



Decision Superiority: An Air Force Concept Paper

FOREWORD

Chief of Air Force's policy regarding the concept of 'decision superiority' as a preferred attribute of the Royal Australian Air Force (RAAF) was first enunciated in the 2007 Future Air and Space Operating Concept. The idea is a simple one but, as this concept paper draws out, not necessarily simple in implementation or practice. Some may also think the concept so obvious that it does not warrant a second thought or any serious consideration; that, of course, Air Force people are already superior decision-makers and Air Force is already an organisation 'designed to decide'. However, that presupposes that quality decision-making across operational and organisational domains is merely a matter of innate common sense honed by experience and that, over time, we get better at it. However, those notions are questionable from the view of a pragmatic observer, and have been proven so by a weight of quality research. Or, to paraphrase a euphemism, common sense is just not that common.

This paper argues that decision-making skill, for operations and organisational design, is so important that it must be considered a defining quality of our Air Force, and perhaps the defining quality. This is because experience suggests that people well educated and practised in their profession, and with superior decision-making skills, will always prevail, all else being equal. They will always make the right force development, organisational and operational decisions and, therefore, Air Force can be confident that such matters will be well treated.

Realising organisational and individual decision superiority means a focus on people as decision-makers and decision superiority as a recognised and supported Air Force philosophy. Realising decision superiority requires that it is a designed intent, and that Air Force's personnel assessment system recognises and rewards it as a central differentiator of people and agencies. There are practical initiatives afoot in Air Force right now aimed at addressing some of these issues.

The questions that this paper explores from the perspective of the Air Force is what decision superiority is, why it is important to us and what Air Force should do, and is doing, about ensuring it. This paper should dispel the myth that making quality decisions is an intrinsic trait of individuals and organisations, or that decision-making skills cannot be taught and practised. Both notions are wrong, with a large body of research to support that contention.

This paper, among other things, presents the following observations:

- Effecting change in an adversary in practice, be it through physical or non-physical means, is achieved most successfully through the exercise of superior judgement around the context of the conflict, and in making decisions that are timely and designed to deliver more effective outcomes than those of the adversary; that is, by us demonstrating decision superiority through our delivered outcomes in operations, operational support and force and organisational development.
- Superior decision-making allows a force to seize and retain the initiative, which is a fundamental premise of all successful military action.

Disclaimer

This working paper was originally published as an A5 booklet in November 2008 (ISBN 9781920800390) and is presented here as a re-formatted printer friendly version. This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without permission from the publisher. The views expressed in this work are those of the author and do not necessarily reflect the official policy or position of the Department of Defence, the Royal Australian Air Force or the Government of Australia. This document is approved for public release; distribution unlimited. Portions of this document may be quoted or reproduced without permission, provided a standard source credit is included.

- Adaptivity is the best way to deal with the new, the unexpected and the unknown when dealing with complex problems or situations.
- Train for certainty, educate for uncertainty.
- Individuals who enjoy a broad and diverse education combined with a broad experience base appear to be more adaptable and exhibit superior decision-making skills and sounder judgement, and deliver effective outcomes in complex and ambiguous environments.
- Technical mastery of air force competencies will always form the foundation of professional mastery and Air Force cannot afford to diminish its competencies in these areas.
- Decision superiority encompasses not only the outcomes of good decision-making, but also the processes, structures and organisational design that facilitate and enable superior decision-making.
- Air Force must develop strategic thinkers and decision-makers who can operate effectively at the strategic level to ensure that strategic intent is translated into operational outcomes that Air Force can deliver.

I commend the paper, and the concept of decision superiority as a core attribute of our Air Force, to you.

Group Captain Tony Forestier
Director, Air Power Development Centre
November, 2008

AUTHORSHIP

This Air Power Development Centre concept paper is a distillation of many years of experience and the ideas developed by many agencies and individuals within the Australian Defence Organisation. The main agencies consulted in developing this concept were:

Air Operations Division of Defence Science and Technology Organisation
Land Operations Division of Defence Science and Technology Organisation
Director General Strategy and Planning – Air Force

The papers' authors were:

SQNLDR Andrew Loch [Principal author]
WGCDR Mark Hinchcliffe
Dr Sanu Kainikara
Mr David Clarke

Significant contributions were also received from:

GPCAPT Anthony Forestier
WGCDR Bob Richardson
WGCDR Scott Wallis
WGCDR Peter McLennan (Retd)
Dr Anne-Marie Grisogono
Mr Ian Lloyd
Dr Julia Chadwick

ABBREVIATIONS AND ACRONYMS

ADF	Australian Defence Force
CAF	Chief of Air Force
DSTO	Defence Science and Technology Organisation ¹
FASOC	Future Air and Space Operating Concept
RAAF	Royal Australian Air Force

INTRODUCTION

New concepts emerging from new capabilities have to break through that rigid mind-set [of platform replacement] to be recognised and exploited by the force-in-being.

Air Vice-Marshal John Quaife,
Air Commander Australia¹

A review of history suggests that how a military force fights—that is, what warfighting concepts it adopts—is at least as important as the equipment and forces at its disposal. Victory in battle, more often than not, goes to the commander who can adopt innovative ways to exploit most effectively the means available to him. Today, the need to exploit creatively the capabilities the Royal Australian Air Force (RAAF) possesses, or will soon possess, is as pressing as it has ever been. Western military forces, including the RAAF, are challenged today in places like Iraq and Afghanistan to apply creatively the overwhelming superiority their advanced weaponry affords to achieve victory over the asymmetric and unconventional means and ways of the adversary. This paper explores an approach to warfighting and force development called ‘decision superiority’. Decision superiority is an approach that, if successfully implemented, will assist Air Force in fully exploiting the tremendous capabilities and networked systems that Defence is acquiring. Understanding this concept and how it effects both the operations and organisation of the force, therefore, is of real importance for all Air Force personnel as they move towards the networked force that Air Force intends.

The RAAF, like many advanced Western air forces, has chosen to adopt an approach to war that leverages its strengths of advanced technology, information dominance and a capacity to conduct multiple parallel operations through a networked force. This approach and the capacity to overwhelm less sophisticated forces is **the** advantage that Western forces wish to maintain. Further, this approach to warfare underpins how Western forces command operations and shapes how they organise their forces, equip and train their personnel, and most importantly how it informs their warfighting concepts to apply air power to achieve their strategic objectives.

Through the *Defence Capability Plan*,² Air Force will develop the capability to leverage this advantage. The capital investment to acquire the equipment, systems and infrastructure to support this capability has already been committed and over the next decade Air Force will transition the bulk of these into operational service. While the acquisition of the physical hardware is in train, and some organisational restructuring has taken place to accommodate this, what remains to be developed are the skills and intellectual capacity to exploit this future networked force optimally. Decision superiority is the basis of this capacity. It is an expansive idea that incorporates an organisational dimension—that is, how the force is structured and organised to facilitate decision-making in the networked context—an operational dimension in which decision superiority shapes

¹ Air Vice-Marshal John Quaife, AM, ‘Reshaping the Royal Australian Air Force: An Operational Perspective’, in the Proceedings of the 2007 Chief of Air Force Air Show Conference: *Smaller Air Forces and the Future of Air Power*, held in Melbourne on 19 March 2007, p. 109.

² Department of Defence, *Defence Capability Plan 2006–2016*, Public Version, Defence Capability Development Group and Defence Materiel Organisation, Canberra, 2006.

how the force is operated, commanded and applied to exploit optimally the capabilities available, and a human dimension. Decision superiority is a tool that Air Force can use in conjunction with professional mastery, to realise its full potential and produce the effects needed to prevail on the day.

The RAAF's Future Air and Space Operating Concept (FASOC) describes the context in which decision superiority will operate. Through the *Defence Capability Plan*, it provides the aim point for Air Force's evolution to about 2025 and it enunciates Air Force's intent to develop and build the emergent networked force through the ability of its people, and those who partner them. In this context, decision superiority for both operations and force development will come from the ability of Air Force personnel to understand and contextualise information responsively, to decide on courses of action in ambiguous environments, and to adapt their approach as needed. Without decision superiority, Air Force will not be able to exploit optimally the enormous capabilities of the future networked force.

However, the development of Air Force capability and the articulation of its intent do not take place in isolation. Australia's security circumstance within the global security environment has substantially changed in the past decade. Increasing complexity and uncertainty, as well as an increased willingness of the Australian Government to employ the Australian Defence Force (ADF) across a broad range of operations, challenge the RAAF's ability to continue to provide effective and appropriate air power effects, and shapes the direction in which Air Force progresses. The concepts of 'networked operations' and 'decision superiority' operating with the equipment and systems delivered by the *Defence Capability Plan* will underpin the RAAF's response to the challenges ahead. This response recognises that, in order to prevail in the complex and ambiguous environment that the RAAF faces, it must develop strategies that recognise uncertainty and are premised upon the force's ability and capacity to exploit its networks to their full potential and to learn and adapt more effectively and more successfully than an adversary. Decision superiority is a key element in how Air Force will learn and adapt in the face of this uncertainty and complexity.

This paper explores the concept of decision superiority from an Air Force perspective. It begins with a discussion of what is meant by the term 'decision superiority' with a view to developing a working definition. It then explores the implications of Air Force adopting decision superiority as an organising concept, discussing how decision superiority might be achieved and what the implications are for the force. The paper then turns to a discussion concerning how Air Force will know when it has achieved decision superiority, and what might be some of the risks associated with implementing such an idea across the organisation.

AIM

The aim of this paper is to describe why decision superiority is a necessary component in Air Force realising the future outlined in Air Force's *The Future Air and Space Operating Concept*³ and the 'strategic focus' described in *An Air Force of Influence*.⁴

DECISION SUPERIORITY: WHAT IS IT?

Decision-making

Any discussion regarding decision superiority should start with a brief outline of the nature of decision-making and why it is so important in the military context. Decision-making is a human endeavour. Decisions are essentially distilled thought; that is, they are the result of a cognitive process in which people make choices between various alternatives. This is thought enacted in practice for it involves a determination of will to make a decision, even if the decision is to do nothing, to defer action, or consciously to not decide. Decisions can be the product of rational or irrational thought, by rational or irrational actors, or they may be intuitive, emotionally

³ Royal Australian Air Force, Australian Air Publication 1000-F—*The Future Air and Space Operating Concept*, Air Power Development Centre, Canberra, 2007.

⁴ Air Power Development Centre, *An Air Force of Influence: A Strategic Framework for the Future Air Force*, Air Power Development Centre, Canberra, 2008.

derived, subliminal or any combination of these. Fundamentally, however, decisions are a human cognitive process, which comprise acts of will and lead to chosen courses of action. The implications of this for military forces are substantial, and go to the heart of our understanding of the nature of conflict and the conduct of war. For in the end, all war is problem solving and as such it involves the effective use of human reason.⁵

Individual Learning

Individual learning is the acquisition of data, information, knowledge, understanding and wisdom over time (see Figure 1). Data consists of symbols that represent objects and events, and their properties. For example, an aircraft's air speed indicator presents data—airspeed. Information is useful data. Information answers who, what, where, when and how many type questions. For example, the information that you are flying at 120 knots will help you decide whether to speed up or slow down. However, while information is helpful in deciding what to do, it will not tell you how to do it. Knowledge consists of instructions and know-how. Knowledge answers 'how' questions. For example, your flying knowledge tells you how to control the aircraft's speed. Understanding consists of explanations. Understanding answers 'why' questions. For example, you understand why the airspeed needs to be maintained at a specific value: so you can make your 'time-on-target'. Wisdom is the ability to perceive outcomes and determine their value. It is useful for deciding what should be done. For example, the wise may decide that aerobatics are currently out of the question because you do not have enough speed.⁶

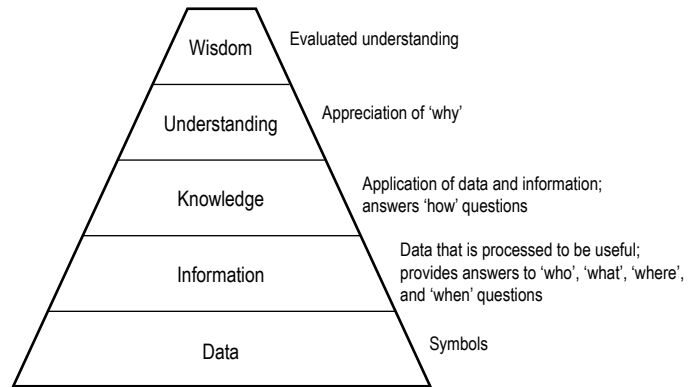


Figure 1: Hierarchy of Knowledge

War, as Clausewitz reminds us, is a clash or contest of wills, typically pursued through trials of strength.⁷ Certainly within the context of 19th century continental inter-state conflict, Clausewitz's trinitarian calculus of hostility, chance and purpose, reflects the central importance of decision-making, rationality and human purpose in the conduct and nature of war. A much earlier and non-European treatise on war, Sun Tzu's *The Art of War*, also highlights the significance of decision-making and intellect in waging war against thinking and adaptable adversaries.⁸ Interestingly, Sun Tzu's approach to war was premised upon a more philosophical form in which victory was not necessarily the result of decisive battlefield encounters. In the circumstances Sun Tzu describes, where the battle-space is more often than not a cognitive one, the vital role of decision-making and agile intellect is of even greater prominence. Ultimately, the end purpose of all struggle can be reduced to forcing a change in an adversary's behaviour either through physical force or by changing the decisions they choose to make. Of these options, the latter, although more difficult to achieve, often produces a more enduring and less bloody result.

Effecting change in an adversary, be it through physical force or non-physical means is achieved in practice most successfully through the exercise of greater judgement and in making better, more timely decisions than the adversary; that is, demonstrating decision superiority through delivered outcomes.

⁵ D. Reid and R. Giffin, *The Cults of Military Thinking: Intellectual Renaissance*, Defence Science and Technology Organisation, Adelaide, 2004, p. 17.

⁶ Brian Berliner, *Learning: Data, Information, Knowledge, Understanding, Wisdom*, <http://blogs.bnet.com/ceo/?p=86>, accessed 19 Feb 08.

⁷ Carl von Clausewitz, *On War*, edited by Anatol Rapoport, Penguin Books, London, 1982, p. 101.

⁸ Sun Tzu, *The Art of War*, translated by Lionel Giles, Signature Press Editions, London, 2007, pp. 44, 51–58.

The ability to set the pace of decision-making and to make and enact sound decisions is critical to military forces. Effecting change in an adversary, be it through physical force or non-physical means is achieved in practice most successfully through the exercise of greater judgement and in making better, more timely decisions than the adversary; that is, in achieving superiority in decision-making. Superior decision-making allows a force to achieve and retain the initiative, which is a fundamental principle of all military action.⁹ By achieving and retaining the initiative, military forces are able, to the greatest extent possible, to control the pace, direction and flow of battle, enabling their forces to plan adaptively and implement proactive action while forcing their adversary to adopt a reactive posture.

This is essentially what is meant by out-thinking an adversary. In complex and ambiguous situations, it is not possible to know with certainty how the adversary may act. The very best that can be achieved is a subjective appreciation of how one's own actions cause a response and which of one's own actions work 'best' and which do not. This is the basis of a simple 'adapting' or 'learning' cycle in which options are generated, tested, evaluated and retained if successful and rejected if unsuccessful.¹⁰ Being able to do this better than an adversary means achieving decision superiority in that particular and defined context. Being able to adapt faster than an adversary means being able to deal with new and unanticipated situations as they arise more effectively than they do and so outmanoeuvre them to achieve desired effects or outcomes. Being superior decision-makers through superior adaptivity and being able to make and enact 'superior' decisions, therefore, is the key to prevailing in conflict and, consequently, of vital interest to Air Force.

Superior decision-making allows a force to achieve and retain the initiative, which is a fundamental premise of all successful military action.

Definition

Decision superiority may appear at first blush to mean simply the ability of individuals to adapt and make superior decisions. While this is an important part of the idea, decision superiority is a far more inclusive and nuanced concept than the name might suggest. Defining its multi-faceted nature precisely is demanding, nonetheless it is a fundamental concept that the best commanders have in their professional toolbox. FASOC states that decision superiority is a necessary and fundamental characteristic that will underpin the success of Air Force's future, allowing it to gain superior situational awareness, degrade an adversary's decision-making process and prevail in conflict.¹¹ It defines decision superiority as 'the ability to make and implement more informed and more accurate decisions at a rate faster than the adversary'.¹² While a good starting point, this definition does not capture fully the multi-faceted nature of the concept and the significant undertaking necessary to achieve it. A more inclusive definition that preserves the essential human cognitive component of decision-making while indicating its organisational and operational dimensions as well is:

Decision superiority is the degree of dominance in the cognitive domain an organisation achieves through its decision-making processes that enables it to acquire and maintain an advantage over its competitors.

Decision superiority, therefore, refers not only to the human aspect of making 'better' decisions, but to much broader organisational and operational attributes and philosophy that embrace the value, necessity and demands of prevailing in the decision space. From this perspective, decision superiority has three domains—human, organisational and operational.

⁹ Royal Australian Air Force, Australian Air Publication 1000-D—*The Air Power Manual*, Fifth Edition, Air Power Development Centre, Canberra, 2007, p. 44.

¹⁰ Anne-Marie Grisogono, *Transitioning a Brigade to an Adaptive Organisational Stance*, Workshop Paper, Defence Science and Technology Organisation, Adelaide, July 2008, pp. 1–2.

¹¹ AAP 1000-F—*The Future Air and Space Operating Concept*, p. 26.

¹² *ibid*, p. 64.

Technical Mastery

Regia Aeronautica Italia – 1923–1940

Between the wars, the Royal Italian Air Force (*Regia Aeronautica Italia*) failed to develop any doctrine or conception of war and combat operations that might have given it strategic direction. The *Regia Aeronautica's* overriding organisational imperative was to maintain and assert its independence. The Italian Air Staff strenuously resisted any suggestion of subordinate roles in support of the Army or Navy.

Instead, the *Regia Aeronautica* concentrated on the accomplishment of technical feats of aviation. During the inter-war period Italian pilots held most of the world flying records for speed, altitude, endurance and distance, and excelled at putting on spectacular displays of formation flying and aerial acrobatics. In the late 1930s and early 1940s the term 'Balbo' was coined as a description of a large formation of aircraft and the term is still used to this day at many air shows. Balbos were named after Italy's flamboyant fascist Marshal of the Air Force, Italo Balbo, who in the 1930s led a series of record-breaking flights by large formations of aircraft. In 1933, he led a flight of 24 flying boats in a much publicised round trip from Rome to Chicago. Accomplishments such as these were used as propaganda tools by Mussolini's Fascist regime and greatly increased the prestige of the Italian Air Staff.

These 'successes' were achieved at the expense of *Regia Aeronautica's* operational and strategic effectiveness as a combat force. Italy entered World War II with an air force and officer corps firmly wedded to wood-and-fabric biplanes that gave manoeuvrability that was ideally suited to aerobatics and displays of individual skill, but proved totally inadequate against the allies' modern Hurricanes and Kittyhawks in the skies above the Mediterranean and North Africa. Italy also began the war without any capacity or provision for air transport, a role it had long despised and resisted. Similarly, it also strongly resisted cooperation with the Navy in developing the necessary torpedo bomber and seaplane reconnaissance aircraft to support the Italian fleet and strike at enemy shipping.

When called upon to advance Italy's long-held ambition of carving out a new Roman Empire in the Mediterranean, the *Regia Aeronautica's* doctrinal and operational vacuum meant it was simply not up to the task.



Italy's most numerous front-line fighter in 1940 – Fiat CR.42

Human domain. The human domain—concerning the individual members of the organisation—is undoubtedly the most important. It entails the acquisition of knowledge through reasoning, intuition or perception (that is, cognitive processes) and the resultant decision made by individuals who comprise the organisation. While, much has been written on decision-making within a variety of corporate and academic environments, most researchers agree that effective decision-making can be enhanced and augmented through education and training.¹³

Organisational domain. Effective organisations are those designed to decide.¹⁴ Subsequently, structuring an organisation to decide effectively is essential in achieving decision superiority. This structuring involves implementing effective and appropriate organisational design that facilitates an adaptive stance and promotes decision-making and implementation throughout the organisation.¹⁵ This organisational design includes

¹³ For example see: Susan G. Hutchins, Jeffrey G. Morrison and Richard T. Kelly, *Principles for Aiding Complex Military Decision Making*, in proceedings of Second International Command and Control Research and Technology Symposium, Monterey CA, 25–28 June 1996; Henry H. Shelton, 'Professional Education: The Key to Transformation', *Parameters: US Army War College Quarterly*, Vol. XXXI, No.3, Autumn 2001, pp. 4–16; and Professor Hossein Arsham, *Applied Management Science: Making Good Strategic Decisions*, University of Baltimore, Baltimore MA, 2008, <http://home.ubalt.edu/ntsbarsh/opre640/opre640.htm>, accessed 8 Jan 08.

¹⁴ Grisogono, *Transitioning a Brigade to an Adaptive Organisational Stance*, p. 3.

¹⁵ Anne-Marie Grisogono and Alex Ryan, *Operationalising Adaptive Campaigning*, CCRTS Presentation: 'Adapting C2 to the 21st Century', Defence Science and Technology Organisation, Adelaide, 2007, p. 19.

implementing pathways of communication (both electronic and personal) and processes that enable decisions to be made and enacted quickly, transparently and effectively, while ensuring that identified decision-makers at all levels throughout the organisation are resourced, authorised and held responsible for making and implementing decisions in a timely and considered fashion. Organisations structured to decide—decisive organisations—therefore, have a culture that values superior decision-making and are structured to allow institutional learning to occur throughout the organisation.

Operational Domain. The ultimate manifestation of decision superiority is in the operational domain. Being able to prevail over an adversary is a function of outmanoeuvring him in an operational sense. The operational dimension of decision superiority, therefore, shapes how a force is commanded and employed to exploit optimally the capabilities at its disposal.

DECISION SUPERIORITY AND THE ROYAL AUSTRALIAN AIR FORCE

The implications

Applying the concept of decision superiority—as the capacity for superior adaptivity and being able to make and enact ‘superior’ decisions—across the RAAF’s organisational design, the education of its members and the conduct of its operations, will enable Air Force to fulfil better its roles and responsibilities to Government. It will achieve this by assisting the RAAF to prevail in all that it does, to best meet the greatest range of challenges and by facilitating Chief of Air Force’s five priorities for the force.

Context. Geographically, Australia is a vast nation continent with littoral and offshore interests, inhabited by a small and geographically concentrated population. Australia’s near neighbourhood is archipelagic and oceanic, and strategically dynamic. However, its small population limits the financial and human resource base from which the ADF, and hence Air Force, can draw.¹⁶ Consequently, Air Force must plan to fight and win with the force-in-being, partnered with the other Services, support agencies, allies and coalition partners, and cannot rely on large reserves of personnel or equipment. Traditionally, Air Force has equipped and trained itself to maintain a technological edge over its neighbours and potential regional rivals. This strategy has served it well since the 1950s. With the more recent rise of regional economic powers and the post–Cold War spread of advanced Russian military equipment, however, this technological edge is eroding. Although the RAAF has never relied solely on advanced equipment to provide a qualitative edge over competitors, the changes within its geopolitical region, which act to diminish its edge, give increased cause for the Air Force to pursue alternative and complementary means of sustaining its advantage.

Increasingly, the RAAF is looking to develop and maintain not only intellectual and operational advantage to complement its technological edge, but also to develop other means of outperforming potential adversaries in the decision space as well. Rather than rely on mass derived from its combat platforms, the Air Force also plans to sustain its edge through effectiveness, efficiency, innovation and the professional mastery of its people. By dominating the decision space Air Force can maximise its qualitative advantage while reducing as much as possible, its numerical disadvantage.¹⁷ A smaller air force must increasingly become a clever one. The best way for Air Force to contribute to the security of Australia’s national interests in this environment, therefore, requires it to be decisive, agile and adaptive in both the physical and cognitive domains.

The RAAF must become the clever force.

To prevail in all we do. Attaining the initiative through the capacity to make and implement superior decisions pertains to all aspects of an organisation’s ability to function successfully and to prevail over rivals in all facets of its endeavours. Decision superiority, consequently, has the capacity to enhance significantly Air Force’s performance

¹⁶ AAP 1000–F—*The Future Air and Space Operating Concept*, pp. 9–10.

¹⁷ *ibid*, p. 10.

across its organisational and operational domains. Within the operational domain, success in the broadest terms means that Air Force meets its objectives. For Air Force to achieve the initiative and succeed in the operational context, therefore, it must attain decision superiority. This is not new. The ability to sense, decide and act first has always been the critical cycle for airmen, and nothing has changed in this regard. Victory on the battlefield, although perhaps the ultimate measure of success in combat, is not, however, the only discriminator of successful military forces. Air forces must operate not only in times of open combat, but also in protracted periods of peace. As an organisation, therefore, Air Force needs to operate effectively and efficiently within the organisational domain, responsible to the Government and the Australian people. By being an organisation that can decide effectively and develop and implement strategic plans and goals through superior decision-making, Air Force will not only optimise its performance, but also be an organisation in which the Government and its citizens can have confidence and trust. Decision superiority, in the organisational domain, like the operational domain, is the key to functioning successfully in the ambiguous and dynamic environment that Air Force occupies.

To meet the greatest range of challenges. Research has shown that by exploiting the power of adaptation an organisation can display agility, flexibility, resilience, responsiveness, robustness and innovation in the face of complex challenges and, even more importantly, continue to improve its ability to do so.¹⁸ Presently, ‘adaptivity is the best way known to deal with the new, the unexpected and the unknown when dealing with complex problems or situations, as it does not require detailed knowledge of the problem in advance, nor the ability to devise the right solution beforehand’.¹⁹ Being able to adapt faster than an adversary means being able to deal with new and unanticipated situations as they arise more effectively and timely than the opponent can. Being superior decision-makers through superior adaptivity and being able to enact superior decisions, therefore, is fundamental to prevailing in conflict.

Adaptivity is the best way known to deal with the new, the unexpected and the unknown when dealing with complex problems or situations.

Chief of Air Force’s priorities. In his first official message to the Air Force, Chief of Air Force (CAF) expressed his priorities for the force in his *Commander’s Intent*. In this, he described the imperatives for the RAAF as: continuing to provide Government with first-rate air power, to enhance the Air Force team and its relationships with partner agencies, to develop further its professional mastery of air power and introduce aspects of space power, to improve its strategy development and implementation, and to improve its internal and external communications.²⁰ Decision superiority has an important part to play in the realisation of each of these priorities.

Provide first-rate air power. Air Force will continue to provide first-rate air power in operations ranging from warfighting to humanitarian support. This must not change even while it introduces new, networked combat systems into service. Air Force will undoubtedly be challenged in the coming decade to continue to provide the level and standard of professional air power that it does at present. In order to maintain its operational capacity during this period of intense transition, in which significant resources will be diverted from operational capability to training and development, Air Force will need to adopt intelligent ways to optimise its capability across the force. Sensibly leveraging its adaptive culture and its capacity to change within a well-considered strategy will enable its success through and beyond this transition. Decision superiority is a useful tool in Air Force’s toolbox that will allow it to best manage this difficult transition period. By promoting decision-making, within a supportive organisational structure, Air Force will maximise its capacity to operate efficiently as a military force and, most significantly, will enhance its ability to conduct operations decisively. The effective exploitation of the

¹⁷ For example: Grisogono, *Transitioning a Brigade to an Adaptive Organisational Stance*, p. 1; John W. Payne, James R. Bettman and Eric J. Johnson, *The Adaptive Decision Maker*, Cambridge University Press, New York, 1993, pp. 2, 5; and Andrew Dowse, *The Diverse Organisation: Operational Considerations for Managing Organisational Information Resources*, University of New South Wales – Australian Defence Force Academy, Canberra, 2007, pp. 69–70.

¹⁹ Grisogono, *Transitioning a Brigade to an Adaptive Organisational Stance*, p. 2.

²⁰ Air Marshal Mark Binskin, *Commander’s Intent: Air Force – One Team*, Air Power Development Centre, Canberra, 4 July 2008, p. 12.

advantages of a networked force relies on decision-making by intelligent networkers. Within the construct of decision superiority, these networkers are able to utilise the capacity of the networked environment to make and implement better decisions than otherwise would be the case. The networked force is ideally suited to the implementation of the concept of decision superiority as the ability to make superior decisions is a direct consequence of superior situational awareness and connectivity provided by these networks. Providing first-rate air power to the Government of Australia in the coming decades is predicated on the evolved force being a networked and decisive one.

Enhance the team. At the heart of Air Force's transition into the future will be the abilities of its people and its relationship with partner agencies. In this context, decision superiority for both operations and force development will come from the ability of Air Force personnel to understand and contextualise information responsively, to decide on courses of action in ambiguous environments, to act on decisions, to measure the effectiveness of outcomes and to adapt their approach as needed. These attributes are the essence of decision superiority; therefore, CAF's priority regarding enhancing the Air Force team works hand in hand with developing decision superiority across the force.

Professional Mastery. Research has proven that organisations who refuse to invest in meaningful and appropriate education will sacrifice their future to short-term expediency.²¹ Consequently, investing in education is one of CAF's highest priorities. Air Force has historically been very successful in providing the training that is the foundation of the technical mastery of air power. However, professional mastery demands more than mastery of the technical domain alone. It is built upon the foundations of technical mastery coupled with a broad-based education and appropriate experience. Educated and experienced individuals—that is professional masters—are the ones best placed to apply sound judgement in the complex and ambiguous situations Air Force personnel face every day. Sound judgement underpinned by professional mastery is the basis for superior decision-making and decision superiority. These individual attributes are essential if Air Force members are to master the complexities of, and so exploit, the emerging networked force Air Force envisages. Developing professional mastery through education, therefore, is a priority for the RAAF.

Train for certainty, educate for uncertainty.

Strategy development and implementation. As even a cursory glance at military history illustrates, whoever masters the strategic decision space often achieves extraordinary outcomes, frequently in the face of dire circumstances. While those who cannot see the big picture and only operate at the tactical level have often met their demise, even when they started out with strategic surprise or a superior force. Air Force's strategic intent is expressed in FASOC and provides Air Force a forward focus to ensure its capability and organisational development are connected to national security objectives. FASOC clearly articulates that Air Force needs to become a force designed, trained and educated to make superior decisions regarding operations, operational support and force development within a coherent strategy framework that effectively links ends, ways and means, as knowing what to decide and how to decide effectively is key to realising strategy. In order to achieve this, Air Force needs to grow its capacity for strategy development as decision superiority functions within, and enabled by, a framework of coherent strategy. This is one of the primary functions of decision superiority, to link high-level objectives to operational outcomes through superior decision-making. Strategy development within the RAAF, therefore, needs to incorporate the concept of decision superiority.

²¹ Shelton, 'Professional Education: The Key to Transformation', pp. 4–16.

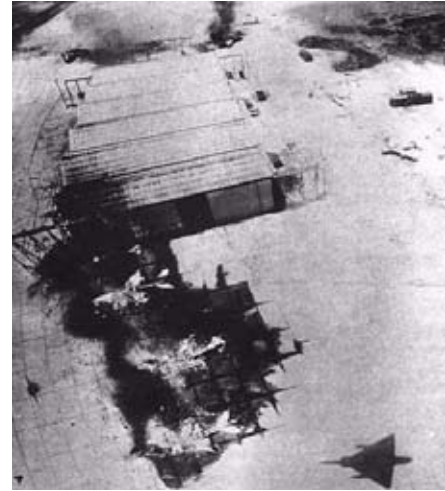
Surprise

Israeli Air Force – The Six Day and Yom Kippur Wars

On 5 June 1965, Israel launched Operation Focus, a pre-emptive air attack against the Egyptian Air Force (EAF). The EAF's 450 Soviet-built combat aircraft represented the largest and most modern air force in the Arab world. The Israelis achieved complete surprise and by the end of the first day the Israeli Air Force (IAF) had destroyed over 300 aircraft on the ground and rendered most of Egypt's air bases unusable.

The foundations of Israel's victory were firmly embedded in the decision superiority they established and sustained over the Arab nations throughout the conflict. In the preceding month, President Gamal Abdel Nasser's decision to order the withdrawal of the United Nation's peacekeeping force in the Sinai and the closure to Israel of the Straits of Tiran convinced Israel's political and military leaders that pre-emption was their only option. Israel quickly proved it possessed both the will and means to wage war effectively. Nasser, by contrast, for all his anti-Israeli rhetoric and actions, was largely unprepared for the conflict. During the course of the war the Egyptians compounded their decision-making problems through poor intelligence and information sharing. Vital information was either unknown or deliberately withheld from key decision-makers—the EAF did not inform the Egyptian Government of its complete destruction until late on the first day and Nasser, in turn, kept this information from his Jordanian and Syrian allies for several days.

The pre-emption and surprise that Israel had leverage into decisive decision superiority in the Six Day War, however, was not a factor upon which Israel could permanently rely. In October 1973, it was Egypt and Syria that launched a surprise attack on Israel that began the Yom Kippur War. The Israelis victory in 1967 had convinced them that their defence forces, particularly the IAF, guaranteed military supremacy in the region. The Arab nations, in contrast, had reorganised and upgraded their armed forces. Egypt had significantly bolstered its air defence network with sophisticated Soviet supplied SAM batteries. Egypt entered war with limited but clear strategic objectives and executed a skilful deception campaign that successfully masked their hostile preparations and intentions. In deciding to limit their initial advances to areas protected by their air defence network, the Egyptians inflicted significant losses on the IAF and effectively neutralised much of Israel's air power advantage during the early stages of the war. Although the Israeli military quickly recovered and the fortunes of the war gradually tipped in their favour, they never achieved the decisive decision superiority they had enjoyed during the Six Day War. At the cessation of hostilities the Egyptians could claim the war as a qualified success. They had restored some of the territory lost in the previous war and, most importantly, they had expunged much of the shame of their humiliating defeat in the Six Day War.



The wreckage of EAF MiG-21s – 5 June 1967

Improve internal and external communication. Quality communication from Air Force's senior leadership through the command chain to the hangar or office floor is vital to the coherence of the force, its unity of purpose and its effectiveness. Similarly, quality communication from Air Force's senior leadership to Government, Air Force's partners and the people of Australia is vital for good governance, effective operations and the public's confidence and trust in the force. Therefore, Air Force as an organisation needs to develop itself and its personnel as more knowledgeable and effective 'networkers' who, as a result, will be better informed and able to make better decisions and be able to communicate effectively both internally and externally. To this end, Air Force will be implementing an organisational design that facilitates and promotes superior decision-making and leadership by developing pathways of communication and processes, both electronic and personal, which enable decision-making and its subsequent enactment, quickly, adaptively, transparently and effectively.

An air force designed, structured, equipped and led in a fashion consistent with the concept of decision superiority would produce outcomes consistent with its intent. For Air Force, this would mean four things. Firstly, its people are trained and educated about the concept. Secondly, the organisation has made the structural changes required to accommodate the concept and shifted its culture so that decision-making and adaptivity is valued. Thirdly, the physical systems that facilitate decision-making are in place and fully operational. Finally, the Air Force will continue to use air power to produce a broad range of effects to meet Government's intent.

Tactical Mastery

Argentine Air Force and Naval Aviation – Falkland Islands War

When Argentina seized the Falkland Islands in April 1982, the Argentinean air forces—the Air Force (Fuera Aerea Argentina or FAA) and the naval air arm (Comando de Aviación Naval Argentina or COAN)—were the largest and the best trained and equipped in South America. Argentina, however, had never seriously considered the possibility a war against a sophisticated major NATO power such as Great Britain. The British Government's decision and determination to retake control of the islands by force caught Argentina's ruling military junta by surprise. The FAA was not trained or equipped for a long-range naval air campaign. Although the FAA and the COAN possessed some relatively modern combat aircraft and small number of sophisticated Exocet anti-ship missiles, the majority of its attack aircraft were aging A-4 Skyhawks armed with dated air-to-air missiles and unguided general purpose bombs. Serious deficiencies also existed in Argentina's airborne ISR capabilities.



Argentine Skyhawks attack HMS *Broadsword*

Argentinean airmen, nevertheless, were able to rise above many of these handicaps and demonstrated a high degree of technical and tactical mastery during the ensuing conflict. In the face of a modern and effective air defence network, the ability to leverage their tactical mastery of air power enabled them to adapt rapidly to an unexpected and unfamiliar combat environment against a technologically superior enemy and extract a remarkably heavy toll on the British Task Force.

Nevertheless, the Argentineans unequivocally lost the war. While the technology of weapons systems and the tactical proficiency of its air forces played a crucial role in the conflict, the root causes of Argentina's defeat lay within the decision space. At the strategic level Argentina's ruling junta demonstrated a remarkable lack of understanding of their opponent, the capabilities of their own armed forces, and of modern military operations. At the operational level, improvised and hasty training programs, mission planning and combat sorties, no matter how professionally and bravely carried out, were no substitute for sound doctrine, realistic training and well-tested tactics. The lack of adequate reconnaissance also resulted in many combat sorties failing to locate any targets and the Argentineans remaining ignorant of the fact that over 50 per cent of their general purpose bombs failed to explode. For all their tactical skill, the Argentine airmen could not make up for the serious deficiencies that their air forces suffered as a result of inadequate information and poor strategic decision-making.

How will Air Force achieve it?

While a product of its history, Air Force is not necessarily captive to it and retains the ability to set a future course of its own choosing consistent with its strategic intent. In choosing to develop and implement decision superiority across all domains of the force, Air Force is accepting a large and challenging task that will require a sustained program of development. The changes required, however, are primarily of a cognitive and often subtle nature, demanding development in areas such as internal process, structures and command and control rather than in material capability development.

Air Force is already committed to transforming itself into an air force of strategic influence and the foundation of this capability is the ability to achieve decision superiority across all aspects of its endeavours. In order to realise decision superiority, Air Force has to change in three key areas: personnel, organisation and operations.

Personnel – how are we going to get there?

The most important step towards achieving decision superiority throughout the force is to develop a culture that values and rewards effective decision-making. This is a cognitive change. By valuing and rewarding personnel who understand the utility of decision superiority and establishing an institutional culture that values decision-making, adaptability and education, Air Force will grow a workforce that is capable, equipped and motivated to pursue decision superiority across all facets of its endeavours.

At the individual level, the benefits of specific professional development and training are well documented and widely acknowledged. The need to educate better and more adaptable thinkers and doers in complex and adaptive military environments, however, is not as well understood or acknowledged. Evidence suggests that broad and general education across a variety of subjects not only promotes more rational and logical decision-making, but is also beneficial in developing the less formal emotional and intuitive decision-making processes.²² Simply put, individuals who enjoy a broad and diverse education combined with a broad experience base appear to be more adaptable and exhibit better decision-making skills and greater judgement, and make better decisions in complex and ambiguous environments. In particular, there appears to be a strong case for educating military professionals in a broad range of disciplines, such as strategy, politics, religion and society, and metacognition (thinking about thinking), so as to better equip them for the rigours of decision-making in the complex security environment in which Air Force operates.

Individuals who enjoy a broad and diverse education combined with a broad experience base appear to be more adaptable and exhibit better decision-making skills and greater judgement, and make better decisions in complex and ambiguous environments.

The Defence Science and Technology Organisation's (DSTO) research into complex adaptive systems has identified the sorts of personal qualities that adaptive individuals exhibit. These qualities are desirable in Air Force members and can be developed through education and training, and will equip them with the appropriate mental 'stance' to operate effectively in complex environments. Individuals with these personal qualities are far more likely to achieve decision superiority in almost all contexts. These qualities include: no need for closure or certainty (i.e. can work in ambiguous circumstances), recognising that their own ideas are not infallible, accepting that they are not always right and are prepared to learn from their mistakes, allowing others to be wrong or make mistakes, and having an ingrained habit of thoughtful self reflection.²³

While Air Force's current training system is meeting its requirements for technical mastery, it is not as demonstrably successful in the development of professional masters who understand and put into effect the fundamentals of adaptability and decision superiority. Personnel need both traditional Air Force skill sets to fly, fight or support as well as additional skills to exploit the new capabilities available to them and to enable them to interact decisively with each other. As the complexity of the operating environment, the technologies involved and the pace of decision-making continue to evolve rapidly, Air Force members will need to become more effectively multi- and cross-skilled, placing a premium on effective education and training systems geared to career-long learning. Decision superiority for both operations and force development will come from the ability of Air Force personnel to understand and contextualise information responsively, to decide on courses of action in ambiguous environments, to act on decisions, to measure the effectiveness of outcomes and to adapt their approach as needed.

Organisationally – how are we going to get there?

By developing an organisational structure that explicitly facilitates effective decision-making while enabling decentralised decision-execution within a framework that is deliberately engineered to facilitate learning cycles, Air Force will develop the institutional capacity for adaptivity and decision superiority. Although clear organisational structure is desirable for command it is less critical in a decision-making process that is network based, adaptive and distributed. Decision-making, nonetheless, requires authority, and authority is still derived from one's status within the organisation. Therefore, Air Force's organisational structure needs to accommodate these tensions and bestow appropriate authority and responsibility as low as possible in the chain of command while maintaining an appropriate military command structure.

Institutionally, the most significant change that Air Force will undertake is a re-alignment in its education practices. As a tactically excellent and technologically focused force, Air Force has, until recently, undervalued

²² General David H. Petraeus, 'Beyond the Cloister', *The American Interest*, Vol. II, No. 6, July/August 2007, <http://www.the-american-interest.com/ai2/article.cfm?Id=290&MI=14>, accessed 28 Feb 08.

²³ Anne-Marie Grisogono, *Transitioning a Brigade to an Adaptive Organisational Stance*, p. 5.

broad non-technical education. While this focus has not hindered the development and operation of the force within the tactical and operational realms to date, it will no longer suffice for a force with a strategic focus. Air Force is committed not only to a thorough review of its professional military education system, but also to changing its culture to value and reward broad-based career-long education. A key feature, therefore, in aligning the individual and collective Air Force mindset to superior decision-making is the adoption of an organisational culture that recognises and values the importance of continuous and broad-based education. Further, to become a strategic air force of influence, Air Force must transcend its technical and tactical focus to develop a workforce that embraces professional mastery in every aspect of work life. Technical mastery of air power competencies will always form the foundation of professional mastery and Air Force cannot afford to diminish its competencies in these areas. The professional mastery of air power, consequently, must be built upon these firm foundations. This professional mastery will be achieved through a deliberate education policy and culture. The intent is not only to develop strategic leaders for the force, but also consistently and systematically to produce thinkers and statesmen who are highly valued and sought after by government and external agencies to fill significant positions of influence.

Technical mastery of air force competencies will always form the foundation of professional mastery and Air Force cannot afford to diminish its competencies in these areas.

Under Project *Reshape*, Air Force Headquarters has already made significant structural changes to the organisation, especially in its ability to raise, train and sustain the force along with how it supports operations. This reorganisation places under one commander the responsibility to prepare the Air Force for operations from a total system perspective with the aim of ensuring prioritised and focused world-class education and training for its people. Through *Reshape*'s process of 'continuous improvement' the force will adopt the continuous short and long cycle learning loops that are essential to the RAAF becoming a true learning organisation that has at its heart a philosophy of adaptation and decision superiority.²⁴ Further, under *Reshape*, Air Force is re-engineering itself through organisational and workforce design. This re-engineering also involves an evaluation of Air Force decision-making processes and structures to ensure that they are optimal and a re-alignment of its culture so that it can be more effective with what it has today. This project represents a significant step in the right direction for Air Force to become a decisive organisation.

Decision superiority encompasses not only the outcomes of good decision-making, but also the processes, structures and organisational design that facilitate and enable superior decision-making.

Operations – how are we going to get there?

Air Force today provides the Government of Australia with potent air power options to meet a wide range of military objectives across the spectrum of conflict. To provide these options, Air Force is structured and manned to provide air power as part of a joint force within a whole-of-government approach to national security. However, operating within this broader context requires senior officers with a broad understanding and experience of working with Australia's national power apparatus if Air Force is to be an active and valued participant in shaping its security environment. In other words, Air Force must develop strategic thinkers and decision-makers who can operate effectively at the strategic level to ensure that strategic intent is translated into operational outcomes that Air Force can deliver.

²⁴ Note: Long and short cycle learning loops refer to an organisation's adaptation cycles. Short cycles are those, usually tactical level, learning situations in which the adaptation cycle—generate options, test them, evaluate them and retain the useful ones—is relatively rapid. The development of tactics, techniques and procedures is a good example. Long cycle loops are ones in which the adaptation cycle has broader application than just a local/tactical context. The development of doctrine is a good example. An organisation should utilise both long and short cycles to retain immediate short cycle lessons and adapt to them where appropriate and then more deliberately incorporate the aggregated lessons learned from long-term experiences.

As the RAAF further matures as an air force, so too will the way it conducts operations—from humanitarian assistance through to high-end conventional warfighting. Air Force cannot presume to know all the answers in advance; therefore, being able to detect changes in the battlespace and make decisions in response to those changes more effectively than an adversary is vital to operations. This uncertainty places a premium on better improvisation rather than more elaborate and exhaustive planning in recognition of the complex and adaptive nature of the adversary and the environment.²⁵ As a result, the critical combat competency for commanders will shift from predominantly rigorous planning—that often evaporates on contact with the adversary—to mission command that encourages improvisational responsiveness.²⁶ This is not to imply that planning is no longer required—far from it—rather it implies that there is a greater return on investment by placing more emphasis on flexibility and devolved decision-making than on developing rigid plans and trying to stick to them. This change of emphasis means that exercises and experiments should focus less on all-inclusive plans of attack or defence and more on the ability to respond flexibly to the unanticipated by moving from tightly scripted exercises to ones which allow some free play.

Cultural, organisational and technological networks have always been central to warfare, for it is through these networks that commanders develop an understanding of their environment and develop and implement their plans. In the past, the emphasis on networking was to improve the cultural and organisational aspects of a commander's understanding. Today, however, significant investment is occurring in developing the technological facets of networking in order to reduce the 'fog of war' and to improve the *rate* of decision-making, if not its import. The technological development in networking offers relatively new ways for commanders to move data, information and knowledge. Military success in an environment of pervasive networking will go to those commanders who can utilise their networks the most effectively, who encourage decentralised decision-making to the lowest feasible level, who have developed organisational structures capable of swiftly self-adjusting as new conditions emerge and who continually adapt their campaign to achieve strategic success.²⁷

Air Force must develop strategic thinkers and decision-makers who can operate effectively at the strategic level to ensure that strategic intent is translated into operational outcomes that Air Force can deliver.

How will we know when we have decision superiority?

Conceptually, determining if an organisation's decision-making ability is effective would appear to be a relatively simple affair—better decisions made in a timely fashion leading to dominance of the contested decision space. The reality is more subjective and problematic. The first thing that has to be acknowledged, however, is that decision superiority is a relative construct—relative in time and space—and once attained there is no guarantee that it will be kept. Once you have decision superiority, therefore, you have to work continuously to maintain it.

While there are many criteria that define a decisive organisation, the following are some of the more important. An air force that has attained decision superiority in all of its endeavours would, more likely than not, prevail over its adversaries across the spectrum of conflict by outmanoeuvring them in the decision space. Further, a decisive air force would have those parts of its culture, professional military education and training programs, and operating models that relate to decision superiority emulated. A decisive air force would be a deliberately engineered learning organisation that is structured to incorporate long and short learning cycles as its mechanism of continuous improvement. It would be an organisation based upon the understanding that adaptation is the best way to deal with new and unanticipated complex circumstances because it does not require detailed knowledge of the problem

²⁵ Grisogono and Ryan, *Operationalising Adaptive Campaigning*, pp. 1–2.

²⁶ Michael Schrage, *Perfect Information and Perverse Incentives: Costs and Consequences of Transformation and Transparency*, Working Paper 03-1, Massachusetts Institute of Technology, Cambridge MA, May 2003, p. 15.

²⁷ United States Joint Forces Command, *Joint Operating Environment: Trends and Challenges for the Future Joint Force Through 2030*, United States Joint Forces Command, Norfolk VA, December 2007, p. 66.

in advance.²⁸ A decisive air force would actively progress the case for a networked, seamless, joint and whole-of-government approach to national security because it is only through such an approach that it can achieve its maximum potential. A decisive air force would attract and be more likely to retain the services of highly competent people as each individual in making superior decisions is more likely to succeed; thereby they would see their value clearly—a very important consideration with Generation Y individuals.²⁹ Furthermore, by being a decisive force, Air Force would consistently and systematically produce first-class leaders, thinkers and statesmen who are highly valued and sought after by government and external agencies to fill significant positions of influence. Finally, Air Force's operational capability will be enhanced through decisive operations, facilitated by controlling the decision space, that make a direct and measurable contribution to achieving intended political outcomes.

Overwhelming Force

United States Air Force – The Air War in Vietnam

From March 1965 to November 1968 the air forces of the United States—USAF, USN and USMC—and the Republic of Vietnam Air Force conducted Operation *Rolling Thunder*, the gradual and sustained bombardment of North Vietnam. During the course of the campaign the American and Vietnamese air forces flew over 300 000 attack sorties and dropped approximately 900 000 tons of bombs on the North Vietnamese transportation systems, military bases, industrial infrastructure and air defences. It was the biggest air campaign of the Cold War period and the largest and longest air battle waged by the United States since World War II.



B-52D bombing North Vietnam during Operation *Rolling Thunder*

The aims of the campaign were to persuade the North to cease its support of insurgency in South Vietnam, to destroy North Vietnam's capacity to wage war, and to interdict the flow of men and material into the South. In November 1968 the operation was terminated having achieved none of these objectives. Fundamental errors and miscalculations in the American decision-making process meant that their enormous technological advantage and the use of overwhelming force had failed to achieve victory.

From the outset the United States failed to appreciate the nature of the conflict and the resolve of their enemy. Civilian and military leaders were simply unable to conceive that the North Vietnamese, or indeed any nation, could withstand and endure the overwhelming destructive force directed against them. The deliberate use of gradualism restricted the targets available to commanders and caused the North Vietnam to doubt America's resolve while allowing them time to recover, adapt and strengthen their air defences. American military planners also lost sight of the objectives of the campaign. Within a week of the commencement of the bombing campaign the first US ground troops were committed to South Vietnam, ostensibly to defend the airfields used to conduct *Rolling Thunder*. Within three months the role of the ground troops was expanded to the conduct of offensive combat operations. The ground campaign soon gained its own momentum and rapidly achieved primacy over *Rolling Thunder*. By late 1965, air power resources were being increasingly diverted from attacks on the North in order to support the ground campaign in the South. Air Force commanders too, progressively focused on the means of the campaign rather than the ends being sought. Progress was measured in terms of tactical proficiency—in sortie generation and tonnage of bombs dropped—rather than the effectiveness of the campaign in achieving the strategic objectives. The result was the complete failure of the most powerful air force in world to defeat a far smaller and technological inferior enemy.

²⁸ Grisogono, *Transitioning a Brigade to an Adaptive Organisational Stance*, p. 2.

²⁹ Penelope Trunk, 'What Gen Y Really Wants', *Time*, 5 Jul 07.

Risks

The introduction of nuanced concepts, such as decision superiority, is not without some inherent risk. Any new military concept, especially in its early developmental phases, will exhibit certain frailties that may threaten the short-term effectiveness of the force. Further, changing an organisation's culture, structure and leadership practices while conducting combat operations and undergoing a large capability transformation will require careful planning and robust leadership. Any additional risks associated with the introduction of the decision superiority concept, therefore, must be identified early and managed appropriately. As an enhancement to current capability built upon the solid foundations of tactical excellence and technical mastery, decision superiority presents very little actual risk, rather a set of challenges and opportunities. Nonetheless, it is prudent to take stock of what risks might arise and to plan to mitigate them as far as practicable.

Personnel – risks

It is hard to conceive of a downside to increasing the broad education of Air Force members. Nonetheless, such education poses some challenges, including cost, workforce management and time away from primary duties for members undertaking education programs. Air Force's approach must be carefully balanced to support both the individual's educational and training needs, and the procedural demands of effectively utilising these enhanced personnel capabilities.

As an organisation, Air Force has historically and reasonably tended to value those who are good aviators—technical masters—rather than those who are good military officers specialising in air power—professional masters. Consequentially, Air Force's primary career management mechanism—promotion—is based on a value system biased towards rewarding technical achievement over professional development. While this is very sound philosophy for a tactical air force, it will not work in a systemically sustainable way for a strategically focused air force. This approach has generally syphoned off the best and brightest into career paths closely and continuously associated with flying and tactical roles (or to opportunities outside of Air Force) rather than developing them as broadly experienced professional strategic thinkers and leaders. This tendency has at times seriously diminished the pool of senior strategic professionals available to Air Force.

Organisational – risks

If Air Force chooses not to adopt decision superiority as a concept, it risks remaining a tactically focused force and not as effective in all of its endeavours or as well respected as it could be. If Air Force chooses to continue in its current form, it will remain largely reactive to its environment rather than being a proactive and influential participant—as any organisation that does not value superior decision-making in all of its endeavours cannot expect to be influential or valued in return.

In designing and implementing an organisational structure that most effectively supports and facilitates decision superiority there exists the risk that workforce requirements will exceed established workforce numbers. The tendency in organisational restructures is that as the new workforce processes are determined, more activities and responsibilities are identified and greater workforce requirements apparently generated. Decision superiority aims to promote clearer and less complicated lines of authority, responsibility and decision-making, and to streamline process and policy thus freeing up time for primary duties. Nonetheless, a potential risk exists for increased workforce requirements as a result of organisational restructuring for decision superiority.

Effective decision-making is also at risk from excessive volumes of data being presented to decision-makers. Although this growth in data volumes is well understood, appropriate and effective solutions are less clear. Nonetheless, while seamless networks of the future will provide the necessary links between sensors, engagement systems and decision-makers, it is the provision across these links of accurate and timely information and

knowledge (not just data) that will enable individuals and commanders to make the best decision at the right time to achieve the desired effect. Data overload is a tendency and risk that will have to be carefully monitored and managed as more capable and integrated network capabilities come into service.

Decision superiority works best when there is a significant diversity in the experience base and opinions of those involved in the decision-making process.³⁰ Decision-making organisations, such as command headquarters, therefore, should be staffed with as diverse a group of people as practically possible. While adopting a ‘cookie cutter’ approach to developing decision-makers is efficient and provides some consistency, the downside includes: predictable decisions to a given stimuli (not always wise in combat situations), lack of customisation to individual requirements (if the individual does not fit the mould they are unacceptable) and individuals selected by these means often cope poorly with change.

Operations – risks

A significant risk to all military operations is poorly articulated, confused or contradictory strategic aims. The more realistic the strategic aims, the greater the chance of military success.³¹ To temper unrealistic expectations of Air Force’s capabilities during times of crisis and to operate to its full potential during times of peace, Air Force needs senior officers who have developed comprehensive personal networks and a sound understanding of Australia’s strategic environment and its ‘players’. Consequently, Air Force needs officers capable of operating effectively at the strategic level of command to ensure that the political outcomes desired match the military capability available. Air Force, therefore, needs to grow selected officers who can operate successfully at this level of command. This will result in Air Force systematically developing a pool of officers capable of operating competently in the strategic environment, as well as obtaining better vertical alignment within the organisation.³²

The *Defence Capability Plan* over the next 10 to 15 years will not only enhance some existing capabilities for Air Force, but will also introduce some significant new ones as well. While this new equipment will bring some technical challenges and new capabilities, it will also test Air Force’s decision-making processes. The volume of data produced by these platforms, along with readily available means of disseminating it rapidly, has the potential to saturate command networks and commanders—causing ‘analysis paralysis’ and slowing the decision-making tempo of operations. Without careful management and implementation, such an approach leads to suboptimal implementation of capability as Air Force’s command processes play catch-up to capability development. Air Force has to ensure that every item feeding command networks is adding value and has to change the flood of data to a steady flow of understanding.

The significantly increased networking of Air Force’s platforms, sensors, and command and control systems resulting from the *Defence Capability Plan* will introduce new risks. While more networks create greater combined intellectual power, they also create more interdependencies and are therefore more vulnerable. Hence, Air Force’s networks will need to be self-healing in order to minimise the inherent risks associated with the loss or compromise of information on the network, system failure—deliberate or otherwise—and human error.

³⁰ Dowse, *The Diverse Organisation*, p. 54.

³¹ Angelo Codevilla and Paul Seabury, *War: Ends and Means*, Second Edition, Potomac Books Inc, Dulles VA, 2006, p. 163.

³² Vertical alignment: where operational units have a better understanding of the strategic guidance coming from higher headquarters and higher headquarters is more trusting of the operational units.

CONCLUSION

In war, superior knowledge does not necessarily imply sound decisions any more than knowledge implies wisdom. In war, as in all other human endeavours, the more competent the decision-maker the less information they require in order to act effectively. This is because such people are able to compensate their information gaps by backfilling from their experience and knowledge, and learn to learn in their context. These people do not have encyclopedic knowledge but are able to adapt successfully to the circumstances and environment in which they find themselves. Weak decision-makers, for their part, never seem to have enough information—perhaps because they want the situation to dictate their decisions. They often get their wish!³³

A small air force could, through its ability to dominate the decision space, better shape its security environment, mitigate its size disadvantage and better fashion outcomes to its desired ends. Dominating the decision space in joint, national and international partnerships will be a key capability of superior forces in the coming years. This dominance, called decision superiority, may be an outcome, a process or an organisational attribute, as well as a personal quality, and is only found in organisations designed, structured, trained and exercised to make superior decisions, in a time and fashion of their choosing, at every organisational level. Decision superiority, therefore, refers not only to the human aspect of making ‘better’ decisions, but to a much broader organisational attribute and philosophy that embraces the value of adaptivity as the best means of making superior decisions.

Decision superiority is an enabling concept, which if utilised as an underpinning philosophy of the Air Force enterprise, has the potential to alter fundamentally the way the RAAF operates and will be part of a tool set that enables disproportionately greater outcomes for a given input with little risk. The development of this concept represents the first steps in growing Air Force into the type of force envisaged in its Future Air and Space Operating Concept. This future force is one in which information from advanced and ubiquitous sensors, coupled with adaptive and responsive command, control and engagement, will provide Air Force with a qualitative and quantitative edge.

To realise this future, Air Force will have to make some adjustments in three key areas. Firstly, through transforming its organisational design to be a force structured to decide and adapt, an organisation that values decision-making, education and taking the long-term view for generating considered and enduring results—a learning organisation. Underpinned by the capability for decision superiority, the Air Force will be adaptive and seamlessly integrated, and optimised for decision-making within a joint and whole-of-government approach to national security. This capacity for decision superiority will apply across all domains—internally within Air Force and externally among the broader security environment, nationally and internationally. This transformation will be an ongoing evolutionary process for many years to come.

Secondly, while Air Force’s capability and capital equipment goals are set for the next 10 years in the *Defence Capability Plan*, its force structure needs to be designed from a systemic approach in which all of its resources, human and technological, are synergistically networked to maximise its decision-making potential. A fully networked, decisive organisation will allow Air Force the flexibility to apply any or all of its capabilities as a part of Australia’s national effects-based approach to security appropriate to Australia’s national interests.

Thirdly, and perhaps most fundamentally, Air Force needs to focus the education and culture of its people towards an adaptive decision-making way of thinking. Air Force’s most critical and valued resource is its people and it must recognise that cultural change is required to infuse the force with the kind of thinking that enables decision superiority towards operational and strategic effect. The greatest distinction between a strategically focused air force and a tactical one is not manifest in terms of capability or equipment, but in the cognitive domain—how people think of and for themselves while conducting operations. Through education and training, Air Force should develop within its people with the wherewithal to be strategic thinkers, capable of superior decisions to achieve its strategic intent.

³³ Codevilla and Seabury, *War: Ends and Means*, p. 13.

BIBLIOGRAPHY

- Air Power Development Centre, *Air Campaigns – The RAAF’s Application of Air Power*, Air Power Development Centre, Canberra, 2008.
- Air Power Development Centre, *An Air Force of Influence: A Strategic Framework for the Future Air Force*, Air Power Development Centre, Canberra, 2008.
- Alberts, David S. and Richard E. Hayes, *Power to the Edge: Command and Control in the Information Age*, US Department of Defense Command and Control Research Program, Washington DC, June 2003, http://www.dodccrp.org/files/Alberts_Power.pdf.
- Arsham, Professor Hossein, *Applied Management Science: Making Good Strategic Decisions*, University of Baltimore, Baltimore MA, 2008, <http://home.ubalt.edu/ntsbarsh/opre640/opre640.htm>, accessed 8 Jan 08.
- Berliner, Brian, *Learning: Data, Information, Knowledge, Understanding, Wisdom*, <http://blogs.bnet.com/ceo/?p=86>, accessed 19 Feb 08.
- Binskin, Air Marshal Mark, *Commander’s Intent: Air Force – One Team*, Air Power Development Centre, Canberra, 4 July 2008.
- Chiabotti, Stephen D., ‘A Deeper Shade of Blue’, *Joint Force Quarterly*, Issue 49, 2nd Second Quarter, 2008.
- Clausewitz, Carl von, *On War*, edited by Anatol Rapoport, Penguin Books, London, 1982.
- Clippinger, Dr John H., *Human Nature and Social Networks*, SocialPhysics.org, 2005, http://www.socialphysics.org/images/Human_Nature.pdf.
- Clippinger, Dr John H., *Leadership*, SocialPhysics.org, 2005, <http://www.socialphysics.org/images/Leadership.pdf>.
- Codevilla, Angelo and Paul Seabury, *War: Ends and Means*, Second Edition, Potomac Books Inc, Dulles VA, 2006.
- Department of Defence, *Defence Capability Plan 2006–2016*, Public Version, Defence Capability Development Group and Defence Materiel Organisation, Canberra, 2006.
- Dorman, Andrew M., *Transforming to Effects-Based Operations: Lessons from the United Kingdom Experience*, Strategic Studies Institute, US Army War College, Carlisle PA, January 2008, <http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB831.pdf>.
- Dowse, Andrew, *The Diverse Organisation: Operational Considerations for Managing Organisational Information Resources*, University of New South Wales – Australian Defence Force Academy, Canberra, 2007.
- Grisogono, Anne-Marie and Alex Ryan, *Operationalising Adaptive Campaigning*, CCRTS Presentation: ‘Adapting C2 to the 21st Century’, Defence Science and Technology Organisation, Adelaide, 2007.
- Grisogono, Anne-Marie, *Transitioning a Brigade to an Adaptive Organisational Stance*, Workshop Paper, Defence Science and Technology Organisation, Adelaide, July 2008.
- Harris, Robert, *Decision Making Techniques*, VirtualSalt, 3 July 1998, <http://www.virtualsalt.com/crebook6.htm>.
- Hutchins, Susan G., Jeffrey G. Morrison and Richard T. Kelly, *Principles for Aiding Complex Military Decision Making*, in proceedings of Second International Command and Control Research and Technology Symposium, Monterey CA, 25–28 June 1996.
- Jeffress, Richard S., *The Continuing Quest for Certainty: Decision Superiority and the Future Force*, School of Advanced Military Studies, Army Command and General Staff College, Fort Leavenworth KS, 2004.
- Moseley, General Michael T., *The Nation’s Guardians: America’s 21st Century Air Force*, CSAF White Paper, Pentagon, Washington, 29 December 2007.
- Payne, John W., James R. Bettman and Eric J. Johnson, *The Adaptive Decision Maker*, Cambridge University Press, New York, 1993.
- Trunk, Penelope, ‘What Gen Y Really Wants’, *Time*, 5 Jul 07.

- Petraeus, General David H., 'Beyond the Cloister', *The American Interest*, Vol. II, No. 6, July/August 2007, <http://www.the-american-interest.com/ai2/article.cfm?Id=290&MIId=14>.
- Quaife, Air Vice-Marshal John, 'Reshaping the Royal Australian Air Force: An Operational Perspective', in the proceedings of the 2007 *Chief of Air Force Air Show Conference: Smaller Air Forces and the Future of Air Power*, held in Melbourne on 19 March 2007.
- Rasmussen, Mikkel, *The Risk Society at War: Terror, Technology and Strategy in the Twenty-First Century*, Cambridge University Press, Cambridge, 2006.
- Reid, D. and R. Giffin, *The Cults of Military Thinking: Intellectual Renaissance*, Defence Science and Technology Organisation, Adelaide, 2004.
- Royal Australian Air Force, Australian Air Publication 1000-D—*The Air Power Manual*, Fifth Edition, Air Power Development Centre, Canberra, 2007.
- Royal Australian Air Force, Australian Air Publication 1000-F—*The Future Air and Space Operating Concept*, Air Power Development Centre, Canberra, 2007.
- Royal Australian Air Force, Australian Air Publication 1000-H—*The Australian Experience of Air Power*, Air Power Development Centre, Canberra, 2007.
- Rudd, Kevin, *Advancing Australia's Global and Regional Economic Interests*, address to the East Asia Forum, 26 March 2008, http://www.pm.gov.au/media/Speech/2008/speech_0145.cfm.
- Schrage, Michael, *Perfect Information and Perverse Incentives: Costs and Consequences of Transformation and Transparency*, Working Paper 03-1, Massachusetts Institute of Technology, Cambridge MA, May 2003.
- Shelton, Henry H., 'Professional Education: The Key to Transformation', *Parameters: US Army War College Quarterly*, Vol. XXXI, No. 3, Autumn 2001.
- Tzu, Sun, *The Art of War*, translated by Lionel Giles, Signature Press Editions, London, 2007.
- United States Joint Forces Command, *Joint Operating Environment: Trends and Challenges for the Future Joint Force Through 2030*, United States Joint Forces Command, Norfolk VA, December 2007.
- Wheeler, Steven, Walter McFarland and Art Kleiner, 'Resilience Report: A Blueprint for Strategic Leadership', *strategy+business*, Booz & Company, 10 January 2008.