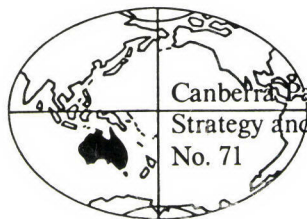


RAAF AIR POWER DOCTRINE :

A Collection of
Contemporary
Essays

Gary Waters
Editor



Canberra Papers on
Strategy and Defence
No. 71

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STRATEGY AND DEFENCE NO. 71**

**RAAF
AIR POWER
DOCTRINE**

**A COLLECTION OF
CONTEMPORARY ESSAYS**

**Gary Waters
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ABSTRACT

This collection of essays, written by a group of Australia's leading air power exponents, complements the *Royal Australian Air Force Air Power Manual* recently produced by the RAAF and aims to contribute further to awareness and understanding of air power in Australia.

The essays examine the circumstances which led the RAAF, after seventy years of operation, to develop an air power doctrine unique to Australia; the general theory of air power; the question of control of assets; operations and roles required of air power in Australian conditions; the joint force and political context in which Australian air power operates; the application of air power within the strategy of defence in depth.

Canberra Papers on Strategy and Defence are a series of monograph publications which arise out of the work of the Strategic and Defence Studies Centre, Research School of Pacific Studies, The Australian National University. Previous *Canberra Papers* have covered topics such as the relationship of the superpowers, arms control at both the superpower and South-east Asian regional level, regional strategic relationships and major aspects of Australian defence policy. For a list of those still available refer to the last pages of this volume.

Unless otherwise stated, publications of the Centre are presented without endorsement as contributions to the public record and debate. Authors are responsible for their own analysis and conclusions.

The views expressed in this publication are those of the authors and not necessarily those of either the Minister for Defence or the Department of Defence.

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Gary Waters

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ACRONYMS AND ABBREVIATIONS

AAA	Anti-Aircraft Artillery
AAP 1000	Australian Air Publication 1000 - <i>Royal Australian Air Force Air Power Manual</i>
AAR	Air-to-Air Refuelling
ACAUST	Air Commander Australia
ADF	Australian Defence Force
AEW&C	Airborne Early Warning and Control
ALG	Air Lift Group
ANU	Australian National University
AO	Area of Operations
APSC	Air Power Studies Centre
ASW	Anti-Submarine Warfare
BAI	Battlefield Air Interdiction
CAIRS	Close Air Support
CAS	Chief of the Air Staff
COMINT	Communications Intelligence
DCA	Defensive Counter Air
DOA87	<i>Defence of Australia 1987 (White Paper)</i>
ECCM	Electronic Counter-Counter-Measures
ECM	Electronic Counter-Measures
ELINT	Electronic Intelligence
ESM	Electronic Support Measures
EW	Electronic Warfare
JINDALEE	Over-The-Horizon Radar Network
MPA	Maritime Patrol Aircraft
MPG	Maritime Patrol Group
OCA	Offensive Counter Air
OTHR	Over-The-Horizon Radar
RAAF	Royal Australian Air Force
RAF	Royal Air Force
RAN	Royal Australian Navy
R&D	Research and Development
RDT&E	Research, Development, Test and Evaluation
RNZAF	Royal New Zealand Air Force
SAM	Surface-to-Air Missile
SEAD	Suppression of Enemy Air Defences
SRG	Strike Reconnaissance Group

TFG
TTG
USAF
VIP

Tactical Fighter Group
Tactical Transport Group
United States Air Force
Very Important Person

CONTRIBUTORS

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FOREWORD

Group Captain B.J. Espeland, AM

Air power is able to respond to multiple threats over a diverse area. That is, it can be employed against a variety of targets dispersed throughout that wide area, with priorities for employment able to be switched rapidly. Importantly, air power can also be concentrated in time and space against specific high-value or high-priority targets.

Thus, the judgement that air power has special significance to the defence of a nation with Australia's characteristics and geo-strategic circumstances is perhaps an obvious one. Yet, it is at this point that the understanding of air power in an Australian context often ends.

In determining how air operations may best be conducted, the RAAF must not lose sight of the need to educate its personnel, other members of the ADF, the broader defence community, and the Australian population at large. This involves a process of exposing people to an awareness of air power in Australia's environment.

The cornerstone to this process has been laid with the recent release of *Royal Australian Air Force Air Power Manual* - the first comprehensive enunciation of air power doctrine in an Australian environment. This collection of essays builds upon that foundation.

PREFACE

Wing Commander G.W. Waters

The Royal Australian Air Force (RAAF) published AAP 1000, *Royal Australian Air Force Air Power Manual*, in September 1990.¹ Written by the Air Power Studies Centre (APSC), the Manual is the first attempt in the 70-year history of the RAAF to formally document a central body of thought on how air power should best be applied in the defence of Australia. Whilst the APSC would hope that all the information contained in the 273 pages of this rather erudite document is digested, it accepts that there may be times when a broad overview of the doctrinal thought would suffice.

To that end, this collection of essays has been compiled. The first, entitled 'The RAAF Writes Its Doctrine', postulates why it has been necessary for the RAAF to record its own doctrine in the first place. In reaching its conclusion, this essay examines the meaning of doctrine, explains Australia's lack of an air power doctrine in the past, and highlights the need for single-Service doctrine in an increasingly joint military environment. The second essay poses the question, 'Should air power be united or divided in the defence of Australia?' The title, 'One-A-Penny, Two-A-Penny', is an obvious reference to the 'penny packeting' of aerial capabilities and the dangers inherent in such a course of action. The essay explains the maxim of the unity of air power from first principles.

The next three essays discuss the essential doctrinal thought upon which the AAP 1000 was based. The first - Essay Three - is entitled 'Air Power - An Australian Approach' and is the RAAF's initial attempt to enunciate a general theory of air power which has application world-wide. This is the first step in orientating a valid theory towards Australia. Essay Four, 'Air Power Operations and Roles for Australia', takes the second step. It describes in detail the specific operations and roles required of Australia's air force and how those operations and roles may be conducted for best effect. Because air power does not exist in isolation from other forms of combat power, nor from political strategic direction, these two essays must be viewed within a broader context. Accordingly, another in this group - Essay Five - is offered, entitled 'An Australian Approach to War'.

It is all very well to identify a need for formally endorsed doctrine and to define what it should be. However, to then bring the conceptual threads together, some practical orientation is called for. Essay Six provides just that. Entitled 'Air Power in the Defence of Australia', it is a transcript of the Blamey Oration delivered by Air Marshal R.G. Funnell to the United Services Institution of Victoria in August 1988. Air Marshal Funnell provides an appreciation of Australia's geo-strategic circumstances and clearly and succinctly argues the most appropriate application of air power in a strategy of defence in depth.

An important issue mentioned by the Director of the Air Power Studies Centre in his Foreword is air power awareness. It is to education that we must look to provide the proper focus for air power awareness: indeed, some of these essays have been used in recent staff courses. The time is certainly opportune to bring these essays together under one cover as the essence of RAAF Air Power doctrine. In complementing the *Royal Australian Air Force Air Power Manual*, this collection of essays will contribute further to an awareness and understanding of air power in Australia.

Endnote

1. Air Power Studies Centre, AAP 1000, *Royal Australian Air Force Air Power Manual*, (RAAF Base Fairbairn, Canberra, 1990).

CHAPTER ONE

THE RAAF WRITES ITS DOCTRINE

Group Captain B.L. Kavanagh
Group Captain D.J. Schubert

Editor's Note

This essay provides a most appropriate starting point for a book on contemporary RAAF doctrine. The authors argue that RAAF doctrine of the past had been borrowed from the UK and USA and that there had been little incentive for the RAAF to develop its own doctrine for the employment of air power. Changes in world politics and the release of DOA 1987, Australia's Defence White Paper¹ which articulated a policy of defence self-reliance, saw all that change.

The authors argue that the US 'Guam Doctrine' and the UK withdrawal from the Far East were in fact blessings in disguise. After all, the national policies and military strategies that had been adopted by Australia did not reflect Australian and regional conditions. Furthermore, the air power doctrine that existed in a myriad of forms could not be embraced readily by Australia's airmen.

Doctrine, the authors say, is a definitive statement for operations in peacetime and in time of conflict. Although only a guide, it provides a focus for strategy and planning and forms a common baseline that enhances education and understanding. Experience and innovation provide the inputs for doctrine. It is experience that provides the enduring foundation and innovation which gives the dynamic direction.

Every RAAF Serviceman and Servicewoman needs a common understanding of why the RAAF exists and how it can use air power to protect the nation. It is only through an RAAF-unique doctrine that this understanding can be provided. Doctrine can then be used to guide all levels of planning and support associated with the conduct of air operations. It can

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also assist in the determination of appropriate aircraft, weapons systems and capabilities for the future.

At a time when the ADF is becoming more attuned to joint operations, why postulate single-Service doctrines? The authors argue that even in the joint arena, the single Services must still exploit their own form of combat power. Furthermore, those Services have separate force structures, different equipments and operating conditions, and different skills, tactical thinking and training requirements. Therefore, an RAAF doctrine is necessary before a more apposite joint ADF doctrine can be produced.

* * * * *

In a reference to doctrine and doctrine writing, General Momyer, USAF (retired) once wrote,

We find ourselves constantly in a dilemma as to whether too much detail has been presented or whether we have become so terse that the meaning [of doctrine] is clouded and darkness descends upon the reader.²

A mere discussion of doctrine causes some people to shudder, others to expound, at length, on the many different views of its meaning, while the remainder seem to sink slowly and interminably into Momyer's darkness. Mention of doctrine within the Royal Australian Air Force (RAAF) will elicit, at best, confusion, and at worst, looks of derision from many. In the words of the indomitable Professor Julius Sumner Miller, 'Why is it so?'³

A Borrowed Doctrine

The straightforward answer is that in the past the RAAF has not perceived a need for an Australian doctrine. This has been a consequence of Australia's earlier 'forward defence' policy whereby the assistance of 'big league' sponsors such as the UK and the USA has allowed the RAAF to adopt, wholesale, the doctrines of air forces of these nations. This luxury has, at the same time, proved a disincentive

to the independent development of air power strategic thought in Australia. RAAF doctrine has therefore been the doctrine of others, neither directed specifically at Australia, nor influenced significantly by members of its air force. In short, few members of the RAAF have thought about doctrine; of those who have, even fewer have contemplated it in an Australian context.

An example of borrowed doctrine was the RAF AP 1300, *Operations Manual*. This manual was a significant influence on the RAAF until a major shift in UK strategic strike defence policy in the 1960s rendered much of its content obsolete. Until that time, concepts used in Australia, such as 'the balanced air force', were derived from this useful manual, once considered the unofficial 'bible' of air operations in the RAAF.

Times have changed. Major shifts in world politics - the US 'Guam Doctrine' and the emergence of regional economic and national powers, just to name two - have altered Australia's strategic circumstances. In turn, Australia's national strategies and defence policies have changed; old reliances are now irrelevant and the absence of a specifically Australian doctrine is becoming apparent. The RAAF can no longer rely on the doctrinal precepts of other, generally larger and more broadly based, air forces which support fundamentally different national policies and military strategies. While their doctrines are at times outdated, they are, more importantly, inappropriate to Australian conditions. Moreover, reliance on other air forces to formulate how this nation will use its air power in future hostilities is contrary to the fundamental principles of Australia's recently adopted official defence policy of self-reliance.

There is however another, more important, philosophical reason why an increasingly self-reliant fighting force should have its unique, formalised doctrine. Unless a fighting force has a clear understanding, which is manifested in a definitive statement, of how it is going to fight in war, it has no explicit and absolute basis on which to focus its strategy and planning. Of equal importance, without a requisite doctrine that fosters broadly based understanding, a fighting force lacks those shared assumptions among commanders and subordinates that enable them to know intuitively what each is likely to do under the pressures that cause confusion in combat. For doctrine, if it is sound, is the means of reducing the Clausewitzian

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concepts of 'fog' and 'friction' of war, the same sound doctrine is the foundation of all successful military enterprises.

Doctrine - The Holy Writ?

Contrary to popular folklore, doctrine is neither some kind of codified law enunciating immutable rules on how to fight war, nor is it a dusty book of commandments kept in an old trunk in a deep, dark cellar, guarded by monks and brought out only for Kangaroo Exercise washups. Those ideas suggest things sacrosanct; that is to say, unchanging and unchallengeable. They are not doctrine, they are dogma. The rigidity of dogma inevitably leads to failure - as history and experience show. Military operations do not aim to fail, so dogma has no place in their domain.

Military doctrine is a body of central beliefs about war that guides the application of power in combat: it is authoritative but only a guide and requires judgement in its use. Doctrine is derived from a synergy of two sources - fundamental principles and innovative ideas about the best use of combat power. Fundamental principles draw on experience and are time-honoured as the optimum way to succeed, or, what has worked best in the past. Conversely, innovative ideas look only to the future and include theoretical as well as practical applications. Fundamental principles are, by nature, relatively permanent, evolving slowly, whereas innovation embraces continuous change. The overall interaction of the two therefore makes military doctrine a particularly dynamic process bounded only by the limits of our imagination.

Air Power Doctrine

We have defined doctrine here in a general sense, as it applies to any combat power. Air power doctrine however has a more specific focus. Firstly, consider what air power is. The widely recognised Mason and Armitage definition proclaims air power as:

... the ability to project military force by or from a platform in the third dimension above the surface of the earth.⁴

So air power doctrine can be described as the central beliefs about the conduct of war that guide air services in the application of military power within this third dimension.

Note that air power doctrine is not just concerned with the air war nor confined solely to air forces. Air power doctrine is about the best use of air services to exploit the intrinsic qualities of air power in the achievement of national objectives. The characteristics of air power, its advantages and limitations, must be conveyed within the context and form of future warfare. While air power doctrine logically may be based on the past and established in the present, its prime concern is with the future. Lord Tedder, Chief of the Air Staff of the RAF from 1946 to 1949, and an exponent of air power, encapsulated the concept of doctrine when he stated,

We must look forward from the past ... not back to the past.⁵

The Shaping of Air Power Doctrine in Australia

Let us take Lord Tedder's advice and dwell for a moment on the historical events that have shaped air power doctrine both globally and nationally. In this way we will have a better understanding of where RAAF doctrine is today and where it should go from here.

Throughout the relatively short history of air power (some 80 years) opportunities for development of air power doctrine have been few. This was initially the result of a harmful effect on the efficacy of air power doctrine caused by some over-earnest, politically motivated proponents of air power who were actively seeking the independence of air forces. It was also the result of a disproportionate demand on air power's responsibility to support land and maritime powers, often to the detriment of singular development of operations within the dimension of the air. Air power can be applied in support of other combat powers; it can also be applied independently. Both applications are vital to a nation's security, yet history suggests that the development of the latter role has suffered from this undue emphasis on the support role.

An unrelated but parallel development was the attitudinal change to warfare since the end of World War II. The idea of global

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confrontation, either conventional or nuclear, was the driving force behind Western military doctrine immediately after World War II and for the next twenty years. It has steadily given way to greater emphasis on limited warfare. For political and military reasons, modern warfare now seeks limited objectives rather than the total victory of the past, and conflicts may take the form of counter-insurgency, guerilla warfare or counter-terrorism. The Granada invasion and the raid on Libya are examples of the modern use of combat force, and are acknowledged in today's warfare lexicon with its reference to low-intensity conflict or, in Australia's case, escalated low-level conflict on a regional scale. The attitudinal changes to warfare over the four decades since World War II have had a major impact on the application of air power.

Technology too has had an impact. Technology has improved the performance of military equipment, with the direct result that the numbers of weapons and weapon systems within military inventories have decreased. This has not been without corresponding and dramatic rises in costs. Also, the cost of retaining and training personnel has increased relative to the past. In short, past capabilities can now be matched with fewer resources, but rising costs and diminishing numbers of assets are factors of concern within a modern military force.

There is no doubt that the RAAF today is a high-technology force. Yet it is still a small force with a decreasing inventory and, paradoxically, an increasing demand for provision of air services. This latter point is exemplified in that RAAF air power assets are now needed for fleet protection, following disbandment in the 1980s of the Royal Australian Navy (RAN) Fleet Air Arm. At the same time, strategic guidance from the 1987 Defence White Paper emphasises how the newly adopted Australian defence policy of self-reliance and defence in depth, '... gives priority to the air and sea approaches in our area of direct military interest'.⁶ Furthermore, this large area of Australia's direct military interest - over 10 per cent of the earth's surface - is unlikely to decrease in the future.

To reiterate, air power in Australia today faces different challenges to those of the past in terms of perceived real threats, forms of combat, and tasks. Air power is now responsible for defence of an enormous, Australian area of direct military interest using more lethal,

more expensive and gradually decreasing numbers of air assets. Allocation of these limited assets is now the most significant, single issue of command and control within the Australian Defence Force (ADF). This last point is controversial because there is increasing pressure to unnecessarily divide Australia's air services - a concept which defies doctrinal precepts on the best use of air power.

Considerations When Writing Doctrine

Doctrine was defined earlier, and from that definition an understanding of air power doctrine was developed. While this theoretical aspect is important and necessary, it is not a sufficient condition for doctrine to be successful. The practical consideration must be that doctrine is recorded, in order that the body of central beliefs is accurately reflected and correctly perceived. The right perspective is an integral part of the revision and refinement which make doctrine a dynamic process. Accurately recording the collective memory of central beliefs enforces a discipline and clarity of thought which helps sustain this dynamic process.

From the earlier theoretical appreciation, doctrine was shown to have its roots in the relative permanence of fundamental principles and the dynamics of innovative ideas. It is this relative permanence associated with fundamental principles that provides the keystone for doctrine writing. When these principles, which chiefly arise from combat experience, are distilled more or less in a vacuum, they will provide an ideal foundation to develop air power doctrine for any nation. The foundation of principles is then melded with innovative ideas and the reaction of the two becomes the core or philosophical basis of doctrine. But a working doctrine cannot end there; in this form it is sterile, in a vacuum. For it to be effective for the organisation, it must be adjusted to the dominant influencing factors and realities of the organisation.

The realities that directly influence the doctrine of a military organisation are the defence policy of the nation, geography and geo-strategic perspectives. An offensive national defence posture, for example, would engender a far different military doctrine from one that is intrinsically defensive. Similarly, a doctrine for protecting an island nation with a vast area of national interest and regional

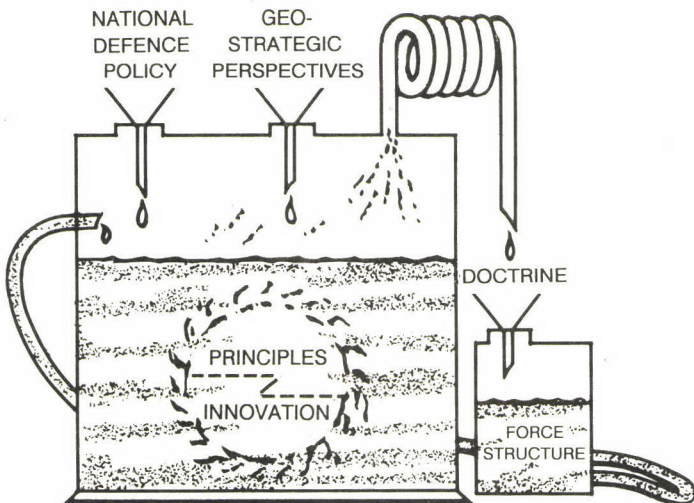
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influence must be different from that of a small land-locked country with hostile borders. Other influences, such as economics and threat assessment, add to the equation, but they shape the defence policies and geo-strategic perspectives more than directly influencing military doctrine.

Force structure - or the current force in being - is an influence that must be considered in the task of initially recording air power doctrine. No military organisation starts from a 'clean slate'; existing conditions are already part of the central body of beliefs. Once doctrine is written, based on the present organisation, force structure should then be reactive rather than proactive to the dynamics of doctrine.

Figure 1 is an attempt to show the complexities and dynamics of a viable, continuous doctrine. It represents a symbolic still. In the distillation process the container is the framework and fabric of a nation and its perspectives of warfighting. The fluid to be distilled - a mix of national defence policy and national geo-strategic perspectives - is both activated and fed by a 'yeast' containing the core elements of principles and innovation - both theoretical and practical. This core is

FIGURE 1: THE DOCTRINAL STILL



alive, volatile and is capable of crystallisation or precipitation depending on the state of the solution. The product distilled is doctrine; the product crystallised is dogma. Doctrine slowly reacts with force structure prescription, thus changing the force structure over time. Eventually the modified force structure feeds back, maturing and mellowing the original distillation process.

This analogy attempts to show the interactions of the various dynamic elements and stresses that doctrine development, being akin to an ongoing chemical reaction, should be viewed as a continuum. There is no suggestion that the 'still' or its ingredients have not existed in the past. The process of distilling doctrine is perennial - the end product, after all, is a body of thought. There is also no suggestion that the distillation process will not operate without all the ingredients; however in that situation the end product may not be the best available. In Australia's case defence self-reliance has changed the content of the ingredients, and now there is a need to critically examine the quality of the 'yeast' used previously. Given the changed ingredients, the most appropriate 'yeast', and the continuing 'chemical' reaction, the best doctrinal distillate will flow as a matter of course.

The Relevance of Doctrine to the RAAF

After all that good theory you may ask yourself: how is all this doctrinal 'moonshine' relevant to the RAAF and what's it got to do with aeroplanes? Perhaps the best way to begin to answer this question is to determine what members of the RAAF believe a doctrine should achieve, and why they think it is necessary to formalise RAAF doctrine.

It is common sense that an organisation the size of the RAAF, which shares responsibility for the security of the nation, should have a common set of assumptions, ideas, values and attitudes as a guide to its future actions. All members, from the initial trainee through the operational aircrew to the highest ranking leader, should share an understanding of how air power can best be applied in an Australian context. This can be achieved by documenting that understanding. Once recorded, the central beliefs provide the common baseline for education and dissemination of the collective thought. Should nothing

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else be achieved, recording a doctrine is at least a common starting-point from which to educate RAAF personnel.

A recognised, accepted, and duly recorded doctrine will also provide a common framework for planning within the RAAF and will influence the future force structure of the RAAF. So establishing a doctrinal framework gives direction to force structure and to development of the most appropriate strategies, from which evolve in turn the operational art and, at the unit level, the best tactics for use of its resources. Once again the point is stressed that doctrine is only a guide, it shows the direction - it is not a panacea but is rather one particular, but necessary, part of the planning process.

Viewed simplistically, the whole fabric of planning can be likened to developing a playing field. The national defence policy dictates the range of games to be played. Doctrine is the initial selection and clearing of a patch in the wilderness, levelling the ground and growing the grass. Some long-range planning is then needed so that the correct lines can be drawn on the ground and the appropriate goalposts erected. Once this is done, team leaders and members can then determine the best strategies, operational art and tactics to play the game. There is nothing to prevent a team working out its plays in advance, provided these plays are for the range of games dictated. There is more to playing the game, however, than strategies and tactics, and the results may not be as hoped for, particularly if the game then has to be played in the wilderness.

So, in answer to the sceptics - doctrine has a lot to do with the RAAF and is not just about flying aeroplanes. Doctrine gives every member of the RAAF a common understanding of why the Service exists and how air power can best be used to protect the nation. Doctrine, as a guide, influences every level of planning for the best employment and support of aircraft. Furthermore, it directly affects the selection of the RAAF's future aircraft, weapon systems and air power capabilities.

Why a Single-Service Doctrine?

Most military commanders in Australia recognise that the ADF is at present firmly committed to joint operations, and that its future defence commitments will most likely be joint in nature. Why,

then, should the RAAF write a dedicated single-Service doctrine in an increasingly joint-Service environment?

In the context of military operations, jointness denotes two or more independent Services functioning in their own operational environments, whether land, sea or air, under a single point of command to meet a common aim. Although command is centralised, each service still functions in its unique realm. Further, each one strives to complement the combat powers of the other two by exploiting its own combat power within its operating medium.

As long as ships continue to ply the seas, tanks roll over the ground and aircraft take to the skies, there will be fundamental differences between the three arms of the defence force. The differences will continue to be manifest in a number of ways. First, their force structures for the most part will remain separate, because of basic differences in equipment and operating conditions. Second, the peculiarities of the land, sea and air will demand different skills, applications and tactical thinking of the people who operate in their respective environments. Third, and most important, each Service's roles will remain aligned with its environmental dimension, and in many cases can be carried out as single-Service tasks, rather than as joint-Service tasks.

There is nothing to suggest, therefore, that jointness implies integration of the three armed Services. Equally, there is nothing to suggest that increased jointness will reduce the need for single-Service roles in the future. The diversities between land, sea and air as military operating media are too vast to permit an amalgamation of their essential functions, and the applications of land, sea or air power cannot simply be lumped together for economic or technical expediency. Perhaps such consolidation may be feasible if and when a military vehicle is built that is capable of operating across the full spectrum of the world's operating environments, including space. Until then, for the sake of overall defence efficiency, some support functions may be joint or assigned to one Service. But, as long as functional divisions remain, there will always be a requirement for single Services to carry out specialised roles and tasks unique to their own operating environments.

Justification of single-Service doctrine would not be necessary if jointness were viewed from an historical perspective. In 1942,

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during the North Africa campaign of World War II, Field Marshal Montgomery and Air Marshal Coningham created the Allied Tactical Air Forces and introduced 'Air Land Battle' doctrine. They showed that the quintessence of jointness in an air land battle was cooperation - in this case, between land and air forces with their unique functions, and among allied nations. Without cooperation, all the joint doctrine and procedures in the world will not bring together three organisations as disparate as the fighting arms of a nation. Conversely, with cooperation, jointness will triumph with even a modicum of pre-ordination.

Unfortunately, this perspective of jointness is non-existent: jointness is gathering a momentum of its own, almost as an end in itself rather than a means to an end. It tends to de-emphasise the need for single Services yet avoids fully fledged integration of the Services. And, all too often, initiatives that are 'in the interests of jointness' are considered sacrosanct. To challenge them borders on heresy. Perhaps we need to rigorously question some joint initiatives, particularly those that may reduce a Service's capacity to operate effectively within its own medium. Perhaps we need to engender a sense of cooperation among the Services which will pave the way for joint operations in war, rather than manufacture an artificial construct that compromises between continuing demands, yet detracts from individual performance.

The Way Ahead

Where does RAAF doctrine go from here? If, as argued, single-Service doctrine is still necessary and written doctrine is so important, then a doctrine suitable for the RAAF must surely be recorded. That is precisely what has happened.

The Chief of the Air Staff, Air Marshal Funnell, took the initiative and nominated three officers from RAAF Development Division as project officers to develop RAAF doctrine.* The product - the *Royal Australian Air Force Air Power Manual* - was released on 10 September 1990.

* *This project and the three officers formed the foundation of what is now the Air Power Studies Centre - Ed.*

The task is a 'first' for the RAAF; it is also rather onerous because, as General Momyer pointed out,

... the writing of manuals is perhaps one of the most difficult tasks in the field of military writing.⁷

Yet the stakes are high: the future of air power is vital to Australia. The RAAF has a compelling responsibility to enlighten and align its personnel. Equally, the RAAF has a moral duty to make air power better understood and appreciated within the defence community of Australia. Both aims can be achieved through the writing of an air power doctrine manual. The alternatives are ignorance, suspicion, misemployment and inefficiencies - characteristics that nestle comfortably under the mantle of General Momyer's darkness.

Endnotes

1. Department of Defence, *The Defence of Australia 1987*, (Australian Government Publishing Service, Canberra, 1987).
2. Quoted in Robert Frank Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907-1964*, (Air University, Maxwell Air Force Base, Alabama, 1974), p.197.
3. This phrase was the catchcry of Professor Miller, a well-known academic in Australia who used simple experiments to explain scientific phenomena to children.
4. M.J. Armitage and R.A. Mason, *Air Power in the Nuclear Age, 1945-82*, (The Macmillan Press, London, 1983), p.4.
5. Lord A.W. Tedder, 'The Unities of War', in Eugene M. Emme (ed.), *The Impact of Air Power: National Security and World Politics*, (D. Van Nostrand Co., Princeton, New Jersey, 1959), p 339.
6. Department of Defence, *The Defence of Australia 1987*, p.vii.
7. Quoted in Futrell, *Ideas, Concepts, Doctrine*, p.196.

CHAPTER TWO

ONE-A-PENNY, TWO-A-PENNY: AIR POWER IN THE DEFENCE OF AUSTRALIA - UNITED OR DIVIDED?

Group Captain B.L. Kavanagh

Editor's Note

Since the inception of air forces, airmen have attempted to elucidate, generally to their surface force colleagues and often with little success, the few basic principles upon which the independent application of air power is founded. Usually this was the result of challenges to the independence of air forces from land and maritime commanders, and particularly from those with an interest in establishing organic air power within their own forms of combat power.

Inevitably, airmen's arguments distil down to one irrefutable and often intractable principle - airmen traditionally believe in the indivisibility of air power. Yet when pressed, in most cases they are unable to explain the principle adequately. Instead, aviators often resort to shibboleths about the dangers of dividing a nation's air power in combat, and about the need to retain a unified air force that can be concentrated rapidly in time and space. Very few surface force commanders have been convinced to this day.

'One-A-Penny, Two-A-Penny' is an attempt to explain from first principles unity or indivisibility of air power as it applies to a modern, conventional, small air force such as the RAAF. The author draws upon historical precedents and logical premises that have established this philosophical thought. He then goes further - he offers unity of air power as the central doctrinal tenet for air forces and carefully illustrates his reasons for so doing.

The essay is more than just theoretical, it is provocative and addresses a number of contentious issues which are part of the current defence debate. The author challenges the sanctity of jointness in the ADF, and argues that Australia's rush to jointness for the apparent sake of jointness per se is having a disunifying effect on the single services, especially the RAAF.

He cites apposite historical examples in which interservice rivalries have caused air power to be divided and hence unable to be applied in other than piecemeal fashion. He pleads for command arrangements that give due recognition to the importance of retaining the ability to concentrate air power. Finally, he is quite categoric in his conclusion that Australia can ill-afford three air forces, neither economically nor militarily, and that this appears to be the way the ADF is heading.

* * * * *

The debate over the role that air power should play in the defence of a nation is one that has ebbed and flowed since the beginnings of air forces. Today, among nations of the Western World and certainly within Australia, the discussion is no less lively than it has been in the past. Although informed debate on the most effective use of the air arm of the Australian Defence Force (ADF) is encouraged, all too often, in these days of increasing jointness and integration, discussion centres unduly on the part air power should play in supporting the roles of the other Services. At the same time, there appears to be insufficient understanding of air warfare or appreciation of its history to realise that there are equally valid and compelling strategies for the employment of air power other than helping to win a land or sea battle. While there is no doubting the importance of essential mutual support among the three Services in achieving war aims, some balance in the debate needs to be restored in order that we Australians might become aware of the full potential of that enormous force called air power that we possess, and the part it should play in the defence of this nation.

In any appreciation of air power in Australia's defence, we might first ask ourselves why air power should play a prominent role - indeed, any role - in the defence of this country. Few antagonists would see no part at all for an aerial capability. Rather, the question is what contribution should air power offer to the Australian military equation as compared with that of the more traditional land and sea powers? More explicitly, how should this form of combat power be employed and managed when it is interacting with land and naval forces? The issue then becomes one of command and control of air

power and distribution of its assets. This is one of the more pressing defence issues within Australia today.

The very fact that distribution of air power is such an important issue within the ADF is testimony to air power's relevance to Australia, yet the intricacies of its proper employment are poorly understood within all arms of the services. Certain recently endorsed practices for air power employment are testimony to that. This chapter explains the best use of air power for Australia and the fundamental need to keep it unified, by substantiating the importance of air power to our national defence, by explaining the concept of unity of air power from first principles, and by analysing the consequences of divided air services for this country.

Air Power's Relevance to Australia

The most conspicuous reason that the use of the air is essential for Australia is the nature of our continent - its geographical position, topographical profile, distribution of people and resources, and its lack of adequate lines of communication. Suffice it to say that the nature of the Australian continent demands a force that can respond quickly, over thousands of kilometres, with enough flexibility to change roles rapidly, against a variety of targets in locations often inaccessible by surface means. The type of force needed is self-evident. Only by possession of an effective air component in our military force can we ever hope to exert influence within our region at a time and place of our choosing, during periods both of hostility and of peace.

Linked with geographical realities is a defence policy recently adopted by this country which gives priority to stopping an aggressor in the sea-air gap, especially to the north. The underlying military concept is that of defence in depth. Such a defence policy is as expedient as it is sensible, because in most contingencies this buffer zone must be crossed by any aggressor, and here the enemy is most vulnerable, particularly to attack from the air. Further, Australia can ill afford a major lodgement. It is politically unacceptable but, more pragmatically, our relatively low population would be a disadvantage in manpower-intensive warfare. For these and other reasons, Australia would try to avoid a major land battle, except as a last resort. Consequently, if the will of this nation is to do all it can to protect

offshore assets and prevent a hostile lodgement, it will need air power. In most cases, air power will be the initial and, most likely, the principal tool to be used.

This is not stated lightly. For in any strategy of defence in depth, air power is needed throughout. It is a primary element in surveillance of, and intelligence gathering in, the sea-air gap; in controlling the sea-air gap in times of threat; and in defeating an enemy should he attempt to cross the seas or land on our shores. In short, using the words of the Chief of the Air Staff, Air Marshal Ray Funnell, air power in Australia

... is needed to win the air battle, it is needed to win the maritime battle, and it is needed to win the land battle.¹

Beyond its immediate importance to fundamental defence aspects of this nation, air power provides the best entry to the world's high-technology defence development. Aviation is arguably the fastest developing arm of defence industry today; it is also the industry that offers the greatest flexibility, responsiveness and mobility, which are all necessary characteristics for waging modern warfare over long distances against a range of possible threats.

These are the reasons why air power is important for Australia. If this nation is to defend itself effectively and field the best possible deterrent forces, it must maintain credible, operationally efficient, and state-of-the-art air forces - forces which are powerful by regional standards. Our geography, manpower and economic resources, and access to technology all attest to that, as does an Australian defence policy of self-reliance achieved through defence in depth. Most strategists and defence thinkers in Australia today will endorse these sentiments. What many of them forget, however, is that if the ADF is to have optimum military effectiveness, air power - like any other form of combat power - has to retain some unity of action and purpose within the total force. As we shall see, unity of air power is the cardinal tenet of air power doctrine; yet, paradoxically, it is being avidly challenged in Australia today. This is perhaps because of a reluctance on the part of surface force commanders, with little or no appreciation of aviation, to understand unity of air power, or to appreciate any use of the air beyond their own interests.

The Concept of Unity of Air Power

There is nothing mysterious or particularly difficult to understand about unity of air power. The concept evolved from hard-learned historical lessons; namely, that the operational and organisational processes of using the air for war fighting should be commanded and controlled at the highest practical level and by a single agency with the best expertise to do so. Nor is the concept of unity unique to air power. Indeed, operational and organisational unity are necessary with each form of combat power - be it on land, at sea or in the air - if each is to contribute fully to military effectiveness. Historically, land power and sea power were coordinated, organised and commanded centrally, each within its own dimension, for best effect. This traditional responsibility of each form of combat power for its own dimension was indeed the rationale for the evolution of armies and navies. Because the air is a separate and independent dimension, air power also needed unity of coordination, organisation and command, along environmental lines, to assure its most effective use. This third dimension provides a similar basis for the evolution of centrally commanded air forces.

Theoretically, unity of each form of combat power is simply a set of historically evolved principles. Practically, the application of these principles generates internecine argument because the application is really about command and control. Put bluntly, the debate centres on who, within the total force, should own and employ the resources of each individual form of combat power while ensuring that the unified action of each form is retained. Each Service argues that for best effect its own traditional combat power demands command and control that should be, first, at the most appropriate level and, second, within the most appropriate Service - two dictums that are common to land, sea, and air power.

The historical experience of air power accords with these two dictums. Thus, air forces argue in defence of unity of their own combat power, that unity of air power means air assets must be retained under the highest practical level of centralised command and control, and that they must be commanded by a leader experienced in the application of air power. Air forces, in fact, are adamant about these requirements because historical experience also shows that the

impact of unity of air power has even greater consequences for military effectiveness than the impact of unity of the other combat powers. Similarly, experience and logical analysis show that divided air power produces disproportionately large reductions in military effectiveness in comparison with the effects of disunity in land or sea power. Aviators understand this adverse consequence, and they argue tenaciously for the 'indivisibility of air power', a term synonymous with unity of air power. Both terms mean that air power assumes its greatest strength when it is applied holistically as a distinct entity, rather than simply in a collection of roles. The reasons for this conclusion warrant further analysis.

Air power can be employed in a number of strategies at any one time, but it can only do so successfully if its forces are unified under appropriate command. This chapter has suggested that support for the other Services was only one of the strategies available to air power. Two other distinct but interactive aerial strategies have direct application for air forces and can have direct and independent influence on the outcome of the war. One is to attack an enemy's war fighting capacity; that is, to inflict moral or material damage directly on his homeland. The second is to oppose and defeat his air forces. These strategies are termed Strategic Strike and Control of the Air respectively. The three aerial strategies are not independent actions whereby one follows another in some battle campaign sequence - all three are interactive and, in reality, would be pursued simultaneously. Their hierarchy of importance at a particular time, which can be termed air power employment doctrine, must be determined in the light of strategic as well as tactical considerations.² This hierarchical determination requires a decision by a supreme commander, with the advice of a commander having full knowledge of air power employment.

The second reason for unifying air power is the ability to concentrate force rapidly in time and space - air power's greatest advantage. Whether to mount offensive actions against an enemy or defend against his initiatives, air power's strength lies in this innate ability to concentrate vast amounts of firepower in combat. Concentration enables a force to be decisive. If need be, the whole weight of the air power force can be employed against a single, most important target or, alternatively, against an array of lesser targets. Used properly, which means in accordance with the correct

employment doctrine and concentrated in time and space, air power can be singularly decisive in affecting the outcome of the war, rather than merely influencing the land and sea battle by piecemeal application.

The ability to use concurrent aerial strategies and to concentrate air forces rapidly indicates a completely different perspective of time and space within which air power is employed, in contrast to the perspective for land or sea power. The differences are substantial, and deserve closer examination if we are to fully understand the aviator's concern over misuse of air assets - which could lead to division of air power and diminution of its effect. If we look at the traditional evolution of command and control, the relative perspectives of time and space will be more evident.

First, the extent of military command and control is commensurate with the combat radius of action of the weapons system involved. For example, the combat radius of action of an infantry platoon, depending on the timeframe, is a day's march or the trajectory range of small arms munitions. Therefore, it would make no sense to take divisional artillery weapons, with ranges of 50 kilometres or more, and divide them up under command at battalion level or lower. As we know, this is not done; artillery assets are commanded at the highest possible (divisional) level, where the 'big picture' is more evident.

What sense, then, does it make to break up, into penny packets, a force with a combat radius of action of hundreds or thousands of kilometres, which can be used against a variety of targets by reassigning or re-equipping, and which can have a 'big picture' of strategic proportions, compared with the more tactical view by surface-locked combat units? Even Navy fleet units at sea, with speeds of advance of less than 40 knots and combat radii of action limited either to radar horizons or the ranges of surface-launched weapons are, within realistic timeframes, tactical units. Air Force combat units are capable of being used in the macro (strategic) sense, whereas most other combat units belong to the micro (tactical) environment.

Linked directly with combat radii of action, or the 'space' perspective, is the difference in appreciation of time between air power forces and surface forces. Surface forces, by virtue of the limitations on

their speed and mobility, think more in terms of days and weeks to react to a threat, to manoeuvre or to redeploy their forces. Air power operates in much shorter timeframes; its commanders think in terms of hours, and even minutes, to complete a task. Again, what sense does it make to allocate sections of a highly responsive force to commanders who traditionally wage war at a much different pace? The quantum difference in appreciations of time and space between air forces and surface forces is the basal premise for unity of air power.³

There is yet another factor militating against the division of air power within the total force. Today's modern air assets are capable of more than one role. An anti-tank weapon within an army is an anti-tank weapon. Within an air force, however, it is also a battlefield air interdiction weapon, perhaps an offensive counter-air weapon, and even an air defence weapon. Dividing up these flexible assets to meet narrow, specific requirements means that they are not available for other roles. A pertinent example is the P-3 aircraft in the RAAF today. If P-3 aircraft are permanently assigned to the Navy for Fleet Support functions, they will not be readily available for other, first echelon, layered defence roles of Out-of-Area Reconnaissance and Surveillance, as well as additional roles including Electronic Warfare, Search and Rescue, general transport and airborne command and control. The result is a reduction in multi-role flexibility that decreases the efficiency and application of air assets and diminishes national military effectiveness.

The foregoing are the operational reasons why unity of air power is vital to national military effectiveness. In addition to these operational aspects, there are two other important factors which also attest to the necessity for unity of air power. They are the relevance of critical mass and the importance of aerial expertise and continued professional development to air power's proper application.

The term critical mass, when used in this context, means the size of the entire body of an independent force needed to support its fighting edge; that is, the total infrastructure within the force which, together with the operational component, makes for an effective war-fighting entity. The critical mass concept is especially relevant for air forces because they have an inherently high 'tail-to-teeth' ratio; therefore their critical mass is high. For example, it takes the whole force of about 22,000 permanent serving members in the RAAF today

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to maintain an organisation whose sole aim in a war is to launch a few hundred individuals in a lesser number of aircraft to meet a hostile threat. This is a difficult concept for many to grasp, both within and outside the ADF. What many also fail to realise is that, should these few hundred operational assets be divided among different agencies, each of these agencies then requires an inordinately disproportionate support 'tail' to maintain its own limited air power capability, compared with the size of the 'tail' required for a single air force.

Size - critical mass - is a fundamental consideration to the control of air assets, particularly with small, independent armed Services such as Australia's. Small, independent armed Services do not have organisational structures large or flexible enough to properly train personnel and operate equipment to its maximum capacity in more than one primary area of activity. Nor are their infrastructures capable of providing adequate independent maintenance of, and logistic support for, divided air assets. The resources needed to meet such a challenge would be of an order of magnitude that is available only in a Service of the proportions of the United States Navy. Only such a Service, although not normally inclined to operating in the air, would be capable of maximising air power, ensuring its continued logistic support and providing a natural progression of professional air power development.

The ADF, now that it is committed to self-reliance, and if it is to achieve maximum military effectiveness, must be fully aware of both sides of the 'tail-to-teeth' equation before dividing its assets. This was not so crucial in the past, when Australia conveniently neglected the support aspect of critical mass (as it so often did) because its historical reliance on and alliances with the UK and USA would counteract any imbalance. That is no longer the case. The ADF can no longer rely on superpower support, nor should it continue to model its defence forces on nations with vastly different resource bases and national objectives. As with other small, independent forces, Australia must develop an appropriate infrastructure to support the fighting edge of combat power or, conversely, reduce the size of the fighting force. Dividing air assets demands a larger base of support; if the support is not provided, effectiveness is reduced. Realistically, the ADF must compare its force structure and division of roles and assets with other small, independent, but proven forces such as Israel's,

rather than continue the traditional approach of half-copying the forces of larger allies, particularly those of the United States.

The notion of professional expertise is also interwoven within the unity of combat power argument, and it is from this notion that the second dictum originates - that command must be located within the appropriate military discipline. The notion is simple. Each Service must exercise a professional ability within its own combat environment, whilst at the same time acknowledging and respecting the other Services' expertise to best operate and manage their own combat power assets. No one Service can afford to do otherwise. In Australia today, the Army and Navy frankly do not have the expertise to properly employ the air power that may be placed under their permanent command. Nor, conversely, does the Air Force have the expertise to optimise land or sea power for its own use should such a situation arise. This is the position today; but will the situation change, and what future professional development can ensure continued expertise?

Few will disagree that the Army is naturally inclined to concentrate on the land as its primary area of activity, just as the Navy looks to the sea for its present and future operations. The best Army and Navy officers will naturally be those most proficient in their particular Services' respective environment; and rightly so, as professional expertise develops along environmental lines. Just as some officers need to be trained to operate on the land or at sea, so do others need specialist training within the third dimension, the air, as a primary medium of operations. The air calls for different strategic and operational thinking as well as specialised skills, and it will continue to do so into the foreseeable future. Therefore, if the nation is to be served by the same quality of professionalism within the air environment, it must not allow air power to become divided and thus subordinate to other combat forces. Otherwise, a curtailment of professional development within the air environment would ensue, because Army and Navy officers would be preoccupied with their primary environments, resulting in a gradual erosion of air power expertise.

In short, unity of air power constitutes a cardinal tenet of basic air power doctrine from which emanates all air force command and control thinking. In principle, its evolution is no different from that of

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the unity of other forms of combat power, but unity of air power contributes more to military effectiveness than does unity of land or sea power. Air power is a bigger contributor because its application allows concurrent prosecution of the three independently decisive air power strategies: Strategic Strike, Support for the Other Services and Control of the Air. Further, it enables a force to concentrate firepower rapidly in time and space, and it offers a nation all the benefits of multi-role flexibility. Three premises underlie the conclusion that command of the air must be retained by an airman at the highest practical level and within an independent air service: the practicalities of controlling weapons systems with radically different combat radii of action and reaction times, the critical mass needed to properly apply air power in a high-technology force, and the requirement to generate the highest possible level of specialist professional expertise within each individual Service.

The Employment of Air Power Within Australia

Air power today is seen too often and by too many only as a force to be carved up among the other two Services. Occasionally this is advocated in the name of jointness, but more often in order that the Navy and Army may better achieve their respective tasks. This line of reasoning is oriented primarily to tasks or capabilities, whereby one thinks in terms of the optimum weapons or force mix - either bi-Service or tri-Service - necessary to achieve a task or provide a capability within the joint force. Moreover, this reasoning takes little account of the various tasks each Service can achieve.⁴ With sensible application, force-mixing has a valid place within our strategic thinking; after all, air power, like land and sea power, cannot win the war alone. Each component of combat power is complementary. But force-mixing must not be allowed to dominate our thinking to the exclusion of those hard-learned lessons of history which vindicate a continuing need for three independent fighting arms of a defence force. If we need an integrated force created from independent armed Services to complete a task or mount a capability, we should carefully weigh the benefits of this action against possible disunity among the parent Services.

Disregard for single-Service unity is evident in Australia today. There is a persistent and irrational trend within the ADF to

parcel out packets of air assets as each new requirement for joint-Service capabilities is identified. Either to support the fleet at sea with a particular task such as maritime strike operations, or to meet close air support requirements of the land commander, permanent allocation of air assets seems to be the inevitable demand - and damn the consequences. Often little thought is given to the integrity of the Air Force as a unified force or to the best use of scarce air power resources. In fact, in the interests of meeting a perceived single-Service need - not to mention one of joint capability - we have gone to this extreme. The transfer of the battlefield helicopter to the Army is the prime example. In this instance, however, we must inquire about consequences - can the battlefield helicopter retain its multi-role capability in its new livery? Will command and control of the battlefield helicopter become so decentralised in Australia that this weapon system will be unable to exploit the fundamental principles of mass and concentration?

For the reasons we have seen, the practice of dividing air power is not effective. Air power, divided, suffered in the past. At the first battle of Kasserine Pass within Operation TORCH in North Africa in February 1942, the US Army suffered heavy losses as a result of dividing its air among Corps commanders. Following the regrouping of US Army Air Force assets, the outcome of the second battle was radically different. The cost of dividing air power was not just confined to the allies in World War II. Packaging of Luftwaffe assets, rather than concentration, set in train Germany's defeat in the Battle of Britain and also contributed to the failure of the Eastern Campaign in Russia. These lessons were relearned in the early stages of the Korean War, when the efforts of US air power forces were uncoordinated and relatively ineffective because of a neglect of the principle of centralisation of air power, caused for the most part by inter-Service rivalries. On the other hand, the Battle of Khe Sanh between December 1967 and February 1968 showed the success of a unified air power operation, where centralised control and coordination were exercised appropriately by one man, General Momyer, through US 7th Air Force Headquarters in Saigon.

All Services have potential for disunity, but none so great as air forces because, unlike tanks or ships, aircraft are prominent in all forms of warfare and readily lend themselves to parcelling out. Air is also the pervasive medium in any conflict. Land and naval commanders are aware of the importance of air to the success of their

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own missions, and naturally are desirous of having within their own control these flexible, responsive forces that can concentrate large quantities of firepower. If all demands are met discretely, air power becomes divided.

There are at times overwhelming temptations to divide air power assets. Succumbing to such enticements does not guarantee a favourable short-term result in the battle, and in the longer term it inhibits flexibility and an ability to concentrate one's force. Lord Tedder, in a lecture to the Royal United Services Institute in London in January 1946, warned that:

If your organisation is such that your air power is divided up into separate packets and there is no overall unity of command at the top, once again you will lose your powers of concentration. Air power in penny packets is worse than useless. It fritters away and achieves nothing. The old fable of the bundle of faggots compared with the individual stick is abundantly true of air power. Its strength lies in unity ...⁵

The Consequences of Dividing Air Power in Australia

The RAAF today is a modern, reasonably well-balanced force with the capacity to employ all three air power strategies. It is also a force which has built up sufficient levels of expertise and support to ensure that the ADF receives the best return for the heavy investment it has made towards a complete and credible air power capability. Any weakening of the balanced force or reduction of its levels of expertise by disunity and decentralisation of command will have implications far beyond normal single-Service, air force boundaries. Yet, this is happening. Some well-intentioned but misguided individuals see Australia's defence enhanced by the division of the country's combat air power.

Australia, as a middle-ranking power, has too few available resources and too small a defence force to maintain and operate three separate air services. Should this trend continue, important questions of efficiency and effectiveness will demand answers. Will the ADF realise any savings in terms of manpower and resources by taking this

route? Here, one needs to carefully examine the real, total costs of current Army and Navy organic air. Will the ADF overcome unnecessary duplication of effort and wastage of resources in the future? More importantly, will divided air assets within the ADF offer the maximum military effectiveness for the defence of this nation? For all the reasons given in this chapter, the answer to these questions is a clear and categoric no. It is patently inept to have three air forces in this country - Australia can ill afford it economically or militarily.

What, then, are the most likely outcomes of allowing the evolution of what effectively are three independent air forces for Australia? The short term would see a weakening of Air Force capability and an increase in Navy and Army force structures to meet newly perceived capabilities. The Air Force would have to re-examine its functions and roles and concentrate its limited capability into specialised roles such as air defence. Eventually, each Service would lay exclusive claim to both its own air assets and specialised air power roles for retention within that Service rather than for the common good of Australia's defence. Even if they wanted to, and it is doubtful that they would, the three Services could little hope to combine the three air service arms into a coordinated entity to concentrate the force in times of conflict. The experiences of the United States defence force, with four military air arms, uphold this supposition. In the long term, this handicap would inhibit the use of flexibility and versatility to employ the total air power force in the best possible manner for the defence of this country, because each separate air service group would be anchored to its vested interests.

Second, the ADF would experience a general degradation of expertise and efficiency in the way each Service operated its air assets. This decline would come about because the Army and Navy organisations do not have the necessary infrastructure size and depth for the maximum development of personnel trained in air power and the most efficient use of its equipment. Nor do they have a natural orientation to operate in the air environment. Within the other two Services, as far as operational and technical expertise are concerned, air power would eventually take a back seat.

In all, unless we direct our thinking in this country more toward retaining unity within the most pervasive form of combat power available within our military inventory, the standard of air

service provided by the ADF will drop significantly. This will result in a weakening of our total air power capability and directly reduce the ADF's ability to protect this nation.

Perhaps in these days of competing priorities and limited resources we need to occasionally go back to first principles. Let us, then, heed the words of Field Marshal Montgomery, one of the first senior military commanders to appreciate the essence of the unity of air power:

... the Air Force ... must be centralised and kept under Air Force command. I hold that it is quite wrong for the soldier to want to exercise command over the air striking forces. The handling of an Air Force is a life-study, and therefore the air part must be kept under Air Force command.⁶

Endnotes

1. Air Marshal R.G. Funnell, 'The Royal Australian Air Force - A Small Air Force and Its Air Power', The 1987 Sir Ross and Sir Keith Smith Memorial Lecture.
2. For a much more detailed coverage of air power employment doctrine, see Wing Commander A.G.B. Vallance's 'strategies approach' to doctrine in 'The Evolution of Air Power Doctrine Within the RAF, 1957-1987', a thesis submitted to Queens College, Cambridge, August 1988.
3. The concept here is an extension of the idea of Air Vice-Marshal R.A. Mason of determining levels of command and control using comparative combat radii of action of weapons systems. The perspective of time to respond is added, thus command and control can be analysed in the context of the two dimensions of time and space.
4. The 'capabilities' versus 'services' approach to total force structure is from a concept of Wing Commander A.G.B. Vallance, who used a doctrinal development matrix with 'the optimum mix

of air/land/sea weapons systems' as the vertical perspective, and the 'balance ... and interaction between the various air power roles' for the horizontal perspective. See Wing Commander A.G.B. Vallance, 'Air Power Doctrine', *Air Clues*, May 1988, pp.163-168.

5. Lord Tedder, 'Air Land and Sea Warfare', *Journal of the Royal United Services Institute for Defence Studies (RUSI)*, January 1946, p.61.
6. Field Marshal Montgomery quoted in John Terraine, *The Right of the Line: The Royal Air Force in the European War, 1939-45*, (Hodder and Stoughton, London, 1985), p.380.

CHAPTER THREE

AIR POWER - AN AUSTRALIAN APPROACH

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Editor's Note

'Air Power - An Australian Approach' is an attempt to encapsulate the broad issues which the authors believe to be the essence of doctrinal thinking for the RAAF. The essay starts with an overview of the nature of air power and its historical development, essentially as a scene-setter.

This essay argues that air power achieves its objectives through the use of three air campaigns - Control of the Air, Air Bombardment, and Air Support for Combat Forces. Furthermore, these air campaigns will only ever be conducted to best effect if four maxims pertain. Concurrent air campaigns, unity, independence and balance are the four maxims, and they provide the philosophical basis for air power doctrine.

Air campaigns and maxims of air power apply to all air forces. The maxims themselves must be interpreted for Australia within specific national imperatives - this the authors do, but first, they examine, the relevance of air power to Australia.

Air power is derived from many sources, the most effective of which, in terms of adherence to the maxims, is an air force. The authors postulate a series of imperatives for Australia's Air Force, which are based on defence policy, ADF priorities, and Australia's unique needs. These imperatives are: command, qualitative edge, attrition management, centre of gravity, timing, and preparedness. The RAAF's current organisation is seen as being able to meet these imperatives, provided certain issues are addressed in the near future.

The aim of 'Air Power - An Australian Approach' is to summarise the doctrinal thinking which led to the writing of the first two chapters on air power in the Royal Australian Air Force Air Power Manual. Readers

wishing to pursue any specific line of reasoning mentioned in this essay are encouraged to read Chapters 2 and 4 of that book.

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Since its foundation in 1921, the Royal Australian Air Force (RAAF) has relied on air doctrines borrowed from larger allied nations. The record of fine achievements of the RAAF shows that this reliance has not adversely affected the RAAF's ability to refine the technical and tactical skills at the operator or working level. However, the lack of a uniquely Australian air power doctrine has discouraged the development of necessary conceptual skills, particularly at the strategic level.

The RAAF is now redressing the past imbalance between tactical and conceptual skills by firstly, developing an Australian air power doctrine, and secondly, recording it as an Air Force document. AAP 1000, *Royal Australian Air Force Air Power Manual*, is a comprehensive and coherent recording of knowledge, guidance, ideas, values and attitudes on the necessity for air power and the likely shape air power will take in the Australian context. As such, it provides the basis for commanders at all levels to determine how air power may best be applied in the defence of Australia.

This essay examines the nature of air power and postulates three fundamental and necessary air campaigns, before deriving specific maxims for the most effective employment of air power. The essay then discusses the relevance of air power theory to Australia today, and interprets the maxims in an Australian context. Finally, it examines the RAAF in detail by determining relevant operational planning and organisational imperatives, and by listing the operations and roles which the RAAF must be able to perform.

The Nature of Air Power

The definition of air power by Mason and Armitage has been cited above (Chapter 1). Air power encompasses the sum total of a nation's aviation and related capabilities. The extension of the

perceptive horizon, the speed of air travel, and the freedom from surface barriers are the very basics of air power; all, however, are limited by relatively high costs.

The positive attributes of air power include: flexibility, swiftness of application, ubiquity, range, and shock effect. From these attributes, air power derives a relative advantage over other forms of combat power in terms of rapid concentration. Moreover, its application introduces a different order of magnitude of time and space.

These factors make air power very responsive to, and capable of demonstrating, a nation's political intent. However, this ability to be used for political purposes also has the potential to be a limitation of air power, if for reasons of political expediency the positive attributes of air power are not fully utilised. Other limitations include its dependence on prepared bases, cost, and vulnerability both in the air and on the ground. Further, air power cannot hold ground, has limited endurance, and can be negated by weather - all of which lead to a perception of impermanence.

The Historical Development of Air Power

Air power was first used in World War I in an airborne observation role as an extension of land and sea power. By the end of 1918, its ability to bomb, strafe and shock the enemy had been recognised. Also, the concept of leapfrogging the battlefield and 'taking the war to the enemy's homeland' had been considered for the first time. The inter-war period saw the development of the Western air power doctrine of strategic bombing conducted by an independent force (an air force) as being, theoretically, the most effective means for exploiting the air environment.

The myths of strategic bombing were dispelled in World War II, where it was recognised that air power alone could not bring an enemy to its knees. Without doubt the most important principle of air power to emerge from this war was not that the bomber would always get through but that the need to gain control of the air was paramount to successful operations by surface forces. Other principles to emerge were: the use of tactical air power in contributing to the surface battle, the importance of using air power offensively for shock and decisive

results, and the overriding importance of applying air power as a unified force.

After World War II, the most influential factors affecting nations' air power doctrine were nuclear weapons and the threat of global conflict. It was not until after the Korean and Vietnam wars - considered to be aberrations at the time of their occurrence - that forces once again were structured for limited, conventional warfare. In more recent experiences, the use of pre-emptive attacks on aircraft on the ground, the exploitation of the electromagnetic spectrum, and other initiatives, such as use of remotely piloted vehicles and aerial refuelling, have greatly influenced air power doctrine. Technological developments, too, in terms of airframes, engines, avionics and weapons systems have exerted considerable influence on war in the air.

A historical perspective of the development of air power highlights three primary aerial campaigns that can be waged in a conventional air battle. These campaigns are the keystone of the theory of air power.

Air Campaigns

The objective of air power is to gain maximum military effectiveness from the use of the air. It does this through an ability to prosecute three campaigns or aerial strategies; Control of the Air, Air Bombardment, and Air Support for Combat Forces. An air campaign is defined as a series of air operations which share a common objective aligned to the overall conduct of the war, and which by itself can have an influence on the war.

Control of the Air, or air superiority as it has also been known, is necessary for friendly forces to operate where and when they choose, and to deny such freedom to enemy forces. It involves nullifying the effects of enemy air power both in the air and on the ground. An appropriate degree of control of the air is necessary for success in subsequent air and surface battles; hence the Control of the Air campaign is regarded as the prime campaign.

The Air Bombardment campaign uses air power to attack an enemy's homeland, national interests, resources, and war-making

capacity. It also provides the wherewithal to best shock and surprise an enemy when used pre-emptively. This campaign should only be used when its outcome will immediately affect the course of the war; when manoeuvre by friendly surface forces has produced a favourable situation; when stalemate has occurred; or when a decisive effort can only be achieved through the destruction of the enemy's economic sources for continuing the conflict.

The third campaign, Air Support for Combat Forces, complements the combat power of sea, land, and air power assets in terms of firepower, mobility, manoeuvre and sustainability. Because this campaign is so interactive and widely applied, centralised control of air assets, unity of effort and independent decision-making are paramount to its success.

Maxims of Air Power

Any analysis of the fundamental nature of air power, its historical development and the evolution of the three air campaigns, leads logically to the derivation of a number of maxims for its application. There are four maxims that cannot be avoided; they encapsulate the essence of what has been discussed so far, and if disregarded can have disproportionate consequences on air power through their absence. These maxims do not merely represent a checklist of what was successful in the past; they are concerned with the future application of air power.

The first maxim is that, if air power is to be effective, it must be applied across the full spectrum of its uses; that is, across the three campaigns. Furthermore, it will most often demand concurrent application among those campaigns. The ability to apply air power concurrently is fundamental to achieving the objective of air power. Concurrent campaigns must be so conducted that each campaign contributes in its own specific way to the overall objective of the conflict. The alternative is for air power's inherent flexibility, so necessary to meet the changing needs of battle, to become eroded or even lost. It is easy, through poor employment doctrine, for air power to become dissipated in pursuit of short-term, possibly diversionary goals.

Air power is a composite of numerous roles, the full potential of which is only realised when it is treated as an entity. Operational and organisational unity - also termed 'critical mass' - is necessary to allow flexibility and the rapid concentration of firepower in time and space. Implicit in unity is centralised command of all air power assets. As air power is expensive to use, in terms of manpower and other resources required, unity is essential to provide optimum effectiveness from the complex amalgam of organisation and skills so necessary for its successful application. Unity of air power is the second maxim.

Air warfare is conducted in a discrete environment and produces a combat effect of a greater order of magnitude than surface forms of combat power. To exploit this potential, the level and depth of expertise necessary for planning, directing and executing all aspects of air power must be realised. For maximum effect, air forces must retain flexibility in discrete tasking of air power. This means they must exercise independence in decision-making and practical application and not be unnecessarily constrained by the tactics of surface forces. Independence, the third maxim, aligns decision-making at an appropriate level with the overall objective of the operation or campaign.

Lastly, an air force should have a characteristic balance that reflects a force structure designed to react to likely threats whilst retaining a degree of flexibility to deal with the unexpected. That is, balance is not a rigid formula for force structure. It is affected by external factors such as prevailing geo-strategic circumstances and national characteristics of geography and economy. There are also internal factors reflecting the relative importance of national capabilities. For example, a force must achieve the right blend between quality and quantity, as well as the right balance between its doctrine and the technology available to it. Finally, a force which is an integral part of an alliance may forego individual balance to promote balance within the alliance.

These four maxims - concurrent campaigns, unity, independence and balance - and their interdependence provide the philosophical basis for air power doctrine. However, the interpretation of these maxims for the purposes of doctrine must ultimately depend on national imperatives.

The Relevance of Air Power to Australia

Australia has paralleled the Western world in air power development and experience, and was one of the first countries to establish and retain an independent air force. Australian air power has supported that of its allies in many conflicts, and has been called upon for the air defence of the nation. Moreover, with its great distances and relatively sparsely populated areas separating the major cities, Australia has been peculiarly suited to the development of civil aviation.

Thus Australian air power has reflected overseas developments and experiences and indeed should reflect a predilection for similar air campaigns and maxims of air power. However, there has always existed a need to tailor this general appreciation of air power to Australia's unique circumstances. The Defence White Paper of 1987 has provided strategic guidance in defining the nation's unique circumstances, and AAP 1000, *Royal Australian Air Force Air Power Manual*, now provides the philosophical basis for meeting that guidance.

The unique circumstances of Australia have led to a government strategy of defence in depth and a defence policy of self-reliance. This requires a defence force structured to meet a continuum of responsibility. Air power, through speed and flexibility, provides the ADF with the capability to apply appropriate levels of combat power across that continuum. For example, multi-role air assets can be switched, as appropriate, to the type of defence required. Air power can, through the advantages of flexibility, speed and mobility, complement the naval quality of sustained presence, and can airlift and support ground forces in an area of operations. It can also be applied in forward reconnaissance, surveillance and identification roles, and is quite capable of stopping a hostile enemy in transit in Australia's approaches, or at source.

To meet these national commitments and to gain maximum military effectiveness from the use of the air, Australia needs to have the potential to conduct all three traditional air campaigns concurrently. Without this capability, Australia cannot properly provide for its own defence. Moreover, the broad lessons for applying

air power especially relate to a nation which must use its limited but advanced technological force over a vast regional interest.

Those same broad lessons suggest that Australia can most effectively conduct concurrent air campaigns by using a unified, independent air force, balanced for Australia's unique needs. That is, operational and organisational unity, independence of decision-making from tactical surface battles of the moment, and a force balanced to meet the various threat levels, are all necessary to allow Australia to conduct concurrent air campaigns with maximum effect. Australia's interpretation of these maxims provides the philosophical basis for the national application of air power.

An Australian Interpretation of Air Power Maxims

Australian reaction to aggression would initially be defensive; however, as conflict continued, Australia would wish to seize the initiative and would therefore seek to take offensive action. Furthermore, as that aggression could be projected along several axes and involve a diversity of actions, Australia would need to retain maximum flexibility in using its air power - it would therefore need the potential to conduct concurrent campaigns.

Australia's defence strategy calls for a military capability to defend the approaches to the nation. To a large extent this would be achieved using the speed, range and responsiveness of air power. In this respect, Control of the Air should be viewed as the prime air campaign for the ADF, in order to maintain air sovereignty in peacetime and to afford a defensive umbrella to surface forces in time of conflict.

The task of defending national approaches in conflict may be facilitated if potential aggressors are deterred in the first instance by the ability of Australia to project air power beyond these approaches. An offensive capability engenders the most effective deterrent. At the same time, provision of such an offensive capability to its balanced force offers Australia the political and strategic options of prosecuting an Air Bombardment campaign, a campaign that would be vital to an island nation should conflict escalate.

Australia is constrained in the size of its standing defence force, and therefore the multiplier effect of air power in naval and land engagements would be a significant feature of future conflict. However, this multiplier effect is not limited to air supporting naval and land power, but must also be extended to air supporting air power. Hence the Air Support for Combat Forces campaign will provide a qualitative edge by multiplying the effects of all three forms of Australian combat power.

For Australia, the maxim of unity calls for air power to be treated as an entity and organised accordingly. This 'critical mass' produces economy of scale. Yet, for sound reasons, Australia has consciously accepted some reduced efficiency for the sake of effectiveness in using limited resources. Importantly, the critical mass of Australian air power has not been reduced to ineffectiveness as the air force retains the majority of air power functions, complemented by specialist air arms which provide immediate but limited support to their parent surface forces.

The maxim of independence means that Australia's air force must be appropriately organised to make decisions and recommendations on the application of air power jointly with surface forces when necessary and, in certain circumstances, separate from those surface forces. This does not mean that the air force should operate discretely from the other forms of combat power. However, in a defence force of limited assets and competing demands, the most effective use of air assets will only be forthcoming if the Service controlling the air environment has the independence to allocate priorities for the application of air power optimal to the circumstances.

The maxim of balance places an appropriate emphasis on long-range and rapid response, primarily over sea, but over land as well. Thus, the capability for long-range reconnaissance and maritime patrol, strike, and counter air becomes essential. Airlift in the air/land environment provides the mobility and rapid response required. Tactical reconnaissance and combat air support are required in both the air/land and air/sea environments and, accordingly, a tactical counter air capability is also necessary.

The Sources of Air Power in Australia

As with most other developed nations, those sources which Australia can call upon to provide air power include its Air Force, air arms of Army and Navy forces, and civil aviation. Within Australia, the Air Force has traditionally provided the breadth of expertise needed to effectively employ air power, specifically by demonstrating a capability to wage all three air campaigns and by concentrating firepower with the most economy of effort.

Air arms, as organic components of the Royal Australian Navy (RAN) and the Australian Army, have traditionally been used to provide a specialised capability that could not otherwise be achieved by their parent surface forces. Importantly, such a capability has been directly aligned to the immediate tactical objectives of the surface forces.

Civil air power contributes to national infrastructure and provides a reserve capacity should Australia require a particular capability, such as surge in airlift support for its combat forces. Other uses of civil aviation in augmenting ADF air power in time of conflict could be surveillance and search and rescue. Of course, augmentation need not be confined to times of conflict.

Satellites and other spacecraft are also potential vehicles for applying air power, particularly in the areas of navigation, surveillance, reconnaissance, communications and early warning. The role of space, either as an extension of air power or as a fourth dimension of combat power, is already well-developed in some nations. Australia, like most other middle-power nations, must now address this issue. Future improvements in technology may result in some aspects of space-based systems becoming cheaper, relative to the more traditional types of air power assets.

The Royal Australian Air Force

The major source of air power in Australia has been, and continues to be, the RAAF. The RAAF's function is to conduct air campaigns for the most effective defence of Australia and Australian interests through air operations and sustainment operations. In

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peacetime, the RAAF offers the Australian government a range of options for community assistance and regional activities.

Control of the Air is the prime campaign for the RAAF and, depending on the contingency, will most often be its initial and most pressing concern. Once the requisite degree of Control of the Air has been obtained, the RAAF would see Air Bombardment as the next priority, based on the successful historical experience of 'taking the war to the enemy'. This does not necessarily imply massed bomber raids on cities, but could mean single-aircraft raids on crucial strategic military targets. These priorities do not prevent the RAAF from providing the necessary, concurrent Air Support for Combat Forces, especially in the air and sea approaches.

Thus the RAAF has set priorities for how it would normally apply air power in combat. There are other compelling aspects associated with the application of air power by small air forces. Based on defence policy, ADF priorities, RAAF structure, and Australia's unique needs, the RAAF must adhere to certain imperatives in planning, organising, training and equipping its forces. These imperatives are considered characteristic of any small air force and are termed imperatives because failure to address them will have dire consequences for any air force, but more especially for small air forces which have little margin for error. The imperatives are: command, qualitative edge, attrition management, centre of gravity, timing, and preparedness.

Command. The RAAF must be commanded at the highest, practical level by a single, experienced commander with expertise in the application of air power.

Qualitative Edge. A qualitative edge must be achieved by the RAAF through a balance between quality and quantity, exploitation of suitable technology, quality of training and expertise and attitudes of personnel.

Attrition Management. The RAAF must be employed in such a way that the disproportionately adverse effects of attrition on its assets are minimised.

Centre of Gravity. The central focus of a force is its centre of gravity. RAAF air power is best applied when matched offensively against an adversary's centre whilst defending its own centre of gravity.

Timing. The RAAF can concentrate its effect quickly in time and space; to be at the decisive point at the decisive time requires exploitation of the speed and flexibility, as well as the close co-ordination, of RAAF assets.

Preparedness. In order to respond effectively to credible air threats and be ready for the unexpected, the RAAF must maintain a high level of preparedness, through operational readiness and sustainability. Moreover, if readiness and sustainability are to be capable of meeting expected surge requirements, then a system of evaluation is necessary. Implicit in such a system would be provision of feedback for future enhancement.

The Application of Air Power by the RAAF

The objective of air power - the gaining of maximum military effectiveness from the use of the air - can only be achieved through the proper conduct of the three air campaigns. These air campaigns are characterised by specific operations which in turn are achieved through combinations of specific roles. Therefore, the application of air power by the RAAF depends on the correct and optimum execution of specific operations and roles, whilst adhering to the four maxims. The specific operations are: Counter Air; Independent Strike; Aerial Reconnaissance, Surveillance and Electronic Warfare; Airlift; Combat Air Support; and Sustainment. Each operation may be achieved through a combination of roles. For example, the Counter Air operation may be achieved through the two roles of Offensive Counter Air (OCA) and Defensive Counter Air (DCA).

The RAAF must have the potential to conduct all roles associated with the six operations of air power. However, equal emphasis is not necessarily given to each role; rather the emphasis depends on the RAAF's particular balance and the external factors, such as economic constraints, which affect that balance. The RAAF's balance also responds to internal factors, such as assigning priorities to

roles which are necessary to meet credible contingencies and to those roles which require long-term training.

RAAF Organisation

The various air campaigns, operations and roles can be effectively applied through the current RAAF structure. The organisation of the RAAF is well-attuned to the maxims of air power and the imperatives for a force of the RAAF's size. Within the RAAF, command and control is exercised by the Chief of the Air Staff (CAS), through commanders of three commands; Air Command, Logistics Command and Training Command.

Air Force Office provides the staff functions for CAS in preparing, implementing and reviewing RAAF policy and contributing to ADF policy as appropriate. Air Command carries out the air operations of the RAAF through a headquarters (Air Headquarters) and five force element groups - the Strike Reconnaissance Group (SRG), the Tactical Fighter Group (TFG), the Maritime Patrol Group (MPG), the Air Lift Group (ALG), and the Tactical Transport Group (TTG). Logistics Command provides, through bases, stores depots and aircraft maintenance depots, the wherewithal to conduct many of the sustainment roles. Training Command provides all non-operational air and ground training through specific units and schools.

The Future

The success of the RAAF in applying air power across the full spectrum of operations and roles will be dependent on the RAAF's ability to meet the six imperatives - command, qualitative edge, attrition management, centre of gravity, timing, and preparedness. In so doing, the RAAF must remain abreast of technological advances and innovation. Increasing costs, associated with advances in technology, will require refurbishments and life extensions of aircraft, matching new weapons systems with old airframes, and, using multi-role aircraft to a greater extent.

Effective early warning and improved base security provide scope for moderating the potential vulnerability of air power. Future

developments in dispersion capability and a reduced dependence on fixed runways and support facilities are also likely to help. Furthermore, tactics and technology aimed at minimising attrition will receive more attention.

Finally, personnel will remain a critical factor, through both the decision-making function and the skills they employ in the actual application of air power. The RAAF recognises a duality of professions - one demanding the technical skill and knowledge necessary for the best application of air power, and the other demanding broader military knowledge linked with the profession of arms. Accordingly, greater emphasis on motivation may need to be incorporated into the training and education system. Greater degrees of motivation could also be provided through increased scope for decision-making at lower levels and increased spheres of responsibility at those levels.

CHAPTER FOUR

AIR POWER OPERATIONS AND ROLES FOR AUSTRALIA

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Editor's Note

This essay pursues the doctrinal theme presented in the previous essay. That is, the RAAF, in meeting certain imperatives and observing the maxims of air power, must be able to conduct specific operations and roles across the three air campaigns.

The authors offer a hierarchy of air power application based on air campaigns, operations and roles. Air campaigns are the broad and continuing application of large numbers of resources to achieve a strategic goal. Campaigns are conducted using a series of operations including airborne and sustainment operations. The airborne operations are: Counter Air; Independent Strike; Reconnaissance, Surveillance and Electronic Warfare; Airlift; and Combat Air Support. Each operation in turn depends on specific roles for its success. One important point made is the necessary causal link between actual flying operations and those non-flying, but vital, activities which are defined here as Sustainment operations.

Another point made by the authors is that air power operations apply to all three environments - sea, land, and air. Hence the Combat Air Support operation is not restricted as by traditional thinking, which has attributed air support to naval and land theatres only. Furthermore, the concept of cooperation is discussed, in which all forms of combat power are viewed as complementing each individual form. This raises a point which is rarely considered in Australia - that land and sea power can complement air power.

In summary, this essay presents the campaigns, operations, roles and their relationships identified in AAP 1000, Royal Australian Air Force Air Power Manual. Readers wishing to study any or all of these operations and roles in more detail are encouraged to read Chapters 5 to 11 of that book.

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The many and diverse activities of air power are rarely viewed holistically. One method by which air power can be viewed as a total entity is through a conceptual model. That is, the activities of air power should be viewed within an air power hierarchy. At the apex of the hierarchy are the three air campaigns - Control of the Air, Air Bombardment, and Air Support for Combat Forces. An air campaign is a controlled series of related air operations aimed at achieving a specific strategic objective. Air operations form the next level of the hierarchy and represent the processes of conducting combat, which includes sustaining the elements of attack, defence and manoeuvre. In other words, the objectives of a campaign will only be realised through the conduct of operations. Within each operation, there are broadly defined means by which objectives may be realised. These broadly defined means represent the next level of the hierarchy - roles.

The purpose of this essay is to examine the operations and their accompanying roles so that a more practical understanding of air power theory may be developed. Through such an understanding, the uses of Australia's air power in peacetime and in time of conflict may be ascertained. Specifically, this essay will address the six air power operations which can be conducted in prosecuting the three air campaigns, namely: Counter Air; Independent Strike; Aerial Reconnaissance, Surveillance and Electronic Warfare; Airlift; Combat Air Support; and Sustainment.

COUNTER AIR OPERATIONS

Counter Air operations are the prime means for achieving Control of the Air. They employ the Offensive Counter Air (OCA) role to destroy enemy air power on the ground and the Defensive Counter Air (DCA) role to attack intrusive enemy air power in the air. Both roles are vital to the defence of Australia.

Offensive Counter Air

In the OCA role (which primarily involves attacks on enemy-occupied airfields) aircraft on the ground, runways, airfields, and fuel and maintenance facilities are the preferred targets. To conduct the OCA role successfully, the RAAF must possess an offensive capability,

which has long range and endurance. The ability of OCA squadrons to deploy readily, and the provision of good intelligence of potential threats are prerequisites for effective conduct of the role.

Operational considerations which must be addressed during the planning phase include:

- a. the decisive effect of the OCA role, which would reduce defensive attrition (that is, by using offensive action initially to stop enemy aircraft from attacking, the high attrition rate expected in defensive air operations would be reduced substantially);
- b. the achievement and maintenance of surprise;
- c. the matching of weapons to targets; and
- d. the use of ground and sea forces to assist with the role.

There are other elements of air power which may also be necessary for successful OCA and which have become an integral part of the role, such as Air-to-Air Refuelling (AAR), Electronic Warfare (EW), Suppression of Enemy Air Defences (SEAD), and Reconnaissance.

The RAAF would use its F/A-18 Hornet and F-111C aircraft primarily in the OCA role. Other aircraft such as B-707 tankers and specialised EW and reconnaissance aircraft could also be used. Generally, combat OCA aircraft would carry a mixed load of weapons to meet the task and at the same time provide requisite self-defence.

Defensive Counter Air

The DCA role involves active and passive measures. Active measures include Surface-to-Air Missiles (SAMs), Anti-Aircraft Artillery (AAA), and air defence fighters. Passive measures include camouflage, dispersal, concealment, hardening and so on.

Because Australia is non-aggressive, DCA would be one of the first roles performed in defending the nation against air attack and, as such, provides a cornerstone for the defence-in-depth strategy. The RAAF cannot hope to gain unlimited control of the air - the sheer dimensions of Australian airspace negate that. However, it should be able to maintain a high degree of control over selected areas, such as

airfields, ports and population centres, through a capability for wide-area coverage for early warning, and a capacity to shift its focus of effort to meet the threat.

The extent of the sea-air gap and national airspace has forced Australia to develop a national air defence system which comprises a control and reporting network, interceptor aircraft, SAM, AAA, intelligence, communications, and concealment and deception measures. In peacetime, it is incumbent on the RAAF to exercise all those skills, necessary for the adequate air defence of Australia.

INDEPENDENT STRIKE OPERATIONS

The capability to conduct Independent Strike operations offers Australia the flexibility to take the initiative, to gain surprise, to minimise attrition and to target an enemy selectively. The net effect is one of deterrence. Independent Strike operations represent the prime means for prosecuting the Air Bombardment campaign and could employ any of the roles of Strategic Land Strike, Strategic Maritime Strike and Interdiction.

Strategic Land Strike

Strategic Land Strike is the application of air power against land targets not directly in contact with enemy forces. The RAAF could discriminate in the selection of targets and prosecute 'surgical' strikes through the use of precision navigation/attack systems and precision-guided munitions. This high degree of discrimination affords an added bonus, as the possibility for collateral damage is greatly reduced.

The RAAF would expect to carry out this role at the outer margin of the defensive umbrella, probably against enemy-occupied staging bases, or against the industrial source of an enemy's air power, using F-111C or perhaps F/A-18 Hornet aircraft, in an augmented configuration.

Strategic Maritime Strike

Strategic Maritime Strike by the RAAF is the application of air power against enemy naval targets not in contact with Australian or allied forces but posing an indirect or longer term threat. Because credible, future conflict would probably be initially maritime in nature, the RAAF would give priority within Independent Strike operations to this role, and could use its F-111C, F/A-18 Hornet or P-3C Orion aircraft (a grouping known as the combat triad).

Interdiction

Interdiction is the application of air power against lines of communication to cut and disrupt the flow of resupply and support capability. Interdiction of enemy supply lines would enable ADF surface forces to determine and control the tempo and timing of battle. This would be especially relevant where the ADF was faced with a larger aggressor or with widely dispersed defensive operations. Again, the RAAF would use offensive elements of its force (its combat triad) for target destruction or for target denial, such as in minelaying operations.

Characteristic Requirements

In conducting these three roles, RAAF assets must emphasise suitable weapons fit and crew experience, an ability to operate at night and in all weather, and responsiveness. To that end, independent verifiable intelligence, secure real-time communications, and adequate levels of training and logistics support become vital.

AERIAL RECONNAISSANCE, SURVEILLANCE AND ELECTRONIC WARFARE

The ability to observe the enemy, in order to be aware of his intentions and thus reduce the possibility of being surprised, has always been of paramount importance in warfare. Aerial Reconnaissance, Surveillance and Electronic Warfare operations seek out intelligence, which is fundamental to all military operations.

Aerial Reconnaissance

Aerial Reconnaissance is the observation of specific targets, interests and areas. It involves the gathering of information by airborne means using photographic, radar, infra-red, electronic and visual methods. Furthermore, it allows the RAAF:

- a. to determine an enemy's force dispositions and to anticipate his intent and likely method of operations in order to counter them;
- b. to determine his logistics and communications arrangements and his infrastructure support in order to interdict them; and
- c. to assess the degree of success in countering and interdicting enemy forces as an integral part of the planning for subsequent actions.

The RAAF would conduct strategic or tactical reconnaissance tasks in fulfilling this role. The difference is in the level of information required and the type of target to be reconnoitred - that is, whether the target has an effect on the tactical battle or on the overall strategic situation. Accuracy, timeliness and the need to reduce vulnerability are necessary features of all Aerial Reconnaissance tasks.

Any RAAF aircraft could be used for reconnaissance, however the only dedicated capability exists in the F-111C force. Accordingly, the reconnaissance task will likely be part of another task that is more closely aligned to the aircraft's primary role. For example, a P-3C Orion may combine reconnaissance with anti-submarine warfare or anti-shipping tasks. In time of competing priorities, reconnaissance activities may have to be forgone temporarily for combat air activities.

Surveillance

Surveillance is the systematic, repetitive, overhead observation of expansive areas of the earth's surface, and has much in common with reconnaissance. Under Australia's defence-in-depth strategy, the RAAF carries out surveillance primarily in the air-sea approaches to

Australia and uses all its air assets, but primarily the P-3C Orion. Airborne surveillance is necessarily limited and RAAF capability will be augmented by Over-The-Horizon Radar (OTHR), civilian airlines, the coastwatch organisation and, in the longer term, airborne early warning and control aircraft. Radars on RAN vessels and civilian shipping also contribute. While satellite surveillance may be a more complete answer for Australia, acquisition of dedicated defence satellites is unlikely.

Electronic Warfare

Electronic Warfare (EW) is the use of electro-magnetic energy to determine, exploit, reduce or prevent hostile use of the electro-magnetic spectrum and to retain friendly use of that spectrum. It involves Electronic Intelligence (ELINT) and Communications Intelligence (COMINT) gathering activities. ELINT is the locating and identifying of an enemy's electronic order of battle, which includes surveillance and early-warning radars and missile guidance frequencies. COMINT is the locating, identifying and monitoring of enemy communications.

There are three aspects of EW - Electronic Support Measures (ESM), Electronic Counter-Measures (ECM) and Electronic Counter-Counter-Measures (ECCM). ESM is the process of passively collecting electronic information for intelligence or early-warning purposes and can enhance the scale of effectiveness of RAAF operations through the primary tasks of intercept and passive warning. ECM involves active or offensive measures to deny an enemy the use of the electro-magnetic spectrum and includes the use of deceptive transmissions, jamming, decoys and screens. Whilst ESM and ECM result from initiatives taken by airmen, ECCM is concerned more with providing equipment which is inherently resistant to ECM.

AIRLIFT OPERATIONS

Airlift provides a military commander with the capability to deploy his force quickly and over considerable distances. It also assists those deployed forces in applying their military effort effectively and affords the capability to sustain that effort. Australia's defence-in-

depth strategy is predicated upon rapid mobility; the ability to redeploy to more appropriate locations is the hallmark of Airlift operations.

Historically, the use of Airlift operations in wartime has been underestimated. There has been far greater demand in wartime than had ever been foreseen in peacetime, and Airlift operations have had to demonstrate greater flexibility of employment than was originally envisaged. In Australia, the ability to augment military airlift with civil assets is a real strength and needs to be capitalised upon.

The specific roles of Airlift operations are Strategic Air Transport, which supports a broad strategic or operational goal, and Tactical Air Transport, which provides for rapid and responsive movement within an area of operations (AO) to meet specific tactical goals. The determinants of whether the role is strategic or tactical tend to be whether movement outside an AO is called for, and the purpose of the task or mission. For example, deployment from a rear echelon into a forward airhead would be strategic, whereas redeployment within an AO would be tactical. Tactical Air Transport is usually related to the direct support of other current operations; thus, if a strategic deployment into a well-defended airhead could only be achieved by air-landing or air-dropping forces, then the mission would be tactical.

Strategic Air Transport involves the provision of:

- a. Strategic Mobility;
- b. Aeromedical Evacuation;
- c. Scheduled Services which are regular point-to-point services and include VIP flights; and
- d. Special Operations which entail deployment, support or withdrawal of special action forces.

Tactical Air Transport encompasses the tasks of:

- a. Airborne Operations, which involve the insertion by air of combat forces into an AO;

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- b. Air Logistic Support Operations, which involve the deployment and recovery of troops, equipment and supplies into an AO but not directly into combat;
- c. Evacuation of Casualties from the combat zone; and
- d. Special Missions, for example, psychological warfare, defoliation.

COMBAT AIR SUPPORT OPERATIONS

The third and final air campaign, Air Support for Combat Forces, involves operations called Combat Air Support operations. These operations support all three combat environments of maritime, land and air. They provide assistance to naval power through the prime roles of Anti-Submarine Warfare and Anti-Shipping Warfare; assistance to land forces in contact through the roles of Close Air Support and Battlefield Air Interdiction; and, finally, they provide assistance to other air power assets through the roles of Air-to-Air Refuelling, Airborne Early Warning and Control, and Suppression of Enemy Air Defences.

Maritime Environment

In likely levels of conflict for Australia, maritime warfare would be restricted to geographic areas of direct consequence to the conflict. That is, Australia would not expect to be engaged in unrestricted maritime warfare, reminiscent of the two World Wars. The primary combat roles expected of the RAAF within the maritime environment are Anti Submarine Warfare (ASW) and Anti-Shipping Warfare.

Responsibility for maritime surface operations rests with the RAN; however, both the RAN and the RAAF have a joint responsibility for maritime air operations. Operational coordination for maritime operations is normally vested in the Maritime Commander Australia, with the Air Commander Australia retaining overall command and control responsibility for maritime air assets.

Anti-Submarine Warfare. Whilst the threat to Australia from submarines is low, the vast ocean surrounds and the nation's dependence on shipping for trade dictate the maintenance of a proficiency in ASW. The submarine represents a flexible and effective means of offence. Just one enemy submarine could seriously disrupt shipping - both coastal and international - over a wide area. To counter it, a mobile and flexible defensive force is needed, which can detect, identify, attack and destroy any enemy submarine that threatens friendly shipping or naval forces. Maritime Patrol Aircraft (MPA) provide an excellent platform around which to build this requisite defensive force.

Anti-Shipping Warfare. Enemy warships could be expected to pose a threat to Australia's merchant shipping and RAN vessels as conflict escalated. Whilst the RAN could take offensive action against such a threat, reaction time and availability of naval assets may preclude that as an option. Should circumstances dictate the necessity for using air power, the RAAF could use strike, fighter or MPA aircraft to prosecute the Anti-Shipping Warfare role. The type of aircraft used would necessarily depend on the capability of the threat in terms of its air defence armament, and the availability of RAAF aircraft.

Land Environment

Air power can be used to provide firepower support to friendly land forces that are either in or close to the battle area. Its shock effect can compensate at a critical time for inferiority in numbers of ground forces. However, its effective use is dependent on close coordination with friendly land forces, a degree of control of the air, and the configuration of enemy formations. In the latter case, air power is less effective against ground forces that are dispersed, well dug-in, or heavily fortified. Air power contributes to the air-land battle in the combat air roles of Close Air Support (CAIRS) and Battlefield Air Interdiction (BAI).

Close Air Support. CAIRS is defined as air attacks against hostile targets which are in close proximity to friendly land forces and which require detailed integration of each air mission with the fire and movement of those forces. As there will seldom be sufficient aircraft available to satisfy all requirements, CAIRS should not be considered

if targets can be engaged and destroyed by weapons organic to ground forces. However, there may be times when the urgency of the situation dictates overwhelming fire support or when surface-to-surface weapons cannot accomplish a task which can be achieved through air-delivered weapons.

Battlefield Air Interdiction. BAI is defined as attacks against enemy forces and resources not in contact with friendly forces but in a position to directly influence and affect the land operation. BAI is most effective when friendly land forces have the initiative and are able to compel the enemy to expend supplies. As with CAIRS, close co-ordination with land forces and control of the air are prerequisites for success.

The principles for CAIRS and BAI are derived from the interdependence of land and air operations and are predicated upon joint planning. Whilst command of all forces in an AO would rest with a Joint Force Commander, he would exercise command of tactical air assets through an Air Component Commander who would normally be allocated the assets. Control would be exercised by the Air Component Commander with execution being decentralised as far as possible.

Air Environment

The combat effect of RAAF air power can be enhanced through improvements in aircraft survivability. Survivability, in turn, can be improved by increasing the radius of action of RAAF air power; by providing timely warning for, and more responsive control of, RAAF air assets; and by countering enemy defences against RAAF air assets. Specifically, the survivability of RAAF aircraft can be improved through Air-to-Air Refuelling (AAR) which increases flexibility in radius of action, Airborne Early Warning and Control (AEW&C) which provides the timely warning and responsive control, and Suppression of Enemy Air Defences (SEAD).

AAR provides increased range and flexibility and improved response times for long-range operations. AEW&C provides an airborne early warning, control and communications and maritime surface surveillance platform. SEAD provides the neutralisation,

destruction, or temporary degradation of enemy air defence systems, so that RAAF aircraft have the freedom of action to perform their missions without interference from enemy air defence weapons.

SUSTAINMENT OPERATIONS

RAAF Sustainment operations encompass all those operations, other than the airborne operations already discussed, that are necessary for the conduct of the three air campaigns. The many activities that must be conducted so that maximum military effectiveness may be gained from the use of air power are quite diverse. This diversity is reflected in the roles of: Command and Control; Communications; Intelligence; Ground Defence; Research, Development, Test and Evaluation (RDT&E); Logistics; Infrastructure; Administration; and Training and Education.

Appropriate Command and Control arrangements are needed to ensure the RAAF is developed along the lines of strategic guidance and that its forces are trained and equipped accordingly; the Chief of the Air Staff (CAS) has this responsibility. More detailed arrangements are needed to develop plans, determine priorities, assign forces and allocate resources. Effective command and control is vital to the successful conduct of the various types of air operations. This is achieved through command and control of operational air assets being vested in one airman, whose task it is to co-ordinate his assigned forces based on CDF's objectives and priorities; the Air Commander Australia (ACAUST) has this responsibility.

The RAAF's operational-level air commander -ACAUST- and his forces cannot operate effectively without efficient and rapid communications, both on the ground and in the air. Moreover, such communications must form part of a network that facilitates all phases of planning, training for, equipping, directing and executing air operations.

Without accurate and timely intelligence, CAS (at the strategic level) and ACAUST (with his subordinate tactical commanders) would be unable to direct the focus of their efforts, and indeed would be hard-pressed to prevent an enemy from achieving strategic, tactical or technological surprise. Intelligence allows the operational effort to be focused on an enemy's centre of gravity, but also demands stringent

security measures to protect the RAAF's own centre of gravity from enemy intelligence gathering.

Aircraft on the ground, airfields and associated installations constitute high-value, high-priority targets and, consequently, must be protected against air and ground attack. Therefore a suitable Ground Defence system is needed to complement the passive measures of the DCA role discussed earlier. A ground defence capability affords protection from ground-force threats.

The RAAF, because of its need to maintain a qualitative edge, requires a specialist in-house capability for Research, Development, Test and Evaluation of its aircraft, weapons and technical equipment. Such a capability is demanded because of the RAAF's need to improve the operational performance of its aircraft, weapons and avionics systems and to tailor that performance to specific and uniquely-Australian requirements.

Gaining maximum military effectiveness from the use of the air is the objective of air power; however, to maintain that level of effectiveness the RAAF requires a logistics capability that will ensure operational readiness and subsequent sustainability of its combat air assets. The tasks of supply, procurement, transportation, maintenance and engineering provide the physical wherewithal to prepare the RAAF to be operationally effective.

The combat power of the RAAF and its logistic preparedness cannot operate in isolation from infrastructure support. Infrastructure involves the coordination of civilian and military assets, facilities and installations which support the role of logistics as it contributes to operational effectiveness.

In order for the RAAF to function effectively in war its administration, in terms of organisational effectiveness and personnel effectiveness, will be of great importance. Therefore, the RAAF's peacetime administrative practices must reflect those which would be used in time of conflict.

In a similar vein, it is only through adequate training and education that every member of the RAAF will be provided with the necessary knowledge, skills and attitudes to enable each to contribute effectively to the RAAF's performance as an integrated operational force in time of conflict. The training and education of RAAF

personnel provide another dimension to maintaining the qualitative edge.

COOPERATION

The description of air power by its various operations and roles is very specific and may give the impression that air power is a discrete form of combat power, limited to its own environment. Clearly this is not the case and, like land and sea power, air power can be applied to support a military objective in another environment. This multi-environmental use of different forms of combat power is termed cooperation.

While the more commonly held perception is that cooperation involves air power assisting land or sea power, the particular point must be made that cooperation is a two- or three-way process. That is to say, land and sea power can be used in cooperation with air power. For instance, land forces can provide low-level air defence, airfield ground defence, logistics support, and search and rescue. Naval forces can provide strike coordination and targeting assistance, positive radar control for interception, mobile air defence, early warning, station keeping, and search and rescue.

The contribution of air power to the maritime environment has been described already. Air power cooperates with sea power in providing Counter Air, Maritime Strike, Interdiction, Surveillance, Reconnaissance and the coordinated roles of Anti-Submarine Warfare and Anti-Shipping Warfare. Similarly, air power contributes to the land environment in a number of roles, specifically Interdiction, BAI, CAIRS, Tactical Reconnaissance and Tactical Air Transport. Cooperation in this environment can include a large number of different tasks, and the effectiveness of close integration of air power is widely acknowledged through the practice of direct command and control systems. Thus, command by the Air Component Commander of a Joint Force Commander's Headquarters is successfully translated into effective control through a Tactical Air Control Centre.

However, it is in the air environment that cooperation reaches a degree of synergy. This aspect of cooperation is not well understood and is therefore not well practised except when dictated by necessity. For Australia, with large areas in the air-sea gap, naval cooperation in

the air environment is vital. Of prime importance is the ability of surface forces to provide mobile and durable radar early warning as part of an air defence system by stationing ships seaward of vital assets and across likely enemy lines of approach.

CHAPTER FIVE

AN AUSTRALIAN APPROACH TO WAR

Group Captain B.L. Kavanagh
Group Captain D.J. Schubert
Wing Commander G.W. Waters

Editor's Note

The two previous essays have summarised the air power issues discussed in the Royal Australian Air Force Air Power Manual. This essay is regarded by the authors as essential to placing the central theme of air power within its proper perspective.

The authors discuss the nature of war, and present certain characteristics of warfare which they believe to be most influential in determining its nature. Their selection of friction, offence and defence, centre of gravity, and the human factor as the most influential characteristics will no doubt stimulate debate. They offer the 'traditionally accepted' classes of war - Global Nuclear, General, and Limited - and place the broad levels of conflict recognised in Australia within that spectrum. Additionally, they argue that there are four hierarchical levels at which wars are planned and waged, from the grand strategic level at the highest, to the tactical level at the lowest.

Broad security needs and defence considerations are examined, which reflect current Australian Government policy expressed in the Ministerial papers released by Defence Minister Beazley in 1987 and Foreign Minister Evans in 1989. The authors argue that these broad issues guide the ADF in the application of combat power through the principles of war it uses, the doctrine it follows, and the international laws that control its behaviour; and they provide an insight into each of these areas.

Not only are relevant government policies and an appropriate ADF important in conflict, but so too is the potential of the Australian nation to support those policies and its defence force. The authors argue that such factors as Australia's national will; its armed forces; economic strength; ability to conduct defence research and development; its population; geography; and security alliances must be considered when assessing

Australia's war potential. They conclude that, broadly speaking, Australia is able to defend itself; that it presents itself as a most difficult opponent; and that it does have a part to play in contributing to regional stability and international security.

In summary, this essay provides an example of Australia's view of war and how it accords with more broadly based international views. Readers wishing to pursue any aspect of this essay are encouraged to read Chapters 1 and 3 of AAP 1000, Royal Australian Air Force Power Manual.

War results from a failure of diplomacy to resolve conflicting national interests. It is viewed by Australia and the rest of the Western world as an extreme occurrence that disturbs long periods of peace. However, it is a maxim that those who wish for peace must also understand war.

To understand war, one must first examine its nature and then orient one's understanding of the nature of war to national circumstances. One may do this by considering broad security and defence needs and then focusing on specific military considerations. Because war involves the entire nation, it is also necessary to identify and examine those factors which might be construed as forming Australia's war potential.

A number of international developments occurred during the 1960s which resulted in larger allies of Australia reassessing their roles in future disputes outside their respective regions. Thus, British forces withdrew from east of Suez and the USA announced what has become known as its Guam doctrine. These developments were largely responsible for Australia adopting a national security policy of self-reliant defence of its interests and have had a profound impact on Australia's approach to war.

NATURE OF WAR

War is seen as the final arbiter for a nation's government. It is the ultimate extension of politics by other means. It usually produces a series of dire consequences which transforms the way of life of the entire nation and from which there may be no simple extrication without recourse to military action. In that sense, any commitment of military force by Australia should exhibit a sense of proportionality and follow a clear political aim, which will allow the nation and those in conflict with it to arrive at a favourable state of peace once hostilities cease.

The nature of war is characterised primarily by confusion and uncertainty, or friction; the interaction of offence and defence; the need to focus on an enemy's essential element, or centre of gravity; and the human factor.

Friction. Friction encompasses those countless factors, often unpredictable and confused, that would collectively reduce the effectiveness and overall efficiency of Australia's military efforts. It is the breakdown in communications that prevents the orders from getting through; it is the unforeseen design defect that makes the weapon malfunction; it is the unanticipated resistance from a resolute enemy. Its sources lie in the paralysing effects of danger, the extraordinary demands for exertion, the uncertainty of everything in war, and the influence of chance. Therefore, actions taken in war to drive up the adversary's friction would be as vital to success as those taken to minimise Australia's own.

Offence and Defence. Within warfare, the two essentially different components of offence and defence continually interact, with the objective of one being to seize the initiative, and the other, to react appropriately to enemy actions. Historically, it has been easier to defend than to attack; however, victory can only be attained through offence because the most that defence can ever hope to achieve is a stalemate.

Centre of Gravity. Offensive action alone will not guarantee victory - it must be directed in order to have the greatest impact on an enemy's capacity and will to continue the war. A nation's centre of gravity is any element or focus which provides strength and balance and on

which its ability to resist or continue to wage war heavily depends. Destruction of a nation's centre of gravity will return a disproportionate effect. Implicit in this concept is the need for Australia to identify and protect its own centre of gravity.

Human Factor. Above all else, war is a human endeavour, and in the end it will be the human factor that will carry the day. Sound leadership, as well as highly skilled and courageous personnel operating in cohesive well-trained units, are essential to success in warfare. Cohesion is obtained through morale, amongst other things, which in turn depends on relevant training, sound doctrine, imaginative leadership and high levels of readiness and discipline.

Classes of War

Three classes of war have traditionally been defined: Global Nuclear War, General War, and Limited War. The probability of Global Nuclear or General War breaking out is very low. Conversely, the incidence of Limited War in today's world is high. Within the term Limited War, three broad divisions of conflict have been postulated as credible for Australia - low-level conflict, escalated low-level conflict, and more substantial conflict. The classes of war, and for that matter the three divisions or sub-classes of conflict within Limited War, will generally require different strategies and methods for success.

Levels of War

Planning for war and actual engagement in conflict should be considered at four hierarchical levels. The first, the grand strategic level, is normally at the highest executive level and is the prerogative of the nation's political leaders. The remaining three are the business of the military. At the second level is the military strategic, which is concerned with employing armed force to secure the grand strategic objectives of a nation. The third, or operational level, involves the employment of armed force in a campaign or theatre of operations to attain strategic goals. Lastly, the tactical level is concerned with the use of military units in combat to achieve operational goals, and it is at this level of war that force of arms renders the decision.

SECURITY NEEDS AND DEFENCE CONSIDERATIONS

Australia's security has historically been tied to the strategies and policies of its allies. However, over the past 40 years, a number of international developments have forced Australia to formally reassess its security needs and defence considerations.

Australia is neither aggressive nor expansionist, hence its defence policy is more aligned to the components of defence than to offence; however, it retains the capability to use offensive assets to defend its interests. At the same time, Australia supports non-nuclear policies and any war fighting would be restricted to conventional weapons and propulsion systems. Overlaying these features is a defence policy of self-reliance, which has been adopted by Australia with four fundamental objectives: independent defence of Australia and its interests; promotion of regional stability and security; support of the mutual obligations of Australia's chief allies; and contribution to global strategic stability.

Australia's national defence interests can be viewed within two clearly defined geographical regions - the region of primary strategic interest, which reaches out to South-East Asia, Indochina, the eastern Indian Ocean and the South-West Pacific; and the region of direct military interest, comprising some ten per cent of the earth's surface and including Australia, its territories and proximate ocean areas, Indonesia, Papua New Guinea, New Zealand and nearby countries of the South-West Pacific. Current defence policy stipulates that the force-in-being should be independently capable of defeating direct challenges to national sovereignty within the region of direct military interest.

There is the potential for a variety of threats to arise in both defined regions which could propel Australia into conflict. However, the most likely contingency in which Australia could be involved would be low-level conflict at the outset, with a possibility for escalation. Accordingly, Australia has developed a strategy of defence in depth which entails initial control of developments well forward in the air and sea approaches to the nation. Moreover, this strategy will, by its very nature, consolidate and strengthen should it be forced back

on itself. Such a strategy provides the flexibility to choose the timing, place and means of engaging an adversary.

MILITARY CONSIDERATIONS

In providing for the security and defence needs mentioned above, Australia relies on the military to support political, economic and social actions which may be undertaken initially, during times of tension. There are four primary considerations that will influence the conduct of operations by Australia's military: the basic elements that form Australia's combat power; the principles that have been adopted to guide the conduct of war; the doctrine, that is the military's philosophical thoughts on war; and the international laws that control the behaviour of Australia's combatants.

Combat Power

Combat power is the ability of a nation to apply the military capability of its armed forces to impose its will on another country, either through the use of force, or as a deterrent through the threat of use of force. Combat power has traditionally been applied through bombardment, blockade, or invasion, and can be applied in the three environments of sea, land or air. Whilst it can be applied selectively in one environment, combat power is usually exercised by Australia's three environmental forces acting jointly. It relies ultimately on firepower and manoeuvre to achieve best effect, but the generation and sustainment of combat power depend upon a range of other factors such as command and control, logistics, leadership, morale and fighting spirit.

The broad functions of the Australian Defence Force (ADF) are to deter aggression, to ensure the security of Australia and its territories, and to uphold and protect Australia's national interests. It is structured to deal effectively with the levels of credible contingencies that could arise in the short term and to provide a basis for timely expansion to meet higher levels of threat that could develop in the longer term.

The ADF, although well-trained in conducting joint and combined operations, retains flexibility by having each Service - the

RAN, Australian Army and the RAAF - independently organise, train, equip and maintain its forces to make best use of its own form of combat power.

Principles of War

Principles of war provide an intellectual framework against which military commanders can question their own processes of logic and decision-making faculties during planning and actual combat. Importantly, principles of war provide a better understanding of warfare; however, mastering the art of warfare requires a depth of knowledge far beyond mere principles.

Ten principles of war have been adopted by the ADF as a frame of reference for its commanders in time of conflict. These principles are: selection and maintenance of the aim; morale; offensive action; security; surprise; concentration of force; economy of effort; flexibility; cooperation; and administration.

Doctrine

Doctrine is the fundamental philosophy concerning the employment of a force - it is authoritative but requires judgement in its use. Doctrine is derived from fundamental principles and innovation. It is this embracing of change, through innovation, that makes doctrine dynamic. Doctrine is interpreted at the various levels of war and that interpretation becomes quite specific. For example, at the strategic level, interpretation of doctrine emerges as guidance which relates to how the strategic aims of war are to be achieved. At the operational level, interpretation of doctrine and guidance emerge as instructions or specific directives about how particular campaigns will be conducted or how areas of operations will be defended. Finally, at the tactical level, are procedures which are tried and practised techniques for engaging in combat.

Independent doctrines of sea, land and air power are necessary as they contain the central philosophies by which forces can make best use of their particular environments. They also provide a strong foundation from which joint doctrine may be derived. The ADF has formalised its joint doctrine and recorded an extensive set of

instructions and procedures for joint training, exercises and operations.

Law of War

The law of war has its basis in fundamental military ethics derived from humanitarian principles and religious beliefs. It exists to protect combatants and non-combatants from unnecessary suffering, to safeguard basic human rights, and to facilitate the restoration of peace. International law recognises that the law of war applies to all belligerents, irrespective of whether they are formally party to the various laws, conventions or protocols.

Australia has adopted the Law of Armed Conflict, which comprises a set of humanitarian rules that require:

- a. unnecessary suffering to be avoided;
- b. destruction of property to be limited;
- c. wounded and sick not to be attacked;
- d. medical personnel to be afforded special privileges;
- e. attacks to be permitted only against combatants; and
- f. certain signs and markings to be observed which convey particular meanings, including immunity from attack.

AUSTRALIA'S WAR POTENTIAL

Armed conflict involves the entire nation, hence those factors which constitute the potential of a nation to engage in hostilities must be included in a study of war. A high national morale manifest as national will provides the foundation of a nation's power to deter aggression. The armed forces are the instrument through which a nation exercises power, but a nation's power cannot be sustained if it does not possess the requisite economic strength in terms of raw materials, technological base and infrastructure. The ability to conduct defence Research and Development (R&D) is also important, as it provides a nation with a qualitative edge in its armed forces. The

physical characteristics, demographic features and skills of a nation's population are other important factors constituting that nation's war potential. So too are a nation's location, topography, avenues of approach and climate - all discussed in this essay as geography. Finally, nations also use alliances to increase their potential for security and development.

Australia's national will has been manifest over the years as a readiness to fight for a common cause, which usually had little to do with direct defence of Australia. However, since Australia's most recent involvements in Korea and Vietnam, there has emerged a reluctance to support wars remote from immediate national interests. National will could be expected to support the use of the ADF within the region of direct military interest and perhaps even to the extent of helping a regional neighbour who requested direct military assistance. However, the question of national will supporting hostilities at a global level, remote from Australia, is one which a government would have to consider very carefully.

The armed forces of Australia, whilst being well-trained in defence of continental Australia, are also experienced in long-range operations and as such can make a significant contribution to regional stability. Primarily, the ADF needs to retain its capability for deployments and practical assistance to neighbours through maritime patrolling, surveillance and intelligence gathering. The ADF must be capable of controlling the sea and air approaches to Australia, especially in the north-west and north-east. It must possess the requisite reach and mobility to react to threats and must have adequate intelligence for timely warning. Limited infrastructure and severe seasonal variations in weather introduce special logistical considerations for the ADF in defending Australia and its approaches.

Additionally, the ADF must have a responsive and substantial deployment capability which can operate throughout the region of direct military interest. The characteristics of responsiveness, reach, mobility, endurance, firepower and flexibility for the ADF equate to an air power capability. Timely warning, which can be provided by surveillance and intelligence, is currently derived from Over-The-Horizon Radar, ship-based microwave radars, air and naval surveillance assets, submarines, and land-based regional force surveillance units. Provision of AEW&C aircraft would complement

the ADF's ability to receive timely warning. The ADF has retained an offensive strike and interdiction capability which, whilst limited politically in low-level conflict, would be essential to success should conflict escalate. The ADF also possesses a strong maritime warfare capability and has modern, effective and versatile assets to successfully control its airspace.

The Australian economy is capable of providing adequate levels of modern equipment and manpower to support the ADF; however, self-sufficiency in terms of industry support cannot be allowed to wane. Moreover, should Australia become engaged in a protracted conflict, then the economy would need to gear up for higher than normal levels of production. To that end, Australia's policy of self-reliance includes a policy for developing war reserves, including stockpiling. Although Australia is well-endowed with raw materials, foodstuffs and natural resources, it lacks a suitable national infrastructure and depends on overseas sources for much of its advanced technology.

Australia's capacity to conduct and exploit defence R&D is tied to its willingness: to encourage local manufacture of high-technology equipment to commit itself early to local projects; to involve the entire academic and scientific community; and to encourage commercial manufacture, where possible, of developments from defence research.

The population of Australia is an aging one, dependent on family migration to retain a balance of youth, which has in turn brought with it cultural diversity. Moreover, that population is more technologically competent, more demanding of leisure time and possessing less of the basic artisan skills than the population of 50 years ago. This has ramifications for not only the ADF itself, but also for industry and for other elements of the economy which directly support the ADF and Australia's war potential.

In terms of geography, Australia's location makes avenues of approach difficult for an aggressor, and the ruggedness of its northern coastline and interior would do little to support an offensive military effort, thereby allowing focal points of entry to be identified and hence defended. However, the large size of Australia makes it difficult to defend.

Australia's war potential is strengthened through the treaties and agreements to which it is a signatory. Security is enhanced indirectly from stability in the region, as well as from the deterrence factor that association with the Western alliance provides. Moreover, Australia benefits through alliances with larger partners through access to intelligence, preferred status in military equipment purchases, and opportunities to participate in combined exercises.

CONCLUSION

Any conflict for Australia would require the ADF to pay heed to those Clausewitzian concepts that constitute the nature of war - friction, offence and defence, centre of gravity, and the human factor. These concepts must be addressed in terms of their relevance to each class of war, but more especially, in Australia's case, to the credible sub-classes of conflict. Additionally, they must be addressed at the four levels at which war may be conducted.

Australia's policy of defence self-reliance and the nation's determination to be able to protect national sovereignty within the region of direct military interest demand a strong defence force. The armed forces of Australia must be comprised of individual forces skilled in warfare within their particular environments of sea, land, and air, and trained to operate jointly. To that end, certain principles of war, war-fighting doctrines, and legal issues that will pertain in war, must be thoroughly understood in peacetime.

The armed forces of Australia will not be able to defend national interests without the support of the entire nation - through the full range of factors that constitute the war potential of a nation. Current levels of competence and preparedness indicate that Australia is able to defend itself, that it presents itself as a most difficult opponent should another nation choose to use force against it, and that it can make a significant contribution to regional stability and international security.

CHAPTER SIX

AIR POWER IN THE DEFENCE OF AUSTRALIA

Air Marshal R.G. Funnell, AC
Chief of the Air Staff

Editor's Note

The author of this essay, Air Marshal Ray Funnell, delivered the Blamey Oration in Melbourne on 25 August 1988. Air Marshal Funnell chose the topic 'Air Power in the Defence of Australia' as his theme because he believed it to be not only an important subject, but also one that was seriously misunderstood throughout the defence and wider Australian community. This chapter is an edited version of that oration.

In arguing that air power is 'especially important for the security and defence' of Australia, the author starts by discussing relevant aspects of the Defence White Paper of 1987 and presenting his own views on the concepts of 'self-reliance' and 'defence in depth'. He then discusses briefly the nature of air power and sets the scene with comment on likely levels of conflict. The remainder of the essay is devoted to the use of air power within the ADF. In this section, Air Marshal Funnell explains his principal contentions: that air power in the defence of Australia is the dominant component of combat power, that air power is crucial to Australia's security but is under-valued, and that a balanced appreciation of the capabilities of air power and the best means of applying air power is essential.

His final point is an interesting one - that air power as a term has a certain utility but that, in the future, Australian military planners will have to determine how the primary elements of the nation's combat power may be combined effectively to form the one combat power entity. Air Marshal Funnell exhorts all members of the ADF to 'transcend the distortions of single-Service backgrounds' in ensuring that the best use is made of Australia's combat power.

Although 'Air Power in the Defence of Australia' was written in 1988, the essential thrust of the essay is an enduring one. Undoubtedly this

essay will stand the test of time and represents a practical and concise interpretation of the use of air power in the defence of this nation, at a time when Australia's strategic thinking is entering perhaps its most challenging era.

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The defence of Australia is important. Of that there can be no doubt and, equally certain, the great majority of Australians would agree. It is a primary duty of any government to secure its citizens against aggression. The role of air power in the defence of Australia is also important and, as I will elaborate, it has special significance to a nation with Australia's characteristics and strategic circumstances. Despite its importance, however, it is not well understood and, in my opinion, it has been consistently undervalued in considerations of how best to secure this nation. Air power is not understood by many members of the military profession. Sad to say, it is not well understood by many Air Force officers. Given that, it is indeed a wonder of no more than minor proportions that air power is not well understood by the public and their elected representatives.

In my own small way, I have tried to educate a variety of groups in our community by various writings and addresses. I have also, within the RAAF itself, established an office and a process for the better development and publication of thinking on air power. These efforts are beginning to produce results and I am hopeful that, through a process of education, the Australian people generally will develop a keener understanding of air power and a better appreciation of its value. The reason I am so hopeful is that I believe the seeds of understanding are being spread on fertile ground. The good sense of the people of Australia is a quality often remarked on by observers. From many discussions I have had in the community I believe that, despite the fact that individual Australians have only a superficial understanding of air power, the collective impression of Australians - including the representatives elected to Federal Parliament - is that air power is especially important for the security and defence of our nation.

The Defence White Paper

Let us now direct our attention to just that subject - the security and defence of our nation. In March 1987 the Australian Government produced its policy blueprint on the subject, the Policy Information Paper entitled *The Defence of Australia 1987*. I do not consider there is any need for me to rework that paper. Not only is it well understood within the community but it has also been generally accepted by Australians as the correct policy approach for the future. I recall that, at the time of its publication, when I was working in Headquarters Australian Defence Force, we were expecting it to stimulate a lot of debate. It did just the opposite. It didn't stimulate argument, it settled it, and since its publication there has been little public discussion, let alone debate, on its policy precepts. What defence discussion there has been in the past 18 months has been on such topics as personnel wastage and conditions of service, not on the fundamentals of our security policy. Consequently, I take it that the policy precepts of the White Paper are accepted as this nation's firm guidelines for the future.

So that we have a common vantage-point from which to view the defence of Australia, I will set before you some aspects of our strategic circumstances. I will use my own wording but the ideas are consonant with those of the White Paper.

Ours is an inherently secure nation. To use the words of Paul Dibb's review, which was the precursor - or should I qualify that to say the essential precursor - to the White Paper: 'Australia is one of the most secure countries in the world'.¹ We are the only nation to occupy a continent; we have no land borders; no nation in our immediate environs has the military capabilities to mount a major attack against us; we are allied to the most powerful nation on earth; we have no traditional enemies (but then again our only natural ally in the region is New Zealand, which is even smaller than we are); and we are under no military threat. This surely is a most favourable security outlook and one with which any nation would be pleased.

On the other hand - and in matters of security policy there is always another hand - we have no guarantees that our present circumstances will last forever, or even beyond the next few years. In

a nation-state system that is still dominated by force or the threatened use of force, one must always keep one's guard up. Friends can fall out; national governments can change personnel and policies virtually overnight. Moreover, we live on the fringes of one of the most dynamic regions in the world, South and East Asia, and that dynamism has led to instability in the past, and probably will again in the future. Even closer to home, the once tranquil political waters of the South-West Pacific have been more than merely ruffled in recent years. Yes, the recent past has been kind to Australia, but the future is uncertain and there are no security guarantees for Australia - or any other nation - within that uncertain future.

When viewing the future I consider that it is useful to do so not from our present position [1988] but from our position 10 years ago, and use the last decade as a filter as we take in the view of what lies ahead; to look ahead from 1978 at what lies ahead of us in 1988. 1978 was before Afghanistan and the Gulf War; before the South Atlantic War and Israel's Peace for Galilee Operation; before the Philippines became the truly ill man of ASEAN; before India began to increase dramatically its strategic reach; before the China-Vietnam border conflict, the build-up at Cam Ranh Bay and the rush to occupy the Spratlys; it was before the troubles in Vanuatu, New Caledonia and Fiji and before the *Rainbow Warrior*; there were no Libyan connections, no Soviet fishing deals and New Zealand was probably the USA's staunchest ally. I put it to you that, viewed through the filter of the last 10 years, the future for Australia is not as rosy as an unfiltered view would suggest.

I also put it to you that Vietnam is not the last armed conflict in which Australian forces will be engaged. Like you, I have no idea of when or where our next armed conflict will be, but I do know that nothing in human history suggests that we few people living on this strategically important and highly desirable tract of land between the Indian and Pacific oceans have stumbled upon the secret of eternal peace - without even knowing how we did it. The 'Lucky Country' indeed!

As I said, I do not know when or where Australia's next conflict will be. (I use the word conflict advisedly as in the modern era wars are seldom declared. Instead, conflict occurs.) If put to the test and asked the location of Australia's next conflict, I would suggest that

it is less likely to be associated with the defence of Australia than it is with the fulfilling of an alliance commitment. The White Paper makes the point that, although not structured for operations further afield, the Australian Defence Force still provides effective options to the government for such operations. Air power's characteristics of mobility, versatility and adaptability make it particularly important if those options are exercised. That is, however, speculation and also a digression, because here I am discussing the defence of Australia and, irrespective of where our next conflict might be, it is the defence of Australia for which the Australian Defence Force is organised, equipped, exercised and trained.

The White Paper emphasises - some say over-emphasises - that our security goal is national self-reliance. Certainly it is self-reliance within an alliance framework, but it is self-reliance nevertheless and it therefore places a major burden on both the nation and its professional military if that goal is to be achieved within the foreseeable future. I pause here to emphasise that self-reliance is a policy goal. It is not our present state of being in a security sense and its achievement will take a substantial portion of our national wealth and our national endeavours. It will not be easily achieved. It is, however, wholly worthwhile and achievable and, currently, it is the only type of national security goal that sits easily with Australians.

The White Paper goes on to describe Australia's defence strategy as being based on the concept of defence in depth. This is not 'layered defence', to use the term coined by Paul Dibb, although the media coverage of the White Paper at the time of its release would suggest that layers of defence were being proposed. They were not. 'Layers of defence' gives the wrong implication. What is proposed is seamless and progressive. There are no fixed boundaries between the areas where one or another defence asset becomes more or less useful. Instead we see the area on and around our island nation as being secured by a mix of forces operating together to produce a total defensive force that would take a very strong and determined enemy to overcome; and it is my contention, which I will now amplify, that air power has a major and probably predominant role to play.

From even a cursory glance at a map of our region it is surely obvious that our military strategy for national security has to be fundamentally a maritime strategy. Here we sit, surrounded by water.

For an enemy to inflict damage on this nation he would have to cross that water to our continent or coastal waters. (As an aside, I reject the notion of action on the open oceans against vessels transporting goods to or from this nation other than as part of a much wider conflict involving action against the Australian mainland and its people, or as part of a more widespread regional or global conflict.) But to return to where we were, our strategy must be a maritime strategy and in such a strategy air power has a major part to play. What, however, do we mean by air power?

Air Power

The best definition of the term is that of two senior RAF officers, Air Chief Marshal Sir Michael Armitage and Air Vice-Marshal Tony Mason, who define it as

the ability to project military force by or from a platform in the third dimension above the surface of the earth.²

With air power, the air is not used merely as a medium that is traversed by a bullet or projectile but as a medium for manoeuvre, deployment, concealment and surprise.

Now, in the Australian Defence Force air power is not the exclusive province of the RAAF. Both the RAN and the Australian Army also possess air power. This might lead an observer to ask if this is the best arrangement for the application of air power, but that is a question for another time. I will steer clear of controversy on that issue but will pursue the digression a little further by remarking that air power is a catalyst for disagreement among military professionals and other analysts and commentators throughout the world. Take joint operations. Without the complication of air power, joint operations would be a matter of minor professional interest with perhaps a little heat being injected every so often through the discussion of amphibious operations. Add air power and air forces and the temperature really rises. Throughout the militaries of the world the command and control of air forces and especially the allocation of air assets are matters of consuming interest and little agreement. Australia is no exception.

Now back to the mainstream of my topic. I steered clear of controversy on one issue but perhaps I will get a few to rise to my next contention, which is that air power is the dominant component of combat power in modern warfare. Mark carefully what I did not say. I did not say that air forces were the most important armed Service or that air forces should be allotted the highest priority in the allocation of funds. I said that air power was the dominant component of combat power in modern warfare, and by that I meant that no contemporary military planner or commander can plan or conduct operations successfully unless he has squarely at the forefront of his consciousness a keen and accurate picture of his opponent's air power, and his own, and their respective capabilities. Look at modern military equipment, what it is designed to do, what it provides and what threats it is designed to counter; look at how we plan, the shape of our doctrine and the threats it contemplates; look at how we exercise and train; and my point is substantiated. You have to know air power and its usage from every possible angle if you are to be successful in modern warfare.

And it is not an easy subject to grasp. The history of air power, from its first use in Libya in 1911 to its use today, is studded with glaring examples of air power misunderstood and misused. These examples are usually characterised by failures at each end of a conceptual spectrum: at one end you have those who failed because they did not acknowledge the power and capabilities of air forces, and at the other end you have those who failed because they claimed too much for air forces. Sadly, there are many pundits today who punctuate their arguments with examples of the failures but who themselves do not seek to understand and profit from those examples but to use them to score rhetorical points. Today we have many professionals, almost exclusively airmen and fortunately a diminishing minority, who consider that air power is independent of other forms of combat power. We have others who consider that air power is nothing more than supplementary to land and sea power and that the air force is a support force which should be declared redundant and its equipment and personnel distributed between the army and the navy. My beliefs are otherwise. Air power is not independent of other forms of combat power, nor are air forces subordinate or supplementary to the older forms of warfare. All forms of warfare are complementary to

each other and each Service must interact with and be supportive of the others. That is the key to success in modern warfare.

Levels of Conflict

One final preparatory step is needed before I take you through the actual use of air power in the defence of Australia. We need to establish the maximum level of conflict for which we should plan. For many years this was a point of great contention within the Department of Defence. Fortunately, the contention is of the past thanks to the efforts of Paul Dibb who, in his review of defence capabilities, postulated that the highest level of conflict that is credible, given our strategic outlook, is that of an initial low-level conflict which has continued and escalated.³ This notion of 'escalated low-level conflict', on which he expounded at some length in his review, was accepted by the government in its White Paper as the level of conflict which the Australian Defence Force must be capable of countering essentially from the force-in-being. Planning for operations in escalated low-level conflict is no easy task for our Defence Force, as at its upper limits it includes engagements between major naval and air units, attacks on coastal shipping, mining of northern waters, air attacks on northern settlements, attacks on offshore territories, and an attack in the north by a substantial ground unit.

I think the stage has been set. I now wish to take you through the defence in depth of our nation to illuminate the ways in which air power will be used, including use with the Navy and the Army.

The Use of Air Power Within the Australian Defence Force

The first task of our Defence Force, and it is one that is conducted 365 days of every year, is the surveillance of our sovereign air and sea space. If we are to secure our homeland we must know what is occurring in its approaches. Here air and sea power combine, each using its characteristics and capabilities to best effect. Aircraft have the advantages of speed, mobility and versatility; ships can maintain a substantial military presence for a considerable time; but both need to know that there is something out there which warrants investigation before either can be used. Our northern approaches

cover thousands of miles of coastline and hundreds of thousands of square kilometres of ocean. That demands a surveillance system which can continuously scan that huge area and react swiftly to identify any target it detects and we wish to identify. Anything less leaves our security goal of national self-reliance in the 'pending' category. Recent government decisions and announcements indicate that we will be able to move it from that category in the foreseeable future.

The decision was taken in 1986 to establish a wide-area surveillance system based on the Australian designed and developed JINDALEE Over-The-Horizon Radar (OTHR) system and the tender will soon be let for the construction of the first operational site. In less than 10 years, when the full system is in operation, we will have a surveillance system which will be able to tell us if there is any surface vessel or aircraft in our approaches which warrants investigation. The Minister for Defence announced in June 1988 that the government intends to purchase Airborne Early Warning and Control (AEW&C) aircraft and tenders will soon be requested. With AEW&C aircraft entering operational service at the time of JINDALEE, we will have the capability to vector aircraft or ships onto any target JINDALEE has detected and we wish to investigate. If all proceeds as planned, we will have in place, in about 10 years, the total system that national self-reliance requires: the wide-area surveillance of JINDALEE, the precision intercept capability of AEW&C, the intercepting aircraft or ships, and the essential command and control of the total system through the operations centres, the computers and the communications which link all elements into an effective whole.

Now, what if more is required than just identification, classification and perhaps warning? What if the vessel or aircraft detected is engaged in or embarked on aggressive acts against us and must be diverted or destroyed? With surface vessels, our maritime defences are formidable. Our F-111s, F/A-18 Hornets, P-3C Orions, all equipped with Harpoon, are a powerful force. Our destroyers and frigates are similarly equipped and similarly powerful. Our Submarine Force adds its own unique characteristics and capabilities to further enhance our capabilities for maritime strike. Against aircraft, our defences will be equally impressive, once JINDALEE and AEW&C aircraft are operational. Having been detected by JINDALEE and intercepted through the use of AEW&C (or, in some instances,

ground-based microwave radars), any aircraft committing aggressive acts against us would have to contend with F/A-18 Hornets, no matter whether it is day or night, good weather or bad. With its sensor and weapon fit, the Hornet is a formidable opponent for any possible opponent, especially one that is operating, as it would need to, at the extremity of its radius of action. The F-111 also has potential in the air defence role, particularly at long range against aircraft of limited performance. This has significance when considering our defences against special forces being air-dropped or air-landed on our territory.

We should not allow ourselves, however, to be locked into a defensive posture if aggression is being perpetrated upon us. For a host of reasons - our small size (population and forces), the factors which influence military success, and the natural inclinations of the Australian nation - we should snatch the initiative from the aggressor and cut off his forces at their source. Here the Strike Reconnaissance Force of F-111s comes into its own. There is nothing in the region, now or in prospect, which can match its capability to strike day and night, fair weather or foul, at long range with precision and power. Moreover, we should not 'pussyfoot' with its power but use it in the way which assures the maximum military return from its impressive capabilities. Here I offer you just two thoughts: first, air power is used most effectively when it is concentrated in unexpected ways on targets of real value; you go in where you are not expected, you hit hard, and you live off the confusion you create; and, secondly, if you are a small nation like Australia with considerable susceptibility to the ravages of attrition, the pre-emptive strike must be seriously considered. Some might argue that it would be morally reprehensible for Australia to strike first; but what could be more morally reprehensible than having irrefutable intelligence of pending aggression against your citizens and doing nothing until the aggression is committed and your citizens have been killed or maimed. Certainly, there are political and diplomatic advantages in not acting first and, consequently, keen political judgement must be exercised, but we should not categorically deny the use of pre-emptive strike through some misplaced sense of morality. We must keep it as a possibility if the strategic situation warrants its use.

I said earlier that the obvious strategy for Australia is a maritime one and I believe that I have now sketched for you not only the means of implementing such a strategy but also the programs

which will bring it about. I will review these for you. Wide-area surveillance will be the task of JINDALEE; refinement of that and close control of intercepts will be accomplished by AEW&C aircraft; air interception is a job primarily for our F/A-18 Hornets but we should not overlook the capabilities of F-111 aircraft for long-range interception; interception of naval vessels is a combined task for aircraft and ships, with ships having the ultimate task and the capability; destruction of airborne aggressors will be accomplished by the total Air Defence System of sensors, aircraft, communications, computers and command and control; destruction of naval aggressors is a task for aircraft, surface ships and submarines, using each in an optimum manner (on this topic it is worth stating that a combined attack using more than one element usually is most effective, with the combination of aircraft and submarines having considerable power); and finally, there is destruction of the aggressor's aircraft and vessels at source using, in particular, the unique capabilities of the F-111 aircraft.

Of those capabilities which are not yet in the force-in-being, the RAAF programs to acquire them are as follows: JINDALEE, AEW&C, the RAAF command and control system, and the F-111 avionics update, all of which are either approved projects or approved government policy. When they are in place, our maritime strategy will be achievable and our nation's security assured.

So far I seem to have neglected the role of our ground forces. I will soon correct that, but before I do, I wish to emphasise the point of all that I have said so far. Our strategy is and must be maritime-based. It is an axiom of our defence - or it should be, for it is self-evidently true - that, if we are properly organised, equipped, deployed and trained, we can control the northern approaches to this nation. The control of our northern approaches is a necessary condition for our security and, what is more, it is a sufficient condition for our security. I admit that it does not ensure against small landings and harassment, but that is another issue. Such aggression hardly threatens the security of the nation; only a major invading force could do that, and as long as we control the northern approaches, no major force can reach us.

This is not to downplay the possibility of land action or to understate the difficulty for the Australian Defence Force in reacting to a series of raids by small parties, especially if they are widely

dispersed - successive exercises in the Kangaroo series have highlighted these points - but we do need to put them into a proper national security perspective. No matter how difficult they are to counter, they do not threaten the core of our nation's security and we should not allow them to distort our strategic and operational perspectives.

Next year will see the largest peacetime exercise ever staged in Australia, Kangaroo 89. It will be a true test of our national security policy, and of our ability to counter escalated low-level conflict from the force-in-being. All parts of the ADF, Regular and Reserve, will be heavily committed and all elements of the ADF exercised. Probably the most interesting aspect of the exercise from the point of view of air power will be to see the way in which it is used in support of land operations. Because the scenario is the defence of Australia, we will not see large, massed army formations drawn up along a front of opposition. Instead we will be involved in countering small groups of enemy forces using hit-and-run harassing tactics in widely dispersed locations. In such operations, air power has an important role, but it is not the classic ground-attack role.

Where air power came of age in support of the land battle was in North Africa in 1943, and subsequently in Italy, France and Germany, and on the Eastern Front. Coningham and Montgomery, Tedder and Eisenhower determined how air power can best be used in the land battle. The conditions they faced were vastly different from those that face us, but the central tenet which they formulated for the use of air power in support of land operations (or, for that matter, any operations) - centralised allocation, decentralised execution - is as valid today as then. Where this will have most application in the defence of Australia is in the allocation of the transport aircraft, fixed and rotary wing, which will provide the tactical mobility so necessary for land operations in the north.

Mobility is central to success in the type of operations we envisage. Aircraft such as the Boeing 707, C-130 Hercules and aircraft chartered from the Civil Fleet, will provide the strategic mobility to move our troops and their equipment to the area of the north where they are needed. The C-130, Caribou, Chinook* and Black Hawk will

* *Still in service in 1988 - Ed.*

place them where they are needed tactically. Tactical mobility is the key to success against dispersed forces using harassing tactics, and a command and control system applying the principle of 'centralised allocation, decentralised execution' will provide the means for ensuring it. I stress the point because it is so important. In these operations, because there will never be enough tactical air transport for all the tasks, allocation of first, priorities and then, assets is most necessary.

Other forms of air support will assist land operations. Of these, the most important are the air operations needed to achieve total control of the air over the land area. With control of the air, almost anything is possible; without it, everything becomes difficult. In the defence of Australia, control of the air will be assured through removing the air threat at its source or, if that is not feasible or possible, by removing it in the approaches to our island continent. Given the air defence system we are planning and the difficulties of an enemy operating at extreme ranges from his air bases, enemy air support of ground forces operating on the Australian mainland would be an almost impossible task.

On the other hand, offensive air support by the RAAF is facilitated through operating at short ranges from our own bases. If the enemy were to establish a beach-head, air power would be used in conjunction with sea power to cut off its supply route, isolate it and, if needs be, attack it constantly. The so-called classical role of offensive air support of land operations, close air support, is probably neither applicable nor appropriate for the type of operations being considered. The targets are small and fleeting; by the time an air support mission is mounted the target has gone and, even if it hasn't, it is difficult to identify from the air and even more difficult to hit. The only possibility for close air support in these circumstances would be armed helicopters, permanently allocated to ground units of about company size. Again, however, the difficulties mount. To ensure timeliness, allocation has to be made down to company levels, but where do we get the helicopters, crews (both air and ground) and the whole support infrastructure to make such an allocation. Even if we assume we can get them there are still the difficulties of finding and hitting the target. Here I will say that we airmen have, in general, misled the public and the military profession about our abilities in close air support. Even in World War II, the most successful use of air power in offensive air

support was against static or slow-moving targets - trains, trucks, ammunition dumps, depots and the like - rather than targets on the front line. There we expended a lot of effort and munitions, and made a lot of noise, but the results were remarkably thin. That has been the continuing tale of close air support in the conflicts of the half-century since then.

There are other difficulties. Close air support is very difficult to conduct in bad weather, and at night it is almost impossible. I suggest that, in the type of land operations we are considering, operations will frequently be at night. Finally, there are shoulder-fired surface-to-air missiles (SAMs). An enemy equipped with these - and we must assume an enemy will be so equipped - will make the battlefield, no matter how small that battlefield is, a highly dangerous arena in which to operate armed helicopters in close air support.

My summary conclusion on offensive air support is that it is best used where it can provide the best effect and that is against targets it can find and hit in the area immediately behind where troops are in contact. To rely on air power to provide support of which it is not capable and to devise our tactical doctrine on such a false premise has the potential for disaster.

Conclusion

In conclusion, I wish to re-emphasise the importance of the topic I set myself. The defence of Australia is important. Some people of supposedly broader vision would argue that this is a strongly nationalistic, perhaps even xenophobic, stance and that nationalism is the curse of the modern world. I acknowledge the point but offer the counterpoint that we live in the world as it is, not as we would wish it to be. Sadly, force does matter in the modern world and man's capacity for violent irrationality seems little diminished after centuries of civilisation. I am writing this piece at Palm Cove, a lovely South Sea paradise north of Cairns. It epitomises serenity. Surely peacefulness would pervade such a spot. On the night we arrived, vandals destroyed every single light-fitting on the newly erected wharf at Palm Cove, causing thousands of dollars of damage. It seems that, irrespective of whether we are considering the behaviour of

individuals, small groups or nations, irrational, stupid actions of destructive violence continue to punctuate life on this planet.

The security of this nation can only be assured by maintaining armed forces of real capability, and that capability will only be real if professional military men think constantly and well about how to provide it. In these considerations, the role of air power deserves serious attention, study and knowledge. My contentions, which I have put before you, are that air power is important but misunderstood, that air power is crucial to our nation's security but it is under-valued, and that a balanced appreciation of the capabilities and a sound knowledge of the best means of applying air power are essential for every professional military officer, but few professional military officers have a deep knowledge of air power. On that last point I will go further and say that the opinions of most professional military officers on air power are a grab-bag of myths, superstitions, half-truths, distortions and misconceptions. I trust that our efforts to correct this will begin soon to bear fruit.

As a final point, and perhaps paradoxically given the strength of my previous statement, air power as a concept may be approaching the end of its usefulness. I hasten to add that my point here is made in an intellectual context rather than in that of the real world. I would prefer to have us all view combat power as an entity and to have less stress placed on air power and sea power and land power, with its inevitable spill-over into emphasis on the Air Force, the Navy and the Army. We need to think in a more complete way about how to combine effectively the elements of our combat power; that is how conflicts are fought and that is how they are won. All of us are to some extent the prisoners of our pasts and we bring to present discussions and debates attitudes and viewpoints with the potential to distort our view of reality. For professional military men, whose business is the management of violence and whose charge is the security of this nation, distorted views are just not good enough. My short definition of a true professional in the profession of arms is one who is able to transcend the distortions of his single-Service background and think clearly across the breadth of his profession. However, the halcyon fields of the military profession are still a few kilometres down the pike and I know that, if I stop emphasising air power and urging people to understand it, air power and the RAAF will be overwhelmed.

Trends in joint-Service operations over the last 20 years encourage me; however, too much of our business is still conducted on single-Service lines. I give you an example. You would have learned, and I mentioned it earlier, that the Minister for Defence recently announced that the government would acquire AEW&C aircraft. Thus the last major deficiency in the force structure we need for the self-reliant defence of this nation will be removed. It is an acquisition which will benefit each of the Services separately and the ADF collectively, and yet immediately following that announcement, the reaction from the Department of Defence was to seek to find from the RAAF, which Air Force programs would have to slip to make way for AEW&C. To distort Saint Augustine: 'Lord, please make us joint-Service - but not yet'.

Endnotes

- 1 Paul Dibb, *Review of Australia's Defence Capabilities*, (Australian Government Publishing Service, Canberra, March 1986), p.174.
- 2 Armitage and Mason, *Air Power in the Nuclear Age, 1945-82*, p.4.
- 3 Dibb, *Review of Australia's Defence Capabilities*, p.53.

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