing manned aircraft entirely.

His skepticism is grounded in practical experience. Drawing parallels to dropped cell phone calls, he questioned the wisdom of relying on data links for platforms operating at high altitude and speed in contested environments. "I'm not willing to put something 9000 feet [away] in and out of weather at night that's running with me at 1.4 Mach that I can't keep a link to."

The general's vision for unmanned systems is more nuanced. He sees value in "little buddies" that can accompany manned fighters to suppress integrated air defence systems but remains nervous about autonomous air-to-air combat in crowded airspace. His 2005 priorities for the Air Force Chief Scientist, the legendary Mark Lewis, included hypersonic weapons, directed energy systems, and drones that could "run with the fighters" – but as supplements, not replacements.

Moseley concluded his remarks by pointing to recent military operations that demonstrate the continued relevance of manned air power. Israeli strikes in Iran, operations in Yemen, and the destruction of Iraqi Republican Guard divisions during Operation Iraqi Freedom all underscore that reports of manned aircraft's obsolescence are greatly exaggerated.

His broader message resonates beyond U.S. borders. The challenges he described – aging fleets, budget pressures, technological transitions, and complex threat environments – face many Western air forces. His emphasis on maintaining service identity while building joint capabilities offers a framework for allied cooperation without losing essential military expertise.

General Moseley's presentation serves as both warning and roadmap.

The warning is clear: current trends in force structure, readiness, and strategic thinking threaten the air superiority that has underpinned Western military dominance for generations.

The roadmap emphasizes returning to basics – understanding core missions, properly funding modernization, and maintaining the technological edge that air power requires.

His closing observation was I think particularly poignant: "Officers and NCOs are not born joint. They become joint. They're born a soldier, a sailor, an airman."

This insight challenges current thinking that views service identity as an obstacle to joint operations, instead positioning it as the foundation upon which effective joint capabilities are built.

The stakes, as Moseley makes clear, extend far beyond military readiness. They encompass the ability to deter aggression, work together effectively as allies, and allows what used to be called the West to deal effectively with the rise of the multi-polar authoritarian world.

NOTE ABOUT GENERAL MOSELEY

General "Buzz" Moseley played a significant role in Operation Iraqi Freedom, serving as the Combined Forces Air Component Commander (JFACC). He was responsible for all aspects of aerial operations, including mission planning, air tasking orders, and airspace management, and oversaw a large number of personnel and assets.

General Moseley successfully integrated joint and coalition forces, including those from the Royal Saudi Air Force, Royal Air Force, and Royal Australian Air Force, into a cohesive air campaign.

He was involved in the planning and execution of numerous missions, including those targeting Iraqi regime leaders and infrastructure, and those supporting ground forces.

General Moseley was known for his leadership and vision, and his ability to inspire and motivate his troops. He also served as a role model for other military leaders, and his accomplishments were recognized with numerous awards, including two defence Distinguished Service Medals.

CHAPTER 3 PUTTING THE NATURE OF THE MILITARY CAPABILITY THREAT FROM THE MULTI-POLAR AUTHORITARIAN WORLD IN PERSPECTIVE

IN ASSESSING how the question of trade-offs between longterm force development versus the need to prioritize ways to enhance the ready force in the short to mid-term, a critical consideration is the nature and scope of the military and security threat posed by the global players – the multi-polar authoritarian world -- changing the nature of the world order.

This can be difficult as the threat is complex and very specific to discrete challenges and global situations. There are questions of how to deal with "gray zone" threats, direct confrontations but through surrogates as is the case of the NATO-Russian war in Ukraine, and in the escalatory encounters which could lead to a global confrontation between the democracies and the authoritarians.

At the seminar, a comprehensive look at the nature of the threat being posed was provided by Professor Justin Bronk. The speaker came from the United Kingdom for the seminar, and he is, among other things, the Editor of RUSI Defence Systems. His presentation and his engagement on one of the panels provided a very well received and persuasive examination of the challenges which needed to be faced.

And unlike many presentations I have heard in the past on such issues, it really was comprehensive and connected a realistic view of Western forces with the kind of decision making which would need to be made in dealing with the authoritarians which threaten us and are crafting an alternative global order to that shaped by what we use to call the West.

Let me first turn to Dr. Bronk's presentation, then to the Q and A session, and then to his comments on the panel on which participated to give a wholistic view of his perspective.

THE PRESENTATION

Bronk's central thesis is that while Western nations debate future technologies and maintain diverse mission sets inherited from counterinsurgency operations, adversaries are focused on the specific problem of defeating Western air power. He warns that without immediate prioritization of stockpiles, training proficiency, and core combat capabilities, Western forces may be unprepared for the high-intensity conflicts they're likely to face in the near term.

This is what the ready force or the "fight tonight force" needs to deal with and to do so on a national and coalition basis.

The scale of the authoritarians commitment to defeating Western airpower is sobering. China produces over 100 fighters annually alongside dozens of AWACS platforms, maintaining approximately 55 KJ-500 airborne early warning aircraft in service. Far from viewing crewed aviation as obsolete, they're simultaneously developing multiple sixth-generation platforms while expanding their fleet of conventional fighters like the J-16 and J-20.

This isn't the frantic scrambling of nations trying to catch up – it's the methodical buildup of powers that understand exactly what they need and are willing to pay for it. When Russia, with a

GDP roughly the size of Italy's, can produce nearly 200 longrange precision missiles monthly while fighting an existential war, it demonstrates that capability production is often more about political will than economic capacity.

Faced with these sobering realities, Bronk argues that Western air forces have increasingly turned to technological solutions that promise to solve numerical disadvantages through innovation. The appeal of AI-enabled autonomous systems and "loyal wingman" concepts is understandable – they offer the tantalizing possibility of multiplying combat power without multiplying pilot training costs or political risks.



Justin Bronk presenting at the Sir Richard Williams Foundation seminar on May 22, 2025.[/caption]

Bronk provides a reality check to such a vision. Scratch beneath the surface of these technological promises, and troubling realities emerge. The widely publicized AI victories over human pilots in dogfighting scenarios rely on a crucial cheat – the AI receives real-time data about enemy aircraft positions that wouldn't be available in actual combat. Once two aircraft merge in close combat, radar becomes useless, and human pilots rely on visual cues and instinctive understanding developed through thousands of hours of experience. Programming an AI to replicate these almost subconscious skills would require camera systems and processing power that simply don't exist.

Even the most optimistic projections for "cheap mass"

autonomous systems suggest unit costs of \$20-30 million each – hardly the swarming capability many envision. When you need AESA radars, secure data links, and 1,000+ nautical mile range, physics and economics impose harsh constraints on how "cheap" these systems can actually be.

Bronk then highlighted a key area which affects the question of core competence of the Western forces against a growing ad increasingly credible adversary threat. While we debate future technologies, a more immediate crisis unfolds in our training pipelines. Western pilots increasingly fly 100-120 hours annually, far below the rates of their adversaries. Worse, much of this limited flying time is consumed by routine patrol missions that offer minimal training value for high-end combat scenarios.

The consequences are already visible. Twenty-one of the twenty-five U.S. fighter losses in the past decade resulted from spatial disorientation in poor weather conditions – pilots losing control of their aircraft in clouds. This represents a failure in one of aviation's most basic skills, instrument flying, and reflects the broader trend of training to currency rather than proficiency.

Meanwhile, Russian pilots emerge from three years of intensive combat operations with vastly improved skills and confidence. Chinese pilots conduct increasingly sophisticated joint exercises, practicing coordinated operations between air and naval forces that would have been impossible just five years ago. The experience gap that once heavily favored Western pilots is rapidly narrowing.

Bronk underscores his concern that Western responses have often been to push more training into simulators, justified by both cost considerations and the classified nature of many advanced tactics. While simulation certainly has its place, it cannot replicate the stress of flying a heavy, fuel-critical aircraft in actual weather conditions after hours in the cockpit. The fear of running out of fuel in a storm, the physical buffeting of turbulence, the disorientation when your inner ear contradicts your instruments – these realities shape pilot decision-making in ways that no simulator can fully capture.

The training crisis is compounded by fundamental geographic realities that require different solutions in different theaters. European nations possess abundant airfields and can adopt distributed operations concepts – Finnish and Swedish air forces demonstrate the effectiveness of refueling and rearming at regional airports within adversary targeting cycles. But Indo-Pacific operations face tyrannical distances with limited basing options, demanding different approaches entirely.

This geographic split increasingly drives Allied nations toward divergent capability development paths. European forces can optimize for shorter-range, more distributed operations, while Pacific allies require longer-range systems and different operational concepts.

For Professor Bronk the challenge is to be able to train for enhanced interoperability and yet to avoid the inefficiencies of completely separate development programs.

Then there is the heavy cost of prioritizing the land wars and the approach to airpower used in those wars. Over twenty-five years, Western air forces transformed from Cold War combat organizations into forces optimized for intervention and counterinsurgency operations. This meant substantial investments in intelligence, surveillance, reconnaissance, and lift capabilities – valuable assets that inevitably create constituencies resistant to change.

But the luxury of maintaining broad mission sets may be ending. If the choice is between retaining current force structures across all missions or concentrating resources on core warfighting capabilities, the mathematics of potential conflict suggest some painful cuts may be necessary. Every helicopter, ISR platform, or transport aircraft we maintain represents resources not invested in combat aircraft, pilot training, or munitions stockpiles.

The counterargument - that our forces are already too small

to cut anything – ignores the reality that these force structures were designed for different threats and missions. The question isn't whether we'll have to make trade-offs, but whether we'll make them deliberately now or have them imposed through combat losses later.

Then Bronk turned to what I consider a very critical challenge which is to have a more sustainable ready force.

Western air forces are only now beginning to procure significant quantities of standoff weapons specifically designed to defeat advanced air defence systems – capabilities that should have been priority purchases decades ago. The S-300 and S-400 systems now proliferating globally were designed in the 1990s and fielded in the early 2000s. Why are we only now buying the weapons needed to defeat them?

The answer often comes back to cost, but this reasoning becomes circular when our adversaries demonstrate that political will can overcome economic constraints. If Russia can sustain massive munitions production while fighting an existential war, surely Western nations can afford the weapons they need for deterrence during peacetime.

THE QUESTION-AND-ANSWER SESSION

First Question - Air Superiority vs. Mutual Denial Strategy:

The questioner asks about balancing investment between air superiority and defensive capabilities. Bronk explains that Russia is still actively trying to achieve air superiority in Ukraine by targeting Ukrainian air defences, particularly Patriot systems. He emphasizes that mutual denial currently benefits Ukraine because Russia has greater resources to exploit air superiority if achieved.

Investment Balance Recommendations:

Bronk argues for a mixed approach, drawing on Israel's experience with integrated air defence systems (Iron Dome, David's Sling, Arrow). Despite Israel's massive investment - about 40% of GDP in defence spending with substantial U.S. subsidies - their layered defence system only buys time (days to a week) for offensive operations. The key insight is that even comprehensive air defence is meant to enable offensive operations, not replace them.

He concludes that air power is "fundamentally offensive" and that gaining air superiority over contested areas remains essential for joint force operations to succeed.

Second Question - Australia's Range Challenge:

How to deal with Australia's specific challenge of limited combat aircraft range (700-1000km) compared to China's J-35 with 3000km range? What about investment priorities between long-range bombers (B-21), land-based missiles, or long-range drones?

Bronk's Response on Range Extension:

Bronk emphasizes that solutions depend on timeframes and highlights Australia's smart investment in electronic warfare capabilities. He explains that extending range requires disrupting Chinese targeting chains, as their long-range threats rely on third-party sensors rather than launch platforms alone.

For immediate needs, he suggests focusing on electronic warfare support, forward tanker operations, and using existing decoy systems rather than expensive new uncrewed platforms. For longer-term solutions, he sees the B-21 bomber as particularly suitable for Australia due to its security relationship with the U.S., though this relies on American orbital support capabilities.

The overarching theme is that range extension comes with significant costs, and max takeoff weight remains the best predictor of both acquisition and operating expenses.

PARTICIPATION IN PANEL ON COST PER EFFECT

Professor Bronk participated in a panel discussion which focused on cost-effectiveness in multi-domain air power opera-

tions. The panel featured senior Australian Air Force leaders discussing how to optimize defence spending while maintaining credible deterrence capabilities.

Professor Bronk highlighted a critical strategic evolution from "deterrence by punishment" (threatening retaliation after invasion) to "deterrence by denial" (preventing initial success). This shift reflects the reality that against nuclear adversaries, you can't credibly threaten their centers of gravity, and certain territories (like Taiwan or Eastern Europe) can't be traded for time.

This also was a key way to characterize what the focus of air power operations would need to be in case of a general conflict with authoritarian powers.

Professor Bronk returned to an issue which he dealt with in his presentism. He provided detailed analysis of the tension between cheap mass capabilities (like commercial drones) and robust military systems. While a commercial quadcopter might cost \$2,500, a military-grade equivalent with all-weather capability, encryption, and survivability features costs \$50,000 or more. The panel emphasized that both high-end exquisite systems and lower-cost mass capabilities have roles, but neither alone is sufficient.

CONCLUSION

Bronk is not sanguine about the time frame facing Western forces. Long range plans will deliver capabilities but not when they are needed in his perspective, one that is based in my view on a realistic reading of the current threat envelope.

The most sobering aspect of current trends is their timing. Multiple indicators suggest the next two to three years represent a particularly dangerous period. Adversary capabilities continue growing while Western readiness faces structural challenges. Historical patterns suggest that nations start wars when they believe they can win quickly and easily – a calculation increasingly favorable to our opponents. The United States faces the historical challenge of preparing for potential conflicts in both Europe and the Indo-Pacific simultaneously, a task that has consistently proven difficult for American forces. Our adversaries understand these constraints and have strong incentives to coordinate their actions to maximize pressure on overstretched Western capabilities.

None of these challenges are insurmountable, but they require acknowledgment that current trajectories are unsustainable. The path forward demands several uncomfortable admissions:

First, technological solutions alone cannot substitute for adequate numbers, proper training, and sufficient stockpiles. AI and autonomous systems will play important roles, but they cannot replace the fundamental requirements of air power.

Second, our adversaries' focus and determination represent strategic advantages that we must match through our own prioritization and resource allocation decisions. We cannot afford to spread resources across every mission and capability when facing opponents who concentrate on defeating our core strengths.

Third, the window for gradual adjustment may be closing. The luxury of maintaining current force structures while slowly building new capabilities assumes a timeline for change that may not exist.

The choice is stark but clear: maintain comfortable assumptions about Western air power superiority and risk catastrophic failure or make hard decisions about priorities while we still have time to implement them effectively. The adversaries we face have already made their choice – the question is whether we'll make ours before it's made for us.

CHAPTER 4 ENHANCING NON-KINETIC CAPABILITIES IN THE READY FORCE

GPCAPT MARIA JOVANOVICH, Chief of Staff of the Vice Chief of the Defence Force, underscored a crucial approach for enhancing the combat capability and success of the ready force.

This is the ability of deceiving the adversary to the point whereby they simply do not know where best to strike and to not be confident of their knowledge of your plans and your targeting operations.

At an earlier Sir Richard Williams seminar, one held in September 2023, she spoke of the nature of the C2, ISR and Counter ISR dynamic and highlighted her involvement at the NAWDC or Fallon Resolute Hunter exercises.¹ This exercise is run by the MISR officers at the naval ai wing training center, and my recent visits to NAWDC last October highlighted how the U.S. Navy is working hard to accelerate their ISR/Counter ISR capabilities.²

In part they are doing so because of the priority which the INDOPACOM commander, Admiral Paparo, has placed on these activities. Admiral Samuel Paparo, who assumed command of U.S. Indo-Pacific Command in May 2024, has made counter-Intelligence, Surveillance, and Reconnaissance (ISR) capabilities the cornerstone of his strategic vision. His stark assessment of future warfare challenges conventional thinking about military priorities and highlights a fundamental shift in how America must prepare for great power competition.

Admiral Paparo's most striking assertion is that modern conflicts will be won or lost before traditional kinetic operations even begin. In his view, counter-ISR operations in space and cyberspace represent "the first battle" that will determine whether U.S. forces can operate effectively or whether adversaries gain the upper hand through information dominance.

"If and when conflict comes, it is that C5ISR in space and cyber, that shall be the first battle and will be either the enabling capability for the joint force, or the Achilles heel for the PLA if that day comes," Paparo told lawmakers during his confirmation hearing in February 2024.³

This assessment reflects a fundamental evolution in military thinking. While previous generations of commanders focused primarily on platforms and firepower, Paparo emphasizes that victory in the 21st century belongs to whoever can "see, decide and act faster" than their opponent.



GPCAPT Marija Jovanovich presenting at the 22 May 2025 Sir Richard Williams Foundation seminar.

In her presentation GPCAPT Maria Jovanovich introduced the subject through highlighting historical examples of the importance of kinetic effects.

On June 1, 1944, as Allied forces prepared for the most ambi-

tious amphibious assault in history, Japanese Ambassador Hiroshi Oshima sent an encrypted message to Tokyo. The transmission revealed Hitler's confidence that the real Allied invasion would come at Pas de Calais, not Normandy — exactly where German forces were waiting in strength. What Hitler didn't know was that his "understanding" was the product of one of history's most sophisticated deception campaigns, demonstrating the extraordinary power of non-kinetic warfare.

Operation Fortitude, the centerpiece of the Allied deception strategy known as Bodyguard, achieved something remarkable. With just 4,500 personnel — including radio operators broadcasting fake traffic, engineers constructing dummy installations, and aircrew flying deceptive sorties—the Allies kept 345,000 German troops pinned down in Norway and elsewhere, away from the actual Normandy battlefield.

The operation's genius lay not just in its scope but in its integration. Fake radio transmissions simulated entire armies preparing for invasions that would never come. Inflatable tanks and wooden aircraft populated Scottish airfields and English ports. Double agents spread carefully crafted narratives. Even General Patton, whom the Germans considered the Allies' finest commander, was used as unwitting bait to sell the deception.

The asymmetry was staggering: less than 1% of the Normandy invasion force managed to neutralize forces twenty times their size. In one subsidiary operation called Ironside, just four double agents kept an entire Panzer division away from the real battle, convinced they needed to defend against a fictional landing near Bordeaux.

Fast-forward seventy years, and the principles remain remarkably consistent, even as the tools have evolved dramatically. When ISIS began terrorizing the Middle East in 2014, their sophisticated online propaganda machine proved as dangerous as their conventional forces, recruiting followers worldwide and coordinating attacks across continents.

The response came through Joint Task Force Ares, a coalition

effort that mapped ISIS's digital networks and identified ten critical nodes that controlled their entire online presence. Operation Glowing Symphony, launched in 2016, demonstrated the modern incarnation of Fortitude's principles: comprehensive intelligence, precise targeting, and devastating effect. ISIS communications collapsed, stolen passwords exposed sensitive data, and their propaganda apparatus—crucial to their recruitment and coordination—simply vanished.

Like Fortitude, Glowing Symphony succeeded because it integrated cyber capabilities with traditional military operations, creating synergistic effects that amplified the impact of kinetic operations on the ground.

Non-kinetic effects — encompassing cyber operations, electronic warfare, and information operations — offer modern militaries unprecedented opportunities for asymmetric advantage. These capabilities can operate simultaneously at tactical, operational, and strategic levels, often with cost-effectiveness that traditional kinetic operations cannot match.

Yet despite their proven potential, most militaries struggle to integrate these capabilities effectively. The reasons are both practical and cultural, rooted in institutional biases that favor conventional weapons over more subtle forms of warfare.

She argued that military culture celebrates the dramatic: fighter jets breaking the sound barrier, precision missiles finding their targets, elite units conducting daring raids. These kinetic capabilities capture imaginations, drive recruitment, and shape how militaries think about warfare itself.

This bias has profound consequences. While most people can name Operation Overlord or Market Garden, few have heard of Operation Fortitude — despite its arguably greater impact on the war's outcome. The seven-person London Controlling Section that orchestrated the entire Fortitude deception remains largely unknown, their extraordinary achievement overshadowed by more conventional military legends.

This cultural preference for "things that fly fast or go bang"
influences everything from capability acquisition to operational planning. Training exercises either exclude non-kinetic effects entirely or treat them as afterthoughts. Doctrinal development focuses on the integration imperative without providing practical guidance on implementation.

She argued that although current military doctrine acknowledges the importance of integrating kinetic and non-kinetic effects but it stops short of explaining how to achieve this integration effectively. While specific doctrines exist for cyber operations, electronic warfare, and information operations, these remain largely isolated stovepipes rather than integrated capabilities.

A 2024 RAND Corporation study of the U.S. Air Force found identical problems: doctrine that lacks explicit integration guidance, training scenarios that inadequately represent non-kinetic capabilities, and assessment procedures that fail to measure non-kinetic effectiveness.⁴

Historical successes like Fortitude and contemporary operations like Glowing Symphony point toward five critical requirements for effective non-kinetic integration:

Long-term strategic planning is essential. Fortitude's success built on intelligence assets and deception networks developed over years, not months. The overarching Bodyguard strategy was conceived in July 1943, with consistent objectives maintained through execution nearly a year later.

Proactive rather than reactive approaches allow militaries to shape conditions rather than merely respond to them. Nonkinetic effects require extensive preparation and cannot be improvised at short notice.

Multi-level integration ensures that tactical actions support operational objectives that advance strategic goals. Fortitude succeeded because individual deception operations reinforced the overall narrative at every level.

Centralized planning with decentralized execution balances coherent strategy with tactical flexibility. The London Controlling Section maintained strategic direction while allowing subordinate commands to adapt execution to local conditions.

High-fidelity intelligence feedback enables real-time adaptation and effectiveness assessment. Ultra intercepts allowed Fortitude planners to monitor German reactions and adjust their campaign accordingly—a closed-loop system that maximized effectiveness.

Integrating non-kinetic effects also raises profound questions that extend beyond traditional military concerns. As societies become more digitally dependent, the technologies that enhance military capability also create new vulnerabilities.

The U.S. Navy's recent decision to resume teaching celestial navigation reflects this reality—recognition that GPS-dependent forces need backup systems when facing adversaries capable of sophisticated electronic warfare.⁵

Information operations pose particular challenges for democratic societies. When entire populations become targets of information warfare, traditional boundaries between military and civilian responsibilities blur.

Nordic countries' "inoculation" programs against disinformation represent one approach, but questions remain about the appropriate role of military forces in what amounts to cognitive warfare.

Perhaps most fundamentally, democratic militaries must reconcile the use of information operations with their societies' values. As one scholar noted, disinformation represents a double threat to liberal democracies: being targeted by such operations undermines democratic institutions, but employing them may have similar corrosive effects on public trust and social cohesion.

Despite these challenges, the strategic imperative for integrating non-kinetic effects continues to grow. Modern conflicts increasingly feature adversaries who exploit the seams between kinetic and non-kinetic domains, using cyber attacks to complement conventional operations, information warfare to undermine social cohesion, and electronic warfare to degrade hightech military systems.

The asymmetric potential of non-kinetic effects — demonstrated from Normandy's beaches to ISIS's digital networks offers military organizations opportunities to achieve decisive advantages with relatively modest investments. But realizing this potential requires overcoming institutional inertia, cultural biases, and doctrinal gaps that currently limit integration efforts.

The lessons of Operation Fortitude remain as relevant today as they were eighty years ago. Success in future conflicts will likely depend not just on the ability to project kinetic force, but on the wisdom to integrate that force with non-kinetic effects that can shape, deceive, and disrupt adversaries in ways that pure firepower cannot achieve.

The question is not whether militaries will eventually master this integration — the strategic necessity is too compelling to ignore. The question is whether they will do so before the next conflict tests their capabilities in the crucible of combat, where the price of unpreparedness is measured not in missed opportunities but in lives lost and objectives unachieved.

As the ghosts of those seven planners in the London Controlling Section might remind us, sometimes the most decisive battles are won not by those who fight, but by those who think — and who understand that in warfare, as in chess, the most powerful moves are often the ones your opponent never sees coming.

CHAPTER 5 BUDGETING FOR AN ENHANCED READY FORCE

IF THE STRATEGIC environment is driving an enhanced need to bulk up the capabilities of the ready force, where will the money come from to do so?

And just as significantly, would recasting and reinforcing the fight tonight force with new means such as maritime autonomous systems change the approach to future force building?

Dr. Marcus Hellyer, Head of Research at Strategic Analysis Australia, delivered a comprehensive analysis of Australia's defence spending challenges and cost-effectiveness considerations. His presentation covered three main areas: defence budget analysis, cost evaluation frameworks, and strategic recommendations.

Dr. Hellyer painted a sobering picture of Australia's defence trajectory, arguing that current spending patterns prioritize expensive, long-term programs over the mass and agility needed for modern warfare. He called for fundamental reconsideration of what constitutes value in defence spending, emphasizing the need for cost-conscious responses that can deliver relevant capability in meaningful timeframes rather than exquisite platforms in distant decades



Dr. Hellyer speaking at the Sir Richard Williams Foundation seminar on May 22, 2025.

The problem begins with where the money is actually going. Of the \$50.3 billion "unprecedented increase" in defence spending, all but \$1 billion is allocated to just two maritime programs: nuclear-powered submarines and the General Purpose Frigate program. This represents a dramatic shift in defence priorities, with maritime capabilities now consuming 38% of total investment spending — more than land, air, and cyber capabilities combined.

"We've essentially created a fourth service with the SSNs," Hellyer explained, noting that the submarine program alone is larger than the entire Air Force capital budget. When combined with other naval spending, maritime programs now outspend the Army and Air Force together.

This maritime focus might seem reasonable given Australia's geography and the strategic importance of the Indo-Pacific. But Hellyer argues the current approach is fundamentally flawed. The \$27 billion price tag for just three Hunter-class frigates, he suggests, "makes no sense whatsoever" outside the peculiar world of Australian defence politics.

Hellyer underscored that these expenditures won't deliver meaningful capability for decades. Australia might receive its first domestically-built nuclear submarine around 2040 — if all goes well — after spending \$100-150 billion. Meanwhile, the strategic environment continues to deteriorate.

The deeper issue, according to Hellyer, is Australia's addiction to "exquisite platforms" delivered in tiny numbers over extended timeframes. While the Australian Defence Force pursues perfect solutions, adversaries have remembered a fundamental truth: in warfare, mass matters.

This reality is playing out in real-time conflicts. In the Red Sea, Houthi forces using relatively cheap weapons forced the United States to expend expensive SM-2 and SM-6 missiles in defensive responses — ultimately leading to what Hellyer describes as President Trump's unilateral declaration of victory and withdrawal, essentially because the U.S. was running out of ordnance.

"I'm still struggling to understand how we think we're going to achieve air superiority against anything resembling a peer adversary," Hellyer observed, highlighting the fundamental mismatch between current procurement strategies and battlefield realities.

The problem extends beyond just acquisition costs. Operating expenses are skyrocketing across all platforms, with air combat aircraft showing particularly dramatic increases in cost per flying hour. Each new piece of equipment is more expensive to sustain than what it replaces, creating a spiral of rising costs and shrinking capability.

To fund these maritime megaprojects, Defence has had to cut \$70-80 billion worth of other capabilities from its integrated investment program. Gone are air and missile defence systems, Navy tankers, and hundreds of infantry fighting vehicles. Even a fourth air combat squadron of F-35s was sacrificed to the maritime altar.

What remains, Hellyer argues, isn't really a "focused force" ----

the government's preferred term — but simply "what you're left with once you've kicked all those other things out."

Critically, nothing has been removed from the list of missions the government expects the ADF to accomplish, meaning Australia is asking its military to do more with less.

Hellyer highlighted the negative effect from what he called "zombie projects" — programs that represent future sunk costs the military hasn't even spent yet. These commitments will lock Australia into expensive, outdated approaches for decades, creating what he terms "the dead hand of sunk costs" that constrains future decision-making.

While Australia pursues small numbers of expensive platforms, potential adversaries are taking a very different approach. Hellyer points to China's electric vehicle production — 12 million units annually — as an indicator of what the country could achieve if it decided to mass-produce military systems.

"Large UUVs [unmanned underwater vehicles] are essentially underwater EVs, same level of complexity, same level of difficulty," he explained. "They only need to take that much of that capacity and start producing uncrewed underwater EVs, and they will be able to produce not just tens, but hundreds of thousands of them."

The implications are significant. Any strategically important body of water in the Indo-Pacific could soon be swarming with Chinese underwater drones, fundamentally altering the strategic balance. Meanwhile, Australia is spending hundreds of millions of dollars to acquire just 24 Group 3 drones — even as military planners acknowledge they might lose five per day in actual combat.

But for Hellyer, the rise of uncrewed systems represents more than just new technology — it's a fundamental shift in how warfare works. Ukrainian forces have demonstrated that small, relatively cheap drones can sink ships, shoot down helicopters and fast jets, and conduct land strikes. These aren't niche capabilities; they're reshaping the battlefield. "Do not look at uncrewed systems as a replacement for a manned platform," Hellyer warned. "What they are doing is making your manned platform irrelevant or making it unable to operate effectively with acceptable levels of risk."

This technological shift amplifies the cost-effectiveness problem. Australia's adversaries are proving "much better at assessing cost effectiveness than we are," using inventive, lowcost approaches to impose disproportionate costs on traditional military forces.

Hellyer's critique extends beyond specific programs to challenge fundamental assumptions about military procurement. He distinguishes between three different analytical approaches: cost-benefit analysis, cost-effectiveness, and value-for-money assessment.

The key insight is that what constitutes "value" in defence spending is changing rapidly. In an era of potential wars of national survival rather than wars of choice, traditional metrics may be inadequate. Instead of seeking the most cost-effective way to hit a fixed number of targets, military planners should focus on sustainable mass, assured supply chains, and the ability to scale production rapidly.

"What's valuable in an age of wars of choice is not the same as what's valuable in an age of wars of necessity and national survival," he argued. This suggests prioritizing affordable mass over exquisite perfection, assured supply during crisis over peacetime efficiency, and "good enough" capabilities now rather than perfect solutions in the distant future.

Hellyer's analysis doesn't offer easy solutions, but it does suggest some principles for reform. Australia needs to escape what he calls the "cult of bigger" and "cult of complexity." The fact that the submarine program will create 20,000 jobs isn't a benefit — it's an opportunity cost representing 20,000 talented Australians who could be contributing to other critical needs.

The is a major challenge in Hellyer's view of overcoming institutional momentum. Current programs have powerful

constituencies, and changing course requires confronting uncomfortable truths about past decisions. But the alternative continuing down the current path — may lead to a military that consumes enormous resources while becoming increasingly irrelevant to actual defence needs.

As Hellyer concluded his presentation: "When you combine the inventiveness of the Ukrainians, the determination of the Houthis and the scale of China's industrial and technological base, we are going to be swamped."

CHAPTER 6 ENHANCING THE READY FORCE: PROVIDING THE OPTIMAL MIX TO DELIVER THE DESIRED COMBAT EFFECT

SUSTAINING AND EQUIPPING the ready force in dynamically changing operational conditions is a major challenge facing the ADF and those of its allies.

A critical metric for evaluating approaches for how to deliver a cost desired effect is simply comparing the use of force packages or what I prefer to call the combat clusters up against the effect you wish to create.

My most recent book entitled *A Paradigm Shift in Maritime Operations* focuses on how to create distributed maritime effects without over reliance on capital ships by leveraging new technology options or reshaped or redesigned ones with legacy systems.

Several speakers at the seminar highlighted the example of the U.S. Navy expending high-cost ordinance against an enemy using cheap weapons. This is a force exchange ratio that if used against a peer competitor would have disastrous results.

It should be noted that the U.S. forces certainly got the point and what was not mentioned at the seminar is how the defeat strategy evolved for the Houthi weapons. In terms of tactical employment, the USAF came up with a good way to defeat cheaper weapons with an approach of their own. As Brian Morra noted in an interview I did with him:

Recently I talked with my colleague Brian Morra, who served in the USAF and worked in defense industry for several decades. We discussed the challenge of how to enhance "the fight to night one force" in the short to mid-term.

He started by citing an example which highlights how the force can leverage its C2 and ISR advantages mentioned earlier by Secretary Wynne to shape new con-ops. The case is of the USAF working with the U.S. Navy in ship defense – both combat and commercial – against the Houthis in the Middle East.

As he noted, the Houthis have been using a wide range of strike capabilities against shipping. The dilemma of using high-cost weapons to defend against much cheaper projectiles has been a key problem.

The USAF came up with a con-ops innovation to deal with the problem. F-16s operating in the Middle East have been using their LITENING targeting pods to identify targets and to kill or degrade those targets using laser guided weapons hitherto used in air to ground operations. The aircraft can carry weapons for higher value targets but have used a much lower priced weapon to kill many of the Houthi's projectiles.¹

This kind of thinking – leveraging core advantages but empowering the force with a much larger weapons arsenal of lower cost weapons – is clearly one example of the way ahead.²

Chris McInnes, Executive Director of the Air Power Institute, provided a way to think about this problem of crafting a costeffective approach to the use of resources. And such an approach I would add requires thinking not just about force employment but the acquisition and sustainment of what we might call a smart ready force given the tools with which it can deliver cost effective desired effects.



Chris McInnes speaking at the Sir Richard Williams seminar May 22, 2025.

This presentation by McInnes focused on the concept of "operational opportunity costs" in Australian defence planning, using HIMARS missile systems as a case study. A critical factor frequently gets overlooked in defence planning: the operational opportunity costs that ripple through an entire defence force when any single capability is deployed.

McInnes highlighted this blind spot using the popular HIMARS missile system as a case study that reveals uncomfortable truths about how we evaluate military investments.

On paper, the High Mobility Artillery Rocket System (HIMARS) looks like a bargain. At roughly \$8 million per launcher, it's a fraction of the cost of ships or aircraft. Defense advocates have championed systems like HIMARS as quick, cheap alternatives that can provide strike capability across multiple domains. The logic seems sound: why spend billions on complex platforms when relatively simple land-based missiles can do the job?

The answer lies in what economists call opportunity cost – not just what you spend on something, but what you give up to get it. When McInnes examined what it actually takes to deploy HIMARS in Australia's strategic environment, the "cheap" option suddenly looked expensive.

A single HIMARS battery doesn't operate in isolation. It requires medium trucks to carry missile pods that weigh over two tons each and cost more than \$4 million per pod. The complete battery needs maintenance vehicles, command systems, air defense, force protection, and logistics support. Deploy this battery to a forward location like Christmas Island, and you're looking at either 16+ C-130 transport flights or a multi-day sea voyage requiring naval escorts and air cover.

Suddenly, that \$8 million launcher has consumed a significant portion of Australia's limited airlift capacity or tied up precious naval assets for nearly a week – assets that can't be doing anything else while they're moving missiles around.

This matters because Australia faces a unique strategic challenge that McInnes describes vividly: we are "an archipelago within a continent."

He argues that "Our major population centers are effectively islands separated by vast distances of land and sea. Perth is as isolated from Sydney as London is from Moscow. Darwin is closer to Jakarta than to Canberra.This geography means Australia cannot make the traditional choice between forward defense and homeland protection. We must do both, simultaneously, with a relatively small military force spread across enormous distances. Every capability deployed in one location represents capabilities unavailable elsewhere."

George Friedman once described Australia as "a creature whose primary circulatory system is outside of the body" – extraordinarily vulnerable because Australia's vital connections run through potentially hostile environments. Whether those connections are sea lanes carrying trade, air routes linking cities, or communication networks binding the continent together, they all require protection across multiple domains.

In this context, air power emerges as particularly valuable, not despite its high upfront costs but because of its operational efficiency. Once airborne, aircraft impose relatively few opportunity costs on the rest of the force. They don't need convoy protection, forward bases can be established quickly, and the same platforms can shift between roles and locations rapidly.

McInnes illustrated this with a hypothetical strike package built around current Australian plans: integrated air assets that could deliver over 13 tons of warhead to targets within 72 hours, with enough diversity of weapons and sophistication to penetrate modern defenses. This package uses less than a third of Australia's planned fleets – except for aerial refueling tankers, which it consumes at about half the available capacity.

This exception is crucial. Tankers are essential for any air operations across Australia's distances, making them a critical bottleneck. The opportunity cost of any operation must be measured not just in the aircraft directly involved, but in the tanker support that becomes unavailable for other missions.

Raw firepower matters less than the ability to package that firepower effectively and effective packaging requires exactly the kinds of flexible, high-capability platforms that look expensive in budget debates.

Perhaps most provocatively, McInnes questions whether Australian defence professionals are intellectually prepared to make difficult arguments about capability priorities. Drawing on observations by British Air Marshal Ed Stringer, he asks whether Australia's emphasis on "integrated operations" might actually be counterproductive if it prevents leaders from advocating for the most effective approaches.

The question cuts to the heart of defence culture: Are we too committed to fashionable concepts like multi-domain operations to honestly assess when less integrated approaches might be more effective? Have we become so focused on looking modern and sophisticated that we've lost sight of what actually wins wars?

The implications extend far beyond any single weapons system. If Australia is serious about deterring conflict in the Indo-Pacific, McInnes argued that Australia needs more sophisticated ways of evaluating military investments that account for their full operational costs and strategic impact.

This doesn't mean abandoning systems like HIMARS, which clearly have valuable roles in Australia's defense. Rather, it means being honest about what those systems can and cannot do, and what other capabilities we sacrifice when we deploy them.

More fundamentally, it means recognizing that in Australia's unique strategic environment, expensive platforms that operate efficiently may be better investments than cheap systems that consume disproportionate support. The most important question isn't what something costs to buy, but what it costs to use it effectively.

As Australia faces an increasingly challenging strategic environment with limited resources, these distinctions may determine the difference between credible deterrence and costly failure. The time for comfortable illusions about cheap military solutions is over. The real work of defence planning – understanding the hidden costs and difficult tradeoffs – is just beginning.

CHAPTER 7 AIR POWER AND THE CHALLENGE OF SHAPING AN EFFECTIVE READY FORCE WHICH CAN DELIVER DETERRENCE BY DENIAL

THE FIRST OF two panels held at the Sir Richard Williams Foundation seminar on May 22, 2025 was entitled a "Cost Per Effect" panel.

It was chaired by Air Marshal (Retd) Darren Goldie and the panelists were:

- Air Vice Marshal Glen Braz, Air Commander Australia.
- Professor Justin Bronk.
- Air Vice Marshal John Haly, Head Military Strategic Plans.

Air Marshal (Retd) Darren Goldie, Australia's former Air Commander Australia and Australia's inaugural National Cyber Security Coordinator within the Department of Home Affairs, opened with a reframing of military cost analysis. "Cost per effect," he explained, "is far more complex than the old 'cost per kill' calculations."

When Australia fires a maritime strike weapon over the

horizon — of which the government has invested heavily —the true cost isn't just the missile itself. It includes a proportional share of pilot training, the targeting enterprise, intelligence systems and everything else required to "render that ship useless."

But the calculation becomes even more complex when considering deterrence effects. "We're talking about a submarine program that exceeds \$300 billion," Goldie noted. "We will get submarines that ideally will never fire a weapon. The effect you seek there is deterrence."

This distinction matters enormously for how Australia approaches defense spending. As Clausewitz observed, "the value of the object determines the measure of the sacrifices by which it will be purchased." When the object is Australia's sovereignty, the acceptable cost ceiling rises considerably.

Professor Justin Bronk highlighted the strategic shift of the past decade which can be described as the evolution from "deterrence by punishment" to "deterrence by denial."

The old model — threatening massive retaliation after an invasion— no longer holds credibility against nuclear-armed great powers. "We're not going to downtown Beijing. We're not going to downtown Moscow. They'll nuke us, let's be clear," Bronk stated bluntly.

Instead, the focus has shifted to preventing initial success. In Eastern Europe, this means stopping Russian advances before they can establish occupation zones. In the Indo-Pacific, it means preventing Chinese forces from gaining a lodgement in Taiwan —because "you'll never kick them out if you do."

This strategic shift has profound implications for capability development. Rather than building forces optimized for deep strikes against enemy homelands, the emphasis is on systems that can credibly deny an adversary's initial objectives.

Air Vice Marshal Glen Braz emphasized that air power remains "fundamentally central to the national defense strategy." Australia's ability to project force quickly, deliver effects at

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long range, and provide options to government aren't future aspirations — they're current realities that need constant refinement.



The panelists in the cost per effect panel at the Sir Richard Williams Foundation seminar on May 22, 2025.

"We need to find smarter, faster, more agile ways to deliver air power that makes a difference at scale, at range and at speed," Braz explained.

"This isn't just about buying platforms; it's about building comprehensive capability through people, preparedness, and integrated systems."

The challenge is particularly acute given Australia's strategic geography. The National Defence Strategy calls for moving resources north but infrastructure development takes time. In the interim, forces must manage risk while building credible deterrent capabilities with existing assets.

Much of the conversation by the panel centered on people rather than platforms. Braz commands approximately 12,000 personnel across Air Force capabilities, and he's acutely aware that technology alone doesn't deliver effects.

"This is a human endeavor," he emphasized. "These humans might use tools that are increasingly uncrewed or increasingly autonomous, but it's a human endeavor."

The Air Force is adapting by developing more flexible personnel who can operate across multiple roles while maintaining core technical proficiency. "We're typically very specialist and very bespoke," Braz noted, "but we need to broaden people's aperture and use their intellect and talent in a myriad of ways."

This isn't about lowering standards — Air Force personnel remain "incredibly proficient" in their specialist roles. Instead, it's about accepting calculated risk in how people are employed while building resilience through cross-training and adaptability.

The panel spent considerable time examining the seductive promise of cheap mass capabilities. Commercial drones costing \$2,500 might seem like an obvious alternative to expensive military systems, but Bronk provided a reality check on the true costs of military-grade capabilities.

"You can have a small quadcopter that costs \$2,500, but it doesn't work in icing conditions, high winds, heavy rain, and doesn't have night-capable cameras," Bronk argued. Make it capable of all those things, "and it's no longer \$2,500 — it's now \$50,000, and you cannot have thousands of them."

The challenge becomes even more complex for longer-range systems relevant to Indo-Pacific distances. A basic airframe for 1,000-kilometer range costs about \$25,000, but adding encrypted data links (\$70,000), AI-powered navigation, seekers, and warheads quickly pushes costs above \$200,000 per unit.

This doesn't mean cheap systems lack value — they can impose costs on adversaries by forcing them to expend expensive interceptors. But they complement rather than replace highend capabilities.

Space capabilities are becoming more important as

Australian and allied forces focus on effective ways to distribute force. As systems become more disaggregated and autonomous, they become increasingly dependent on space-based communications, navigation, and intelligence.

"The more you rely on one-way systems, including longrange strike munitions," Bronk observed, "the more you're likely to be reliant on that space situational awareness picture."

Air Vice-Marshal John Haly, Head of Military Strategic Plans, emphasized the importance of "minimum viable capability" systems that are "good enough on time" with the ability to be upgraded, rather than "exotic, wonderful and too late."

The panel discussed as well how to characterize the threat in relation to a realistic approach which Australia can take to the threats in its region and beyond. As Haly noted, "we shouldn't pretend that what we're preparing for is Australia against a great power alone and unafraid. That's not the case."

Rather, Australian forces need to be prepared to prevail against the subset of threats likely to be directed against Australia as part of a broader conflict. This more realistic framing helps maintain confidence while acknowledging the serious nature of potential challenges.

The panel's conclusions suggest several key principles for Australian defense planning:

- Integration over independence: Modern military effects require seamless coordination across domains, with space and cyber capabilities as critical enablers rather than separate domains.
- People as the foundation: Advanced technology amplifies human capability but doesn't replace the need for skilled, adaptable personnel who can operate effectively under pressure.
- Strategic patience with tactical urgency: Major capability developments take time, but forces must maintain readiness and manage risk in the interim

through innovation, training, and smart resource allocation.

• Alliance integration: Australia's strategic challenges are best addressed through deeper integration with allies rather than pursuing independent solutions.

As the discussion concluded, Braz offered a note of measured optimism: "I am positive that our great people, well equipped and well trained, can do what the nation needs."

In the context of a significant shift in the strategic framework and constrained resources, smart choices about capability development, force structure, and strategic priorities, a cost per effect framework provides a tool for making those choices

The challenge isn't just building a military that can fight and win, but one that can deter conflict through credible capability and strategic clarity. In that mission, every dollar spent, and every person trained becomes part of a larger equation that ultimately determines whether Australia's sovereignty can be preserved without having to test it in combat.

Success depends on smart resource allocation rather than simply buying cheap or expensive — it's about understanding what effects are needed and the most efficient ways to achieve them.

CHAPTER 8 THE NEED TO SPEED DELIVERY FOR THE READY FORCE AND ENABLING A MORE COST-EFFECTIVE FUTURE FORCE

THE SECOND PANEL during the Sir Richard Williams seminar held on May 22, 2025 was composed of members of the Australian defence industry and was chaired by Katherine Ziesing, Sir Richard Williams Foundation. She posed questions throughout and drove a more integrated discussion than would have occurred otherwise.

The members of the panel were as follows:

- Kendell Kuczma, Lockheed Martin
- Nick Leake, Optus.
- AVM (Retr) Robert Denney, Northrop Grumman Corporation.
- Bradley Thompson, Phantom Works., Australia, Boeing.
- Jim Gardner, Raytheon.



The industry panel from left to right: Jim Gardner, Raytheon, Nick Leake, Optus, Kendell Kuczma, Lockheed Martin, AVM (Retd) Robert Denney, Northrop Grumman Corporation and Bradley Thompson, Phantom Works., Australia, Boeing.

The panel painted a picture of procurement processes that are expensive for both industry and government, while failing to deliver the rapid capability development that contemporary threats require.

The panel's most striking moment came when moderator Katherine Ziesing asked for a show of hands from audience members who had written responses to defence tenders. Nearly every hand went up. When asked who thought it was a "brilliant experience," every hand went down.

"We think it's hard to write, but how do you go from one to 10 [tenders] and actually do the evaluation?" asked Kendall Kuczma, Lockheed Martin's program director for Australia and New Zealand. "That's hard work... let's try and make it three, not 10."

The problem isn't just the number of responses. Rob Denney, country executive for Northrop Grumman Australia, argued that the current system's emphasis on probity is actually driving costs up by limiting transparency.

"The most fair way you can do anything is complete openness," Denney said. "If everyone was given a full view of what defense wants, what the requirements are, what the budget is, they can try and get the best solution. But we aren't having that genuine interactive discussion between defense and industry."

Boeing's Brad Thompson, who serves as director of Phantom Works Australia and chief architect of the MQ-28 Ghost Bat drone, drew a parallel to motorsport to illustrate how defense acquisition needs to change.

"The car at the start of the [Formula 1] season will finish last at the end of the season, and the car at the end of the season only has 15% common components," Thompson explained.

"They have a method to evolve their systems dynamically. We need to make ourselves look more like Formula 1, rather than traditional defense aerospace."

This agility imperative isn't theoretical. Thompson noted that electronic warfare cycles in Ukraine are just two weeks, raising questions about whether traditional defense development timelines measured in years or decades can respond to rapidly evolving threats.

The panel repeatedly returned to the concept of "affordable mass" – the ability to field large numbers of lower-cost systems rather than relying solely on small numbers of exquisite, expensive platforms.

Raytheon's Jim Gardner pointed to recent U.S. Navy operations in the Red Sea, where warships expended nearly half a billion dollar's worth of missiles defending against relatively cheap Iranian-backed Houthi drones and missiles. The U.S. response has been to integrate lower-cost interceptors like the Coyote system onto ships to provide "magazine depth" at affordable cost points.

"You've got to be able to address all those effects at one time," Gardner said. "How you create that magazine depth — that's thinking about cost per effect."

Optus's Nick Leake offered his perspective as a commercial satellite operator, highlighting successful defence-commercial partnerships that have delivered capability while sharing costs.

"In 2002, we worked with defence and built the world's

biggest commercial defense spacecraft in the C1 satellite, and that's still carrying the defence payload," Leake said. The approach allowed defence to access space-based capabilities without bearing the full cost of a dedicated military satellite.

Leake also warned that Australia risks falling behind in space capabilities, noting that China has been launching new satellites at a rapid pace while improving their intelligence, surveillance, and reconnaissance capabilities.

Despite concerns about flattening defence budgets, the panel's industry representatives insisted their companies remain committed to Australian operations. Several noted that Australia's strategic relationship with the United States provides access to technologies that might not be available elsewhere.

"Australia is still one of the top countries on Lockheed's growth path because of the capabilities and the relationship we have," Kuczma said, noting the company has grown to about 1,700 people in Australia.

The companies are also looking to develop capabilities in Australia that can serve global markets, potentially helping offset development costs through exports.

The panel's prescription for reform centered on several key changes:

- Earlier Engagement: More dialogue between industry and defense before formal tender processes begin, allowing requirements to be shaped by technical and cost realities.
- Transparency: Open discussions about budgets, requirements, and technical trade-offs rather than adversarial procurement processes.
- Simplified Processes: Limiting tender participants to realistic contenders and streamlining evaluation processes.
- Digital Engineering: Embracing modern development

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approaches that enable rapid iteration and evolution of capabilities.

As Thompson put it: "We need to have an environment where industry, the designer, and the user can collaborate and iterate through design trades dynamically to really find that knee in the curve" between capability and cost.

Perhaps the most important message from the panel was that cost-effective defense acquisition requires treating industry as a partner rather than an adversary.

"Being cost effective is a team sport," Denney emphasized. "Defence and industry are more closely intertwined than we sometimes think."

With Australia facing an increasingly complex strategic environment and constrained budgets, the industry's call for procurement reform is essential for national security in an era where the speed of capability development may determine the outcome of future conflicts.

CHAPTER 9 AN UPDATE ON THE ROYAL AUSTRALIAN AIR FORCE: A CONVERSATION WITH AIR MARSHAL CHAPPELL

AT THE MAY 22, 2025 Sir Richard Williams Foundation Seminar, Air Marshal Geoff Brown (retired, former Chief of Air Force 2011-2015) talked with Air Marshal Chappell (current Chief of Air Force since July 2024) about the current state of the RAAF and the way ahead.

Air Marshal Chappell emphasized that the Royal Australian Air Force is highly regarded globally, built on over a century of investment in people and training.

- During the Pitch Black 24 exercise, involving 20 nations and 4,500 personnel, Australian aviators demonstrated exceptional crisis response when an Italian pilot was forced to eject. Within minutes, Australian aircraft were overhead providing assistance, leading to the pilot's recovery within 90 minutes despite being 90 miles from Darwin.
- Even more dramatic was a life-saving mission to Lord Howe Island, where a C-27J Spartan aircraft battled severe weather conditions — winds gusting to 40

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knots against limits of 25 knots — to evacuate a sixyear-old boy suffering from sepsis. The crew successfully landed on their sixth and final approach, demonstrating the kind of skill and determination that defines the service.

• Perhaps most telling were his accounts of P-8A Poseidon operations in contested airspace over the South China Sea, where young officers and noncommissioned officers conducted Australia's most sensitive missions while facing aggressive intercepts by foreign fighter aircraft. The professionalism displayed by crews comprising flying officers and corporals in these high-stakes encounters reflects the quality of training and character development within the service.



The conversation between Air Marshal (Retd) Brown and Air Marshal Chappell at the May 22, 2025 Sir Richard Williams Foundation seminar.

Contrary to widespread concerns about defense recruitment, the Royal Australian Air Force has actually grown by 685 people in the past year, reaching its largest size since 1998. The statistics tell a compelling story of organizational health:

- Total separation rate of just 6.9%, well within the healthy range for large organizations.
- Voluntary departures at only 3.6% annually.

• Involuntary separations at 0.5%, representing about two people per day who fail to meet Air Force standards.

"We have young Australians and not so young Australians lined up around the corner looking to be recruited," Chappell noted, though he acknowledged some administrative challenges in the recruitment process that need addressing.

The real challenge lies not in numbers but in experience levels. The Air Force faces a shortage of supervisory personnel — corporals, sergeants, and warrant officers — partly due to COVID-era departures and competition from growing defense industries.

Drawing lessons from the ongoing conflict in Ukraine, Chappell emphasized how Russia's failure to achieve air superiority stemmed from fundamental doctrinal flaws dating back to the Spanish Civil War, where air power was treated as subservient to land forces rather than as an independent domain.

"They weren't structured to try and gain and maintain air superiority over what was an inferior force," he observed, noting that had they achieved air dominance, "everything would have come easier for them and almost impossible for the Ukrainians."

However, he cautioned against directly applying Ukraine lessons to Australia's strategic context. Any future conflict in the Indo-Pacific would unfold very differently — arriving "incredibly quickly" across vast distances, potentially reaching from "the Northern Rock of Bathurst Island to the southern tip of Tasmania in seconds to minutes in cyber and within 15 minutes, potentially physical."

Air Marshal Chappell underscored that Australia is in the midst of a significant capability transformation with approximately \$1.8 billion invested in advanced strike weapons. The inventory will include 200 Long Range Anti-Ship Missiles (LRASM), 80 Joint Air-to-Surface Standoff Missiles Extended Range (JASSM-ER), and 63 AGM-158C LRASM missiles across Super Hornet, Growler, and eventually F-35 platforms.

Recent exercises demonstrated the potential of these capabilities, with strike packages flying 2,400 nautical miles from Australia's east coast to simulate targets within one minute of planned timing. "You take that combat radius from Darwin or Curtin or Learmonth, that takes you into the northern South China Sea," Chappell noted.

But Chappell identified clear priorities for additional investment, using a boxing metaphor: "There's no point putting muscles on arms as a boxer if you've got a weak chin and you can't cover your core. If you're unconscious on the canvas, then the big arms aren't going to matter."

His top priorities include:

- Integrated Air and Missile Defense: Described as critical infrastructure protection, with active defense capabilities under development through Air 6500 program working with industry and U.S. partners.
- Counter-targeting Capabilities: As Air Marshal Chappell noted: "The more we can poke out the eyes and the ears and the other senses of a competitor when we come to fight them, then the easier everything else gets."
- Aerial Refueling: Air Marshal Chappell underscored: "You can't have enough gas airborne," emphasizing the need for either more tanker aircraft or autonomous collaborative platforms carrying fuel and sensors.
- Weapons Stockpiles: Acknowledging that advanced weapons will be consumed rapidly in high-intensity conflict, similar to what's observed in Ukraine, clearly finding ways to build weapons stockpiles is an urgent and key priority.

Looking beyond traditional defense structures, Chappell

advocates for leveraging Australia's robust civilian aviation sector to enhance national air power capacity. Unlike some other industrial sectors relevant to defense, Australia's aviation industry is "really vibrant, really capable" with significant untapped potential for defense cooperation.

This concept would mirror the Navy's Australian Maritime Defense Council, creating frameworks for integrating civilian capabilities during crises while maintaining industry expertise critical to ongoing air power generation.

Central to Chappell's strategic thinking is a refined approach to deterrence focused not on nations or militaries, but on what he terms "malign minds" — the decision-makers who might choose to escalate from strategic competition to conflict.

"We've got to focus on that target, then we've also got to understand that deterrence requires capability with credibility, and it's communicated in a way that's comprehended by those targets," he explained.

This philosophy emphasizes that deterrence comes not just from acquiring future capabilities or conducting current operations, but from demonstrating through force generation exercises that Australia can "continue to deliver, degrade, disrupt, destroy, defeat" while remaining "highly lethal, highly survivable."

As Australia develops its 2026 National Defense Strategy, Chappell argues for ensuring air power's role is properly recognized within the broader maritime strategy. While acknowledging that the service has benefited from two decades of focus on high-end training rather than being consumed by Middle Eastern operations, he warns against complacency.

"We're not going to remain in a pretty good place if we don't get more focused attention on air power," he emphasized, noting that Australia's geography — three oceans and an archipelago is fundamentally covered by air, with air power providing both lethality and survivability that enhances all other services' capabilities.

CHAPTER 10 SHAPING A WAY AHEAD FOR THE AUSTRALIAN DEFENCE FORCE IN THE CONTEXT OF GLOBAL STRATEGIC TRANSITION

AT THE SEMINAR, Air Marshal Robert Chipman, Vice Chief of the Australian Defence Forces, recently outlined the nation's evolving approach to national security in a comprehensive address.

Chipman describes Australia's security environment as "complex and deteriorating," with the international system under strain from great power competition between China and the United States. He emphasizes that hard power has become preeminent again, with the Indo-Pacific as the epicenter of this competition. The risk of conflict is assessed as increasing, with reduced strategic warning time.

The comfortable certainties of the post-Cold War era have evaporated. China's rise and its challenge to the established international order, combined with America's more selective engagement globally, has created what Chipman describes as a fundamentally different strategic landscape. Unlike the Cold War's "perverse clarity" of mutually assured destruction, today's great power competition lacks the stabilizing frameworks of arms control and non-proliferation agreements.

This shift has profound implications for Australia. The Indo-Pacific has become the epicenter of great power competition, placing Australia at the geographic heart of rising tensions. The traditional buffer of distance that once provided strategic warning time has been compressed by technological advances and increasingly bold grey-zone activities by state actors.



Air Marshal Chipman speaking to the Sir Richard Williams Foundation seminar on May 22, 2025.

Conventional military conflict could escalate to nuclear war through what military strategists call "horizontal and vertical escalation." This possibility demands entirely new approaches to deterrence, coalition management, and strategic decisionmaking.

Australia's response has been to develop what officials term a "strategy of denial." This strategy recognizes that Australia's critical strategic geography lies to its north, requiring the ability to maneuver simultaneously across all five operational domains: land, sea, air, space, and cyber.

The strategy is defensive in nature but, as Chipman emphasizes, it cannot be implemented with a defensive mindset. Instead, it requires an active approach that embraces contest and pursues asymmetric advantages to offset the significant imbalances Australia faces in military and economic power relative to potential adversaries.

Central to Australia's evolving defence posture is the concept of asymmetric advantage – achieving outcomes disproportionate to the size of the force employed. This concept has gained renewed relevance following observations from the conflict in Ukraine, where low-cost drones have successfully engaged expensive main battle tanks, fundamentally altering traditional battlefield calculations.

However, Australia's approach to asymmetry extends far beyond simply acquiring cheaper weapons systems. The rapid pace of technological change, demonstrated by development cycles measured in weeks rather than years, demands new approaches to capability development. Australia is establishing foundations for rapid innovation and adaptation rather than attempting to stockpile capabilities subject to obsolescence.

The ability to integrate military force across all operational domains, combined with all elements of national power and in concert with allies and partners, represents a key form of asymmetric advantage. This integration capability may prove as valuable as the individual systems being integrated.

Australia's acquisition of nuclear-powered submarines under the AUKUS partnership represents the largest investment in military capability in the nation's history. These platforms will provide the range, endurance, stealth, and lethality needed to protect sea lines of communication across vast ocean distances – precisely the form of asymmetric advantage a medium power like Australia requires.

Modern warfare requires simultaneous operations across land, sea, air, space, and cyber domains. As Chipman notes, air power – long considered decisive in modern warfare – is vulnerable when grounded, can be neutralized through enemy action in space and cyber domains, and requires sea control for sustained operations.

This multi-domain reality creates both opportunities and challenges. While it offers multiple avenues for creating asymmetric advantages, it also increases complexity and vulnerability. Weakness in any single domain can compromise the entire force structure, making balanced investment across domains essential. The communications pathways that enable multi-domain operations also increase what military planners call the "attack surface area" – the points where adversaries can target Australian capabilities. This reality makes cyber protection and space access as critical as traditional military capabilities.

Australia's strategic transformation extends beyond military capabilities to encompass defence industry and innovation ecosystems. The Australian Strategic Capabilities Accelerator (ASCA) represents a new approach to rapid capability development, focused on getting asymmetric capabilities into the hands of service members quickly through innovation rather than traditional procurement processes.

This approach requires fundamental changes to risk management and funding models. Defence must be willing to share genuine risk with industry partners while rewarding innovation and assuring returns on investment. Success demands what Chipman calls "headroom in our budget to resource innovation" matched by greater public understanding of the imperative for innovation and willingness to accept the inherent risks of investing in unproven technology.

The goal extends beyond domestic innovation to building "capable, resilient, competitive and secure supply chains" that include Australian businesses while creating economies of scale through international partnerships. Co-design, co-development, co-production, and co-sustainment with allies can improve resource utilization, strengthen collective industrial capacity, and accelerate technological development.

Despite emphasis on sovereign capabilities and self-reliance, Australia's alliance relationships remain central to its security strategy. The U.S. alliance continues as the foundation of Australian defence planning, providing everything from mission data and command systems to satellite services and advanced platforms.

However, the alliance is evolving. Rather than creating dependency, strengthening Australian self-reliance is seen as

making the alliance more powerful for both nations. This reflects recognition that successful alliances require genuine stakes in each other's security rather than one-sided dependency relationships.

The challenge lies in balancing self-reliance with alliance integration. Australia's "way of war" is built on foundations of U.S. cooperation, creating both asymmetric advantages and potential vulnerabilities that must be carefully managed.

Traditional defence procurement processes, designed for peacetime deliberation, are proving inadequate for current strategic circumstances. Australia has implemented significant reforms to what it calls the "one defence capability system," moving from pursuit of perfect solutions to "good enough on time" with iterative improvements.

This shift represents a fundamental change in risk tolerance and capability philosophy. Rather than waiting for perfect solutions, the focus has moved to getting beneficial technology to service members as soon as it offers advantage, with improvements delivered through progressive capability upgrades.

The approach includes tailored approval pathways for different project complexities and fast-track processes for immediate needs and transient opportunities. However, major platform acquisitions still require deliberate planning cycles, creating a dual-track system for different capability requirements.

Looking toward the 2026 iteration of Australia's National Defence Strategy, several principles are emerging. Australia's security remains best served by international cooperation and effective institutions, but the reality is a more transactional world where strength and resilience take precedence.

The challenge lies in maintaining a strategic culture biased toward cooperation while adapting to circumstances that increasingly reward strength. This tension will shape future capability investments, alliance relationships, and strategic posture.
Australia's defence transformation reflects broader global trends toward great power competition and technological disruption of traditional military advantages. The nation's response – emphasizing asymmetric advantages, multi-domain integration, and innovation agility – offers insights for other middle powers navigating similar strategic transitions.

The overarching theme is Australia's need to adapt to a more dangerous strategic environment through innovative, asymmetric approaches while maintaining alliance relationships and sovereign capabilities.

CHAPTER 11

GENERAL MOSELY WAS ASKED to write a memo about reshaping the ahead for the USAF. This was conceived of a helpful input to the upcoming seminar as well later this year. The seminar is to be held on 18 September 2025.

A BLUEPRINT FOR ACTION FOR THE USAF: HOW TO ENHANCE COMBAT Readiness to meet the strategic challenges facing the U.S. And its allies

The United States Air Force stands at a critical crossroads. After decades of counterinsurgency operations and peacetime bureaucracy, America's air arm faces an uncomfortable reality: it may not be adequately prepared for the high-intensity conflicts that could define the next decade. This sobering assessment comes from one of the service's most experienced leaders, retired General T. Michael "Buzz" Moseley, the 18th Chief of Staff of the United States Air Force

We asked General Moseley after his comprehensive presentation on airpower at the Sir Richard Williams Foundation seminar on May 22, 2025, to provide a follow up on that presentation to highlight his recommendations for shaping a way ahead for recrafting effective airpower.

General Moseley provided a thoughtful response to this request. His central thesis is both urgent and actionable: the Air Force must fundamentally restructure itself from a peacetime organization optimized for stability operations to a combatfocused force capable of deterring—or if necessary, defeating peer adversaries in an increasingly dangerous world.

The strategic environment facing the Air Force today bears little resemblance to the relatively stable post-Cold War period that shaped much of its current structure. Moseley identifies several converging challenges that demand immediate attention:

- Operational Overstretch: Current operational tempo continues to strain an already aging force structure. Aircraft and personnel are deployed at unsustainable rates while facing increasingly sophisticated threats worldwide.
- Technological Adaptation: Adversaries are rapidly adopting innovative technologies, creating new vulnerabilities in existing U.S. command and control systems. The comfortable technological superiority America once enjoyed is eroding.
- Resource Constraints: Despite growing threats, defense spending remains at approximately 3% of GDP—a level Moseley argues is fundamentally inadequate for current security challenges.
- Cultural Drift: Perhaps most concerning, the Air Force has experienced what Moseley describes as a "minimization" of warfighting culture through years of non-combat focused policies and peacetime governance structures.

Rather than proposing abstract strategic concepts, Moseley

offers eleven concrete reforms that could be implemented within a single leadership tenure. These fall into several key categories:

Organizational Restructuring

The Air Force must align its peacetime organizational structure with wartime deployment requirements. This means building around the squadron—the essential unit of deployed air power—rather than the complex bureaucratic structures that have evolved over decades of peacetime operations.

"The essential building block of deployed air/space forces is the squadron and multiples of squadrons," Moseley writes. "The peacetime template must match the wartime deployed template."

Cultural Transformation

Equally important is restoring what Moseley calls the Air Force's "warfighting ethos." This requires comprehensive changes to personnel policies, training programs, promotion criteria, and educational curricula. The goal is to advance the "best qualified" personnel for combat effectiveness rather than bureaucratic management.

Training Revolution

Current training approaches are insufficient for the threats the Air Force may face. Moseley advocates for increased actual flying time and hands-on field training, noting that while simulations and procedural trainers are useful for skill development, they cannot replace real-world exposure to complex combat environments.

Resource Reallocation

The former Chief of Staff calls for increasing defense spending to a minimum of 5-5.5% of GDP, arguing that current funding levels cannot adequately address personnel needs, infrastructure requirements, operations and maintenance, research and development, and modernization demands simultaneously.

Acquisition Reform

One of Moseley's most specific recommendations involves

centralizing acquisition, contracting, and sustainment activities at Wright-Patterson Air Force Base, leveraging existing capabilities to create a more efficient and responsive procurement system. He also calls for updating the Goldwater-Nichols Act to streamline acquisition timelines and authorities.

Beyond organizational changes, Moseley identifies specific equipment and capability priorities that demand immediate attention:

Fighter Aircraft: Mid-life upgrades for F-22 Raptors, comprehensive avionics and engine improvements for F-35As, and acceleration of the F-47 program to ensure adequate numbers on required timelines.

Support Systems: Resolution of ongoing problems with the KC-46 tanker and T-7 trainer programs, either through fixes or new procurement initiatives.

Strategic Systems: Accelerated fielding of the B-21 *bomber and investigation of the Navy's Next Generation Air Dominance program for potential Air Force applications.*

Legacy Systems: A systematic review of older aircraft for potential retirement, particularly non-survivable fourth-generation platforms that may become liabilities in high-threat environments.

General Moseley highlighted concerns with regard to vulnerabilities in global communications systems. He advocates for utilizing the full electromagnetic spectrum to provide forces with "parallel, reliable, resilient, survivable" communication paths. Notably, he identifies upgrades to HF communications as the most available and cost-effective solution—a recommendation that takes on added significance given recent concerns about space-based communication vulnerabilities.

The former Chief of Staff also addresses the critical issue of defense industrial capacity, calling for actions to incentivize growth in aerospace, propulsion, munitions, and sensor manufacturing. His recommendations include fuller utilization of multi-year procurement contracts and establishment of dedicated funding streams similar to the Navy's shipbuilding accounts. Moseley's analysis extends beyond internal Air Force reforms to broader strategic considerations. He calls for a comprehensive review of service roles and missions, suggesting that an updated "Key West Agreement" may be necessary to address overlapping capabilities and ensure each service's contributions align with current national security requirements.

This recommendation reflects an understanding that effective military reform cannot occur in isolation—it must be coordinated across the joint force and aligned with broader national security objectives.

Perhaps most importantly, Moseley argues that these reforms are achievable within the tenure of a single Air Force leadership team. This emphasis on practical implementation timelines reflects his experience with the bureaucratic challenges that often derail military reform efforts.

The general's approach recognizes that perfect solutions implemented too late are less valuable than good solutions implemented immediately. His "doable do's" philosophy prioritizes actionable steps that can create momentum for broader transformation.

General Moseley's analysis arrives at a critical moment for U.S. air power. The comfortable assumption that American technological and operational superiority will persist indefinitely is increasingly questionable. Meanwhile, potential adversaries continue developing capabilities specifically designed to challenge U.S. strengths.

The reforms Moseley proposes represent a return to first principles of military effectiveness combined with practical adaptations to contemporary realities. The question is not whether these changes are necessary, but whether current leadership has the will to implement them before external events force more drastic adaptations.

As Moseley concludes, tomorrow's challenges center on "preparing for potential combat on a theater and global scale against highly lethal opponents in an age of strategic uncertainty and increasing lethality." The time for incremental adjustments may be passing. What remains is the opportunity—and responsibility —to act on lessons that experience has already taught.

The Air Force that emerges from such reforms would be leaner, more focused, and better equipped to fulfill its primary mission: controlling the air and space domains that underpin America's broader defense strategy. Whether that transformation occurs proactively or reactively may determine not just the future of American air power, but the broader trajectory of U.S. national security in an increasingly contested world.

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