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AUSTRALIAN AIR POWER POST 2010

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Preface

For many years, the Royal Australian Air Force (RAAF) has only considered the short to medium term in its planning and force development which covered a period out from five to ten years. There were a number of reasons for that. First, the defence budgetary cycle only went out to five years and thus longer term planning did not figure in financial guidance. Second, the Australian government sits for a three year term and any policies developed by one political party may be overturned when the other major party came to power, hence, long term planning did not figure in strategic guidance. And third, in the past, equipment could be procured in a much faster time-frame meaning that full development of longer term projects were not really necessary.

Those times have changed. A revised acquisition cycle of ten years, more political bipartisanship regarding defence policy and much longer lead times for developing force structure have forced RAAF planners to consider the much longer term. Added to those issues is a more uncertain and oft times unstable world, including Australia's region of primary strategic interest—Asia-Pacific. This paper seeks to consider some of the trends that will affect the RAAF in future and extrapolate those issues to consideration of force structure and the application of aerospace power by Australia post-2010. The next Australian air force has already been decided. This paper considers the air force after that.

In writing and researching this paper, I wish to acknowledge the support and mentorship of Dr. George Stein of the Department of Conflict and Change at the USAF

Air War College, Maxwell Air Force Base, Montgomery Alabama. His advice and time were greatly appreciated. However, any mistakes, interpretations and errors of fact remain my responsibility.

Abstract

In 1996, the Royal Australian Air Force celebrated its 75th anniversary of service to the Australian nation. During most of those 75 years, a global security environment developed which was known and understood and thus, the nation's defence force could be tailored to counter specific threats from within financial guidance. As the world enters the post-Cold War era, the hard questions have become; what is the threat, how should the new generation military be developed and what should be its purpose in peacetime?

Although Australia continues to be a strong supporter of the Western Alliance, the emerging post-Cold War world promises new challenges to those previously well known conditions. The aim of this paper is to examine how evolving international, domestic and air power trends will affect Australia's force structure and the application of air power post-2010 in Australia's region of interest.

As the world and more importantly the region changes, so too must government policy and military strategy evolve. Leading the thrust for change are the global, regional and national trends which act as signposts to the future. Globally, trends include the rise of uncertainty and instability, the growth of economic trading blocs and their concomitant effect on nations, population growth, diminishing defence budgets and the ceaseless technological revolution. Regionally, the indicators are for high economic growth, a nationalistic struggle for autonomy and a rising awareness of trans-national threats. These nations now seek a greater say in regional affairs and have commenced armed forces

modernization to give backing to their political dialogue and rhetoric. Nationally, Australia's outlook is not so clear. Decreased defence spending, massive defence reform, a greater reliance on technology and the adoption of social change factors within the military, in part, affect the shaping the air force after next.

Australian defence policy will also have to adapt to these global, regional and national changes. Predicated on the defence of Australia, the policy now includes a self-reliant posture, embraces regional engagement, requires the strengthening of ties with traditional allies such as the US and the contribution to peace operations around the world. Such a policy is likely to be valid well into the next century and as such, Australia's air force must keep pace with these changes and be prepared to implement this revised government direction.

All these trends indicate a force structure somewhat different from the past. Gone are the days of large standing armies, navies and air forces. The next generation military will be a much smaller, professional and increasingly a joint force. It is also apparent that it will continue to be all-volunteer, focusing on greater use of reserves, with technological solutions replacing manpower shortages whenever possible. Likewise, the next military will have an orientation towards information, space and unmanned warfare, making the soldier, sailor and airman of the future an information warrior as much as a warfighter in the traditional sense.

The force structure of the air force after next will not be radically different from that of today. Budgets would not allow such a massive change. But reducing expenditure on new systems and platforms will mean a greater focus on weapons and information

dominance. Precision, penetrating power and lethality will be crucial as will responsiveness, versatility and autonomy.

The paper concludes that as a vital component of military power, the air force post-2010 will be expected to undertake all the roles presently allocated to it, prepare to undertake information warfare operations, in particular to counter those directed against Australia, and be flexible enough to respond to the full range of possible scenarios from domestic support to general war. The RAAF will remain a significant part of Australia's defence equation as it evolves into an air and space force and will continue to contribute to peace and stability within Australia's area of influence well beyond 2010. Undoubtedly, RAAF development will continue to remain true to the air force motto—*Per Ardua Ad Astra*—Through Adversity to the Stars.

Chapter 1

Introduction

The age of New Era Security will be one of rapid, unprecedented and unremitting change. The question is not one of managing this change but of seeking ways to exploiting it. Unless we aggressively exploit change it will overwhelm us, making our organisation, ideas and capabilities irrelevant.

—Air Marshal Peter Nicholson, Air Commander Australia

Australia is an isolated land, so much so that it remained the last continent to be discovered by the western world. Its very isolation has protected it for centuries, yet despite this fact, historically, Australians have always perceived threats to their sovereignty and *ipso facto*, way of life. Australia has thus sought to ally itself with ‘strong and powerful’ friends—first Britain and after World War II, the United States of America, to wit, Australia’s military has fought in every major war this century and continues to support UN sponsored peace missions and democratization around the globe. Although Australia continues to be a strong supporter of the Western Alliance, the emerging post-Cold War world promises new challenges to these previously well known conditions. The ‘traditional’ threats have now gone and Australia, like other Western nations, now seeks to develop a more self-reliant, suitable and appropriate force structure to meet credible defence contingencies and national needs.

Traditionally, Australia has been a nation who sent their military forces off-shore to fight other people's wars and only once in its history has the country been directly attacked by an enemy¹. The planning against specific threats to the nation and the establishment, equipment and retention of military forces, although a rich part of the history of Australian development since the earliest days, at the same time has continued to pose a problem for consecutive Governments from early colonial rule. For over 200 years, the hard questions have always been; what is the threat, how should the military be developed and what should be its purpose in peacetime? More specifically, can a small Defence Force be capable of deterring threats to such a large land mass now and in the future changing world environment?

In 1996, the Royal Australian Air Force celebrated its 75th anniversary of service to the Australian nation. During those 75 years, a global security environment developed which was known and understood and thus, the nation's defence force could be tailored to counter specific threats when budgets allowed. That situation has now changed. Planning and force development are no longer automatic, prescribed events and Australia has had to come to terms with a more unstable and ever changing world. The collapse of the Soviet bloc and its overt support for communist movements elsewhere eased the fear of global war and for a while tended to foreshadow a new era of security. Consequently, many western defence budgets and manpower ceilings have shrunk making military forces re-evaluate their roles, missions and capability requirements. Concomitant with such change, threat analysis has become much more difficult making planning, manning and equipping these smaller forces of the future much more challenging.

Aim

The aim of this paper is to examine how evolving international, domestic and air power trends will affect force structure and the application of air power post-2010 for smaller air forces such as that of Australia.

The Way Ahead

The structure of the next generation of the Royal Australian Air Force has already been decided. The size, shape, roles and functions of the post-2000 air force will be virtually as they are today, perhaps with the inclusion of an Airborne Early Warning and Control aircraft. Additionally, with the recently elected Liberal-National Coalition Government holding to existing defence policy, there is likely to be little change to current military strategy or budget expenditure.

But will such be the case for the air force after that? As the world and more importantly the region changes, so too must government reaction and military strategy change and evolve. Change and growth are inevitable. If Australia is to keep pace with its neighbors and the world, its people must learn to adapt and change. How these changes will affect Australia, and in particular, the RAAF post-2010 is the subject of this paper.

Given that charter, this paper will examine several issues. To commence, global, regional and national trends will be considered as these inevitably act as signposts to the future. Next, Australian air force structure will be examined, including the development cycle and the myriad of factors that affect it. The expected outcome from such deliberations is an effective force mix suitable and appropriate for the next generation of

aerospace power projection. Finally, the last chapter relates the application of aerospace power in the Australian region and examines some contentious issues including leadership and doctrinal development.

Notes

¹ In 1942, the Japanese bombed Broome, Darwin and several other towns in the north and west. In all, 64 raids were conducted, but no troops ever invaded. Later, in May 1942, US and Australian naval and air forces turned a Japanese invasion force back in the Battle of the Coral Sea.

Chapter 2

Global, Regional and National Trends

Defence cannot allow itself to become complacent in the face of the enormous changes sweeping through society and sweeping through the region in which we live. Our task is to become the master of change rather than its servant.

—The Hon. I.M. McLachlan
Australian Minister for Defence

Global Trends

The euphoria experienced after the collapse of the Soviet Union and the successful conclusion of the 1991 Gulf War culminated with then President George Bush's declaration of the start of a 'New World Order'. The expectation was that the world would become a much less turbulent place. But the honeymoon, however, was short lived, with violence quickly erupting in Chechnya, the former Yugoslavia and in several African states. Today, there continue to be ongoing internal struggles in the Middle East, Africa, South America and Asia and international terrorism is no less evident.

Far from being a more peaceful world, uncertainty and upheaval would appear to be the harbingers of the next millennium. These trends are currently shaping the global structure of the 21st Century and part of that design will be the shape and form of the next military. The world is also entering an era of global interdependence with non-state actors

now playing an ever increasing role in the security environment. There can be little doubt that global trends will directly impact all future defence decisions, so such trends are worth further examination.

Global Economy and Regional Trading Blocs

We are now entering an era of global market economy as newly democratized states and a growing number of Less Developed Countries (LDCs) strive for economic prosperity and increased standards of living. Such changes bring with them growing pains and undoubtedly there will be unrest, political upheaval and some economic downturn as the process matures. Such pains often result in conflict. This is most evident in several of the newly democratizing nations (particularly of the former Soviet bloc), who are grappling with internal economic restructuring and new forms of government. In effect, the end of the Cold War brought a shift from a focus on geopolitics to a focus on geoeconomics.

There is also now a global trend towards the formation of trading blocs which will eventually lead to a multipolar trading world with perhaps only four or five trade organizations¹. The North American Free Trade Agreement (NAFTA) could possibly extend to include the Organization of American States (OAS) countries, the European Union (EU) could meld together with a number of the former Soviet states and an extended Association of South-East Asian Nations (ASEAN), perhaps with Japan, China, Taiwan and South Korea, could form three such blocs. Africa, Central Asia and the Middle East may have to resort to union to compete. The obvious question for the rest of

the world is where does that leave countries like Australia, New Zealand and the smaller Pacific Island nations?

Such trading bloc partners often have similar defence and security needs which could lead to the establishment of defence alliances based upon economic security rather than philosophical and political alignment as seen in the past. Europe, the United States and Canada have NATO and it is becoming apparent that ASEAN is using the ASEAN Regional Forum (ARF) and Asia-Pacific Economic Cooperation (APEC) forum as a means to debate similar security issues. At present, the ARF has agreed to only modest military measures (training, exercises, peace operations, exchanges and search and rescue), however more ambitious confidence-building measures are likely in future. Could the ARF or more likely APEC develop into a full security arrangement? The answer is not yet certain, but what is apparent is that both the United States and Australia are being drawn into the Asia-Pacific region through sheer economic pull². Such logic also demands some form of security arrangement to preserve the status quo.

The Asian region holds promise to be the economic engine of the first half of the 21st Century. On current trends, China's economy will outstrip that of the US by 2015 and the Asia-Pacific region will enjoy 50 per cent of the world's GNP by 2000³. Economic growth such as this is allowing these developing nation to afford larger military forces and acquire sophisticated weapons systems.

Conversely, there will continue to be a growth in non-state actors which will also pressure military forces and require some form of government response. Growing religious, ethnic and nationalist movements, an explosion in transnational business conglomerates and industrial cartels and the more irrational terrorist groups each seeking

attention of one form or another will all place some strain on military force structure and planning systems, mainly in terms of quality, quantity and timeliness of response.

Population Growth

In 1798, a British cleric and professor of economics published a radical treatise entitled *An Essay on the Principle of Population*, which posed the inevitable fate of the world. Thomas Malthus predicted the world would overpopulate and that food production could not keep up with demand. Only wars, epidemics, natural disasters and birth control measures would prevent the starvation of mankind. To date, the world production of food has kept up with demand, apparently denying Malthus his claim. But will this continue to be the case as we approach the next millennium and if not, what will overpopulation lead to in terms of global stability?

Population growth is related to several factors. The most significant of these are infant mortality rate, fertility rate and life expectancy. The Western world has held close to zero population growth (excluding migration) since the 1970s, but the LDCs have continued to grow on an average of one to two per cent per annum. Overpopulation is a serious impediment to prosperity and economic growth and in the next 20 years, over 90% of the population growth is expected to occur in the LDCs.⁴

Populations grow at an exponential rate and so given the 1990 world 'base' population of about 5.3 billion, it can be expected that by the year 2000, this will have risen to 6.6 billion and by 2010 to 7.1 billion⁵. Most of the growth will be in the less developed countries of Central Asia, Africa and the Middle East.

Along with increased pressure for land, we can expect there will be a corresponding reduction in available resources, an increased demand for food, clothing, housing and

social infrastructure and as importantly, an increased demand for energy. Such demands often have a secondary effect of increasing poverty, which can lead to refugees, mass migration and greater urbanization, putting even more pressure on some of the world's most congested cities⁶. This condition is best summed up by Spanier and Wendzel who claim that:

Overpopulation is a condition that often breeds chaos and bitterness. Economic growth is hampered, popular support for the government jeopardized, and societal cohesiveness suffers. There simply are too many people for the state's economic, political, and social capacity.... The result has been chaos, brutal civil war, and starvation.⁷

Such dire consequences would inevitably cause a global backlash. It is not so much the actual population size that will be the cause of the problem, although in some countries such as Indonesia, living space will be at a premium, but the 'inabilities of governments to function as effective systems of resource distribution and control, and by the failure of entire cultures to compete in the post-modern age'.⁸ Inevitably, we will see fewer 'classic' wars but more widespread violence, terrorism and social upheaval. Even once stable regions could potentially degenerate into chaos and wars in the near term are more likely to be intra-state in nature.

Key regions of population growth causing concern for Australia should be South-East Asia and Central Asia, particularly Indonesia and the Subcontinental region of Pakistan-India-Bangladesh. Indonesia, for example, contains 45 percent of South East Asia's population. Estimated to have 200 million people in 1992, by 2000, this number will have increased by a further 10 per cent to 220 million, a rate of growth equivalent to the whole population of Australia every eight years. By 2010, the number could be as high as 250 million, approximately that of the US today. This does not make Indonesia a threat, but

such unchecked growth must be a cause of concern. Table 1 illustrates population trends in Asia-Pacific for the year 2000⁹ .

Table 1. Selected Asia-Pacific Populations—2000

State	Projected Population (Millions)	Projected Annual Growth Rate (%)
China	1,253.4	1.0
India	1,012.9	1.7
United States	274.9	1.0
Indonesia	219.2	1.6
Pakistan	141.1	2.1
Bangladesh	132.1	1.8
Japan	126.6	0.2
Philippines	81.0	2.2
Vietnam	78.4	2.0
Thailand	61.1	1.1
Burma	49.4	1.8
South Korea	47.4	1.0
North Korea	25.5	1.7
Canada	30.0	1.2
Malaysia	21.6	2.1
Australia	19.0	1.1
Cambodia	12.1	3.3
New Zealand	3.7	1.1

So what does this forebode for the future of Asia? Clearly, for many regional nations, some measure of population control will be necessary if economic growth is to be sustained. Some commentators such as Borthwick and Kennedy believe such economic growth will continue peacefully well into the next century despite the myriad of social problems these individual nations face.¹⁰ Others are not so sure.

Environmental Concerns

One of the emerging trends that nations are going to have to come to terms with is protection and conservation of the environment. Now known collectively as

‘enviromania’, such concerns include noise, exhaust pollution, chemical contamination (of soil, water and air), land conservation, recycling and deforestation—all also associated with defence force operations, regardless of nationality or Service. On a macro scale, natural disasters, the problems associated with mega-cities and the possibility of industrial disasters on a scale larger than the cyanide leak from the Union Carbide plant in Bophal, India or the Chernobyl nuclear accident in the Ukraine are now valid fears. What does this mean for air forces in future?

Undoubtedly, military forces will be expected to be involved in the clean-up after a disaster strikes. This is a consequence of a more environmentally conscious world and there will continue to be a greater reaction and pressure for a response to environmental and natural disasters (such as marine pollution, volcanic eruptions, hurricanes and earthquakes) and industrial accidents. Greater use of the military is likely in future to assist with the clean-up and restoration of law and order, essential services and in some cases, government control. Somalia, Bangladesh and the Los Angeles riots offer three typical and recent examples.

On the micro scale, for the air force of the future, noise complaints, restricted flying areas, conservation of bases and surrounds and maintenance of toxic free work and living areas will be high on the commander’s agenda, because laws are now being enacted to enforce such measures. This means that operations will become more restricted and exercises will have to be conducted in more remote regions. Such is the case already with a number of US Exercises and NATO forces often deploy to remote parts of Canada to achieve more realistic training that is not hampered by European flying restrictions. This is also the case in Australia with two airfield closures due to encroaching urbanization and

further pressure to station forces in the remote north and north-west. By the post-2010 time frame, it is highly likely that more squadrons will be deployed north out of city areas and unfortunately for public defence awareness, out-of-sight is also out-of-mind.

Defence Budgets

Although the global trend over the last five years has been for defence budgets to decrease with the corresponding expenditure on both arms and manpower in decline, this is not the case for the Asia-Pacific. According the Military Balance, 'the IISS estimates that regional defence spending increased by about 9% in real terms between 1992 and 1994.'¹¹ In fact, most Asian countries with the exception of the Philippines both increased their spending and set about modernizing their armed forces, particularly the maritime and air components. With the Cold War ending, so too ended many of the internal insurgencies leaving those afflicted countries now able to concentrate upon external security and resource protection. Figure 1 illustrates the change in defence expenditure from 1985 to 1995, and according to US Army sources, there has been a total Asian defence expenditure growth of around 35% in the last ten years¹².

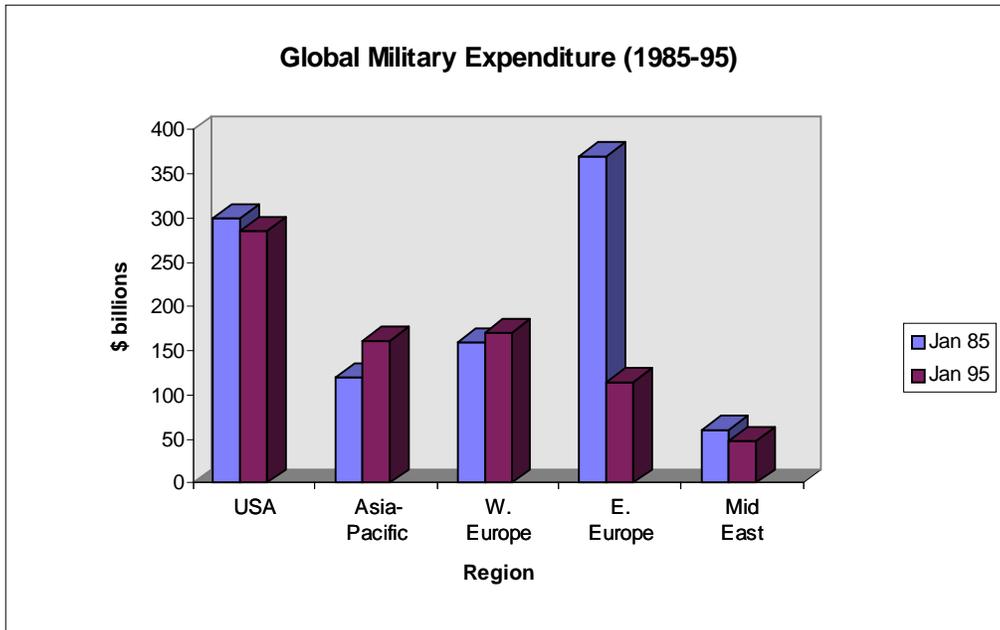


Figure 1. Global Military Expenditure 1985-95

The most dynamic economies (Japan, China, South Korea, Taiwan, Malaysia Singapore and Thailand) have all shown real growth of 8-12%. This has allowed more substantial defence spending, particularly on new weapons systems. Japan's growth is perhaps the most dramatic as although the level of defence expenditure is less than 1% of GDP, at \$56b it now equates to over one fifth that of the US, making Japan (with the possible exception of Russia and China which are hard to assess) the world's second largest defence spender.¹³

Additionally, it is also not surprising that China is now expanding its capabilities with new acquisition projects. China seeks to control the South-China Sea and can only hope to do so with a greater power projection capability. Hence, China is acquiring longer range fighter-bombers, surface combatants and submarines which offer it the ability to progress its claims to regional hegemony with modern, capable equipment. China, Russia, Japan and possibly India, all have the potential to dominate the region. This is not to

suggest that any are a threat, but if we accept that threats are simply ‘capability with intent’ and that the relative strengths of these regional powers may be very different post-2010 from what they are today, then serious analysts must appreciate their strategic potential. Such potential depends upon their economic strength and technological depth. The key issue here is not threat development (although this cannot be totally discounted) but the creation of a new regional hegemon capable of dominating Asia and its environs.

A Continuing Technological Revolution

The world is in the midst of a technological revolution which began in the early 1980s with the advent of the micro computer. Very Large Scale Integrated (VLSI) chips have allowed tremendous growth in capabilities (speed and processing power) of modern micro devices and at a greatly reduced cost. This in turn has led to an explosion in systems, weapons, communications and information technology. As well as improvements in weapons technology, developments in command, control, communications, computers and intelligence systems (C⁴I) also is revolutionizing military operations. The main problem here is one of access. In the future, there will be a greater availability of dual-use technology and a plethora of commercially available systems which can provide the user with a substantial capability with little control from conservative governments such as the US. Already, for example, highly accurate hand-held GPS receivers are available on the open market for a few hundred dollars.

In a military sense, such devices have revolutionized weapon accuracy, lethality and reliability. Any nation with an air capability can project power by purchasing modern weapons that are now available on the open global arms market, a potential destabilizing factor, particularly in a region such as South-East Asia which has traditionally been

suspicious of its neighbors. With a relatively low cost per unit, such technology will bring otherwise less capable armed forces onto a more level playing field.

Regional Trends

In the post-Cold War environment, some global trends have had their focus in the Asian region. Among the most startling general developments are strong economic growth, widespread modernization of military forces and a reshuffle in the balance of power. With the changes to the once bipolar world and the consequent refocusing on internal matters, cuts to defence budgets have had a secondary effect. Some potential regional hegemonies are now seeking to fill the gap in the perceived strategic void. Most notably China seeks to ensconce itself into the South China Sea and India, the Indian Ocean. Likewise, in the longer term, Vietnam has the potential to become a major regional player.

The role of economic growth cannot be overestimated. Given current rates, by 2015, China will have the world's largest economy with Japan, India, Indonesia, South Korea and Thailand in the top ten.¹⁴ Thus, there are now more major players on the security chessboard with vastly more complex interrelationships and national security agendas than ever before. But perhaps the key element in determining how this region develops will be the US policies towards the area. A continued US presence, a commitment to regional stability and support for democratic initiatives will be essential building blocks towards a much more stable region than otherwise may be the case. However, while regional nations want a continued US presence, few seem willing to tolerate permanent US bases. Even the Japanese government is considering a downsizing of the US presence due mainly

to domestic political and social pressure. Recent trade, market access and tariff clashes have also added fuel to the smoldering political fire.

Significant to regional politics will also be the place of China in political, military and economic terms. With a sustained growth rate of an estimated 12 per cent, China is already a force to be reckoned with. In the post-Deng era, how China deals with Hong Kong, the Spratlys and more importantly Taiwan will send a strong message to the region as to how important a role external politics will play.

Other Trends

Since the superpower play-off has ended, so too have the myriad of 'satellite wars' they spawned, with the nature of conflict now changing. The Vietnams and Afghanistans have been replaced by the Bosnias and the Chechnyas. Internal disputes, once held under tight clamps have flared in a number of regions including Asia-Pacific. The usual global response to these conflicts has been to establish cease-fire lines and broker an uneasy peace using troops on peacekeeping operations. Such has been the post-colonial, post-communism trend in Asia, with Vietnam, Cambodia, Laos, Malaysia, Philippines and Indonesia being the major examples. According to defence analyst Dr. Paul Dibb, 'the central problem is that there is no experience in the region of managing a complex multipolar balance of power.'¹⁵ In effect, the nature of the perceived and actual threat is changing.

Emerging Threats

As far as security and well being are concerned, not all threats are either state or military based. A new breed of problems has begun to emerge, all of which can or will directly threaten regional peace and harmony. These include:

- Environmental concerns,
- International Narcotics trade,
- Transnational Epidemics (eg. AIDS, Ebola Virus, etc.),
- Terrorism,
- International Organised Crime,
- The proliferation of Weapons of Mass Destruction,
- Emerging nationalist and independence movements, and
- Actions of rogue states (such as North Korea).

The regional nations will all have to come to terms with these. Additionally, some countries view the Western nations with continued suspicion and even consider the US and Australia a threat. Their leaders remember what it was like to be under colonial rule, so it is confidence building measures that these nations need the most, not only within the region itself, that is between neighbors, but also externally between the newly industrialized countries (Malaysia, Thailand and Indonesia in particular) and their former colonial masters (the US, the Europeans and to a lesser extent, Australia).

Australia's National Trends

Finally, but not the least significant consideration for any future force development process are national trends. Changes in political, social, economic, demographic and cultural make-up will directly affect government policies, country-country interaction and threat perception. Several of these trends must be considered. These are economic outlook, social and societal change and technological advances.

Economic Outlook

As the world realigns itself economically, a more competitive world market can be expected. In the short term, trade issues and tariffs can expect to remain on the agenda until some broad agreement can be reached. The US and Japan are the key nations here and as far as Australia is concerned, any reduction in trade barriers would be welcomed.¹⁶ Australia's competitiveness is continually being enhanced through industry restructuring, labour market reform and increased productivity, but market competitiveness remains a problem given present balance of trade circumstances.

However, other nations also seek a greater share of the world market and Asia is no exception. The growth of regional economies already poses a high degree of competition for Australia, particularly for manufactured goods so it is towards niche markets that Australia must turn. One such niche market is the defence industry which must be encouraged and developed. In addition, Government policy will continue to drive the surge for efficiencies and with defence operating and logistics costs remaining high and increasing, further pressure to reduce or offset personnel costs is likely in future.

Australian Defence Expenditure

No government function can operate efficiently nor effectively without sufficient funding. The Defence portfolio is no different. Since 1989, Australian defence budget has not grown at all in real terms and in the last few years has in fact gone negative. Figure 2 depicts the Australian defence budget in \$Ab over the last twenty years against the corresponding percent of GDP and real growth in percentage terms. Recent government budgetary advice indicates that zero or negative growth will continue, at least in the short to mid-term, and hence no major change in the defence program can be

anticipated¹⁷. More importantly, this approach has bipartisan support and the latest indications suggest a RAAF of 14,500 personnel by the year 2000 with a total defence budget slice of less than 1.7% of GDP.

This then ultimately means that increased spending and major changes to Australian force structure are very unlikely in the next five to ten years, but it does not mean that the Australian Defence Force (ADF) should be isolated from change and effective force structure development.

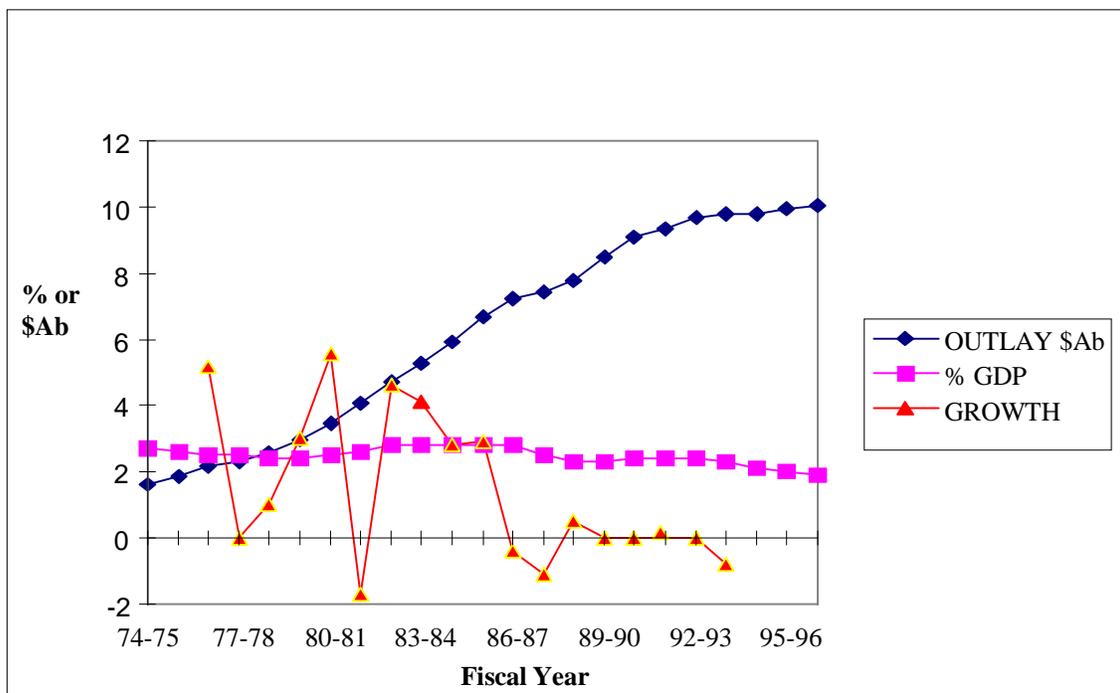


Figure 2. Australian Defence Budget 1974-97

Social and Societal Change

Australian society is also changing and with it, the ADF. According to Dr. Hugh Smith, a leading Australian writer on the subject of social change and defence, ‘as the memory of past war and the threat of future war have receded, the ADF has become more open to change and more susceptible to influences from Australian society’.¹⁸ The

evidence supports that thesis. Key issues are ethnic diversity, the role of women, conscientious objection and tolerance of societal issues such as homosexuality and dysfunctional family structures. Each issue has significance for individual rights versus military expectation and each issue has been resolved, generally in favor of societal expectation and norms.

Once predominantly European in race and outlook, this is no longer the case for Australian society. Since 1980, the population percentage of Asians has risen from less than one per cent to over four percent due to immigration policies favouring Asians and a high intake of Asian refugees (particularly from Vietnam and southern China). Such demographic change is expected to continue with an even larger percentage of Australians coming from non-European backgrounds forming the recruiting base of the future force. The early 1980s also heralded the start of the 'warless society', that post-Vietnam era when no Australian had to fight a war, the 1991 Gulf War perhaps the exception for a small few. The ADF will have to structure its recruiting campaigns to take cognizance of the non-European mix in Australian society if it is to attract the cream of her youth and not limit the pool of resource to only one section of modern society.

The median age of the RAAF is 23 years. To appeal to school leavers as a career, the RAAF also will have to adapt its recruiting strategies to cater for the wants and needs of the 18-23 year old if it is to meet recruitment targets. Such influences as family background, religious beliefs, social structure, English as a second language and education to name a few are now significant to the recruitment of the air force after next. This is a particularly salient point as the younger generation tends to be much more self centered,

more aware of the rights of the individual and less responsive to authority - all the antithesis of military service.

With the changes in society, so too Military personnel attitudes and expectations will also change. Family pressures, job opportunities and lifestyle will become key issues for retention in the future. No longer will personnel join the RAAF for a career, but rather to gain valuable job skills for their second career. Adding to the burden is the long term plan to move the ADF (and the RAAF in particular) to the remoter north and north-west. Out-of-sight, out of the public mind also makes for less desirable postings, which exacerbates the retention problems. Rather than fight such trends, the RAAF must lean to adapt and turn these issues in its favour. This means a radical change in approach to recruiting, conditions of service, retention measures, family support and post-service attractions such as reserve benefits and better retirement provisions.

Manpower and Defence Reform

Broadly speaking, the defence budget is divided into thirds. One third pays the manpower bill, one third goes into operations and the final third is used for modernization and facilities. Ever shrinking budgets of the last five years have led to a number of reform initiatives that would have been unthinkable ten years ago. In its ever increasing hunt for cost savings, the Australian government pursued a number of reviews which sought to produce considerable savings while not losing capability. This generally translated to cuts in manpower. Such review initiatives included the *Commercial Support Program (CSP) 1991*, which considered non-core functions for possible contracting out, *The Force Structure Review (FSR) 1991* which examined defence business and recommended closures of bases and function divestiture and the *Defence Regional Support Review*

(*DRSR*) 1992 which amalgamated many administrative functions undertaken by each service in the capital cities. More recently, the new government's *Defence Efficiency Review (DER)* 1996 which will identify key management processes, assess their effectiveness and eliminate duplication and waste is expected to report to the Minister in March 1997 with amalgamation of some core functions and the production of even more efficiencies the expected outcome.¹⁹ While perhaps a good idea to save unnecessary waste, there is a break even point where no further savings can be made without cutting operational capability and training. Whether that point has been reached is yet to be determined.

To date, CSP has produced the most startling dividends, resulting in savings of \$121m per annum.²⁰ Since 1991, over 5700 military and defence civilian positions have been reviewed for their potential to be commercialized, with about 70 per cent later going out to contract. Significant for the future has been the cultural change the program has brought about in defence, with now broad acceptance of the program as a valid cost saving measure which allowed the maintenance of extant combat capabilities. But CSP has not concluded. Further efficiencies are being sought and 'core defence business' is now being targeted. The problem comes when all reasonable savings have been realized and the government still requires savings to be made. This has meant a steady decline in service manpower since 1990, with a projected overall loss of one third the force by 2000. Figure 3 shows the trend.

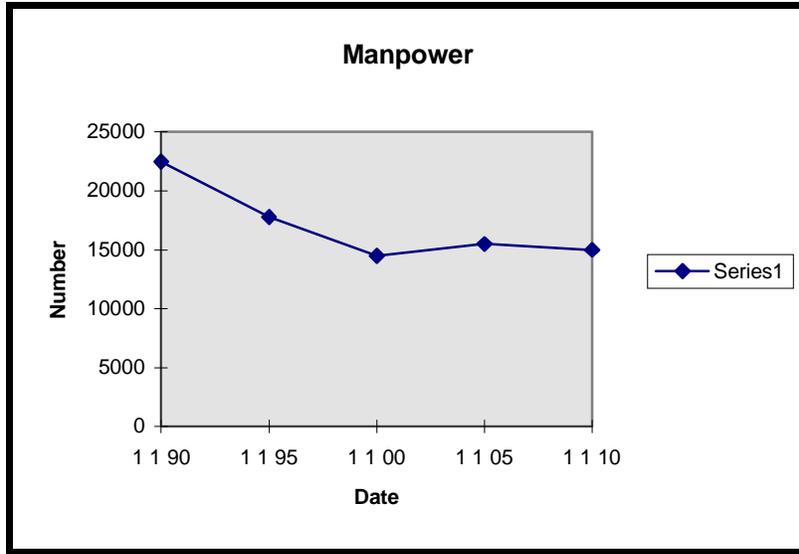


Figure 3. RAAF Manpower Projection

One area that still needs examination is the structure of the military command hierarchy. The RAAF, for example, currently has 15 levels of rank between airman and air marshal, a very traditional command structure that has served the RAAF well for 75 years. But experience from industry has shown that the traditional structures of the past may not be suitable for the future. ‘High tech’ industries such as Microsoft and IBM have moved towards a network command structure with as few as three layers between shop floor and CEO. They have removed the layers of middle management and at the same time, greatly empowered the workers to make decisions, while relieving management of much of the day-to-day management decisions leaving them to concentrate on current crises and future strategies. Some commentators claim such restructuring ‘will be the last manifestation of a revolution in military affairs, and the most difficult to implement’.²¹ Others are not convinced.

Certainly, military organizations need a strong and capable leader and because of the many and varied roles, missions and tasks, they also require subordinate commanders who

can command and control their forces appropriately. But how many levels of structure are required for efficient military operations and what is the appropriate officer/airman²² mix for the future? In 1996, the RAAF officer/airman ratio was 1:3.22²³, due mainly to the high preponderance of officer aircrew. This too may change in the future. Table 2 shows the current rank structure with some possible amalgamation options for the future.

Table 2. Australian Rank Structure

COMMAND LEVEL	CURRENT RANK STRUCTURE	WITH MINOR CHANGE	WITH MAJOR CHANGE
Chief of the Air Staff	Air Marshal	Air Marshal	Air Marshal
Higher HQs	Air-Vice Marshal	Air Commodore	Air Commodore
Higher HQs/Group Command	Air Commodore		
Wing Command	Group Captain	Group Captain	Wing Commander
Squadron Command	Wing Commander	Wing Commander	
Flight Command	Squadron Leader	Flight Lieutenant	Flight Lieutenant
Flights	Flight Lieutenant	Flying Officer	
Flights	Flying Officer		
Flights	Pilot Officer	Warrant Officer	Warrant Officer
Base or Squadron	Warrant Officer		
Wing or Squadron	Flight Sergeant		
Squadron	Sergeant	Sergeant	Sergeant
Section	Corporal	Corporal	
Section	Leading Aircraftsman	Airman	Airman
Section	Airman		
	15 levels	10 levels	7 levels

Upon reflection, perhaps the final cut as shown in the right hand column is too severe, but this will depend upon roles and missions in the 21st Century. Conversely, will such a restructure even be necessary given the nature of military operations? The *1994 Glen Review Into Defence Conditions of Service* examined this very issue and found no reason to amalgamate any of the existing rank layers arguing that rank ‘is still a vital concept in the military and will continue to be important because it recognizes the effort and contribution of people’.²⁴ A similar report, the UK’s Bett Review, found just the

opposite.²⁵ Inevitably, with technology replacing humans at the war fighter level, some amalgamation will be likely, but perhaps not to the extent that industry has changed, nor more than the removal of several layers.

Technological Advances

Along with the global trend of continuing technological advances, according to many defence commentators, the West is on the edge of a Revolution in Military Affairs (RMA)²⁶. This ‘revolution’ is expected to have as much an impact on modern warfare as the introduction of gunpowder in the 16th Century. Further discussion of the RMA is beyond the scope of this paper, but its characteristics must be mentioned as they indicate a path toward future warfare. What is of significance is the fact that such techniques and systems offer a possible asymmetric counter to the symmetric methods of an adversary. Certainly, nations in Asia-Pacific are embracing technology as the answer to a number of their defence problems and the concepts of the RMA have not been missed.

What does this RMA mean? Andrew Marshall in his position as Director of Net Assessment at the Pentagon recently reported to the US Senate Armed Services Committee that the ‘change’ has two dimensions:

The first is that long-range precision strike weapons coupled to very effective sensors and command-and-control systems will come to dominate much of warfare. Rather than closing with an opponent, the major mode will be destroying him at a distance. The second aspect is the emergence of information warfare.²⁷

In the past, Australia has always prided itself on maintaining a technological or ‘qualitative’ edge²⁸ within the region, but such an edge may no longer be possible. Australian defence planners must now turn to consider defence systems ‘parity’ with regional neighbours, which means a changed mindset. To retain a regional advantage,

Australia must now place greater emphasis on training and consider more innovative ways of applying military power. Such innovative ways will inevitably involve adopting methods such as those suggested by Marshall. On a more positive note, defence systems parity also means greater opportunities for meaningful regional training exercises and the opportunity to better interoperability amongst regional partners.

But what of the advances promised by the so called RMA? Such advances that must now become factors in Australian defence and force structure planning include:

- Adoption of the key technologies of detection, precision, lethality and frequency-agile communications.
- A force mix consisting of unmanned as well as manned aircraft.
- Information warfare will be of far greater importance, not only as a weapon, but also must be defended against.
- The time factor has been compressed in modern warfare, and thus will be significant in future war scenarios. There must be an attempt to get inside the enemy's OODA loop²⁹.
- There will be a greater role for space based systems.
- There will be a greater role for stealth across the frequency spectrum (EM and acoustic).
- There will be a need for accurate and timely surveillance and early warning systems to ensure very low false alarm rates, which would suggest adoption of the US 'dual phenomenology' method (of enemy detection from two or more independent sensors to trigger a response).

But such technology also comes at a price. One obvious trap is that technology cannot do everything. Secondly, humans will still be required to operate and maintain it. There will still be a need for a human-in-the-loop if not a human-in-the-cockpit. Finally, and perhaps most importantly, future adversaries may be less technology dependent, thus defeating technology's main focus—the enemy's own technology as his center of gravity.

Conclusion

The promise of a peaceful 'new world order' was soon shattered by a growing number of regional wars which broke out around the globe following the collapse of the Soviet Union. Today, there continue to be struggles in Africa, Asia and the Middle East. Together with upheaval and uncertainty of the security environment, other changes are making themselves felt. This includes the push towards regional trading blocs, an ever burgeoning population and a growing concern for the environment.

Within Australia's region, defence budgets defy the otherwise global trend of reduction. Booming economies and a range of transnational threats have now emerged to replace the threat of communism or internal political struggle. Australia, too, is not immune from change and is presently experiencing great upheaval in defence with lower budgets, massive reform and an even greater reliance on technology to solve some of the defence problems. The present environment presages the future and so it is from this baseline that any discussion of force structure and application of air power for the next generation of air force must start. Clearly, the major trends that face all nations and particularly in Australia's case, those of the Asia-Pacific region, will affect the strategic environment which in turn will affect the development of military forces, the choice of equipment, the type of training and expected operations. The post-Cold War world has not been as stable as originally hoped and as budgets shrink and operational tempos increase, military forces, particularly air forces, are going to have to both adapt to change and rapidly react to the environmental factors that shape the emerging geostrategic balance.

Notes

¹ Mahbubani, Kishore, 'The Pacific Way', *Foreign Affairs*, Vol. 74, No 1, January/February 1995, p 100 suggests three centres of world power - Europe, North America and East Asia.

² Mahbubani, Kishore, *op cit*, p 111.

³ Kennedy, Paul, *The Rise and Fall of the Great Powers*, Fontana Press, London, 1988, p 569.

⁴ Spanier, John & Wendzel, Robert, *Games Nations Play*, CQ Press, 1996, p 224

⁵ *op cit*, pp 136-37.

⁶ These include Tokyo-Yokohama, Seoul, Bombay, Calcutta, Delhi, Karachi, Jakarta and Manila (which are already over 10 million each). They are all in the list of the world's top 20 most populous cities.

⁷ Spanier & Wendzel, *op cit*, p 137.

⁸ Peters, Ralph, 'The Culture of Future Conflict', *Parameters*, Winter 1995-1996, p 18.

⁹ US Bureau of the Census, *Statistical Abstract of the United States: 1996*, 116th edition, Washington, DC, US Government Printing Office, 1996.

¹⁰ Borthwick, Mark, *Pacific Century: The Emergence of Modern Asia Pacific Region*, Westview Press, Boulder, 1992, p 533 and Kennedy, Paul, *op cit*, pp. 568, 572.

¹¹ *The Military Balance 1995/96*, Oxford University Press, Oxford, 1995, p 172.

¹² Source: USARPAC Brief to AWC International Officers, 11 March 1997.

¹³ *The Military Balance 1995/96, op cit*.

¹⁴ Downer, The Hon Alexander, MP, Minister for Foreign Affairs, Speech to the IISS/SDSC Conference, *The New Security Agenda in the Asia Pacific Region*, Canberra, 2 May 1996. See also Halloran, Richard, 'The Rising East', *Foreign Policy*, No 102, Spring 1996, p 11.

¹⁵ Dibb, Paul, 'International Security and Australia' in Stephens, Alan, (ed), *New Era Security: The RAAF in the Next Twenty-Five Years*, RAAF Air Power Studies Centre, Canberra, 1996, p 35.

¹⁶ It has been estimated for example, that US trade barriers cost Australia about \$1b annually.

¹⁷ HQADF Message subject: Defence Budget of 21 August 1996.

¹⁸ Smith, Hugh, 'The Dynamics of Social Change on the Australian Defence Force', *Armed Forces & Society*, Vol. 21, No 4, Summer 1995, p 532.

¹⁹ The Hon. Ian McLachlan, MP, Ministerial Statement, House of Representatives, 15 October 1996.

²⁰ The Hon. Ian McLachlan, MP, Address to the Commercial Support Program Seminar, Weston Creek, 31 October 1996.

²¹ Elliott Cohen, 'A Revolution in Warfare' in *Foreign Affairs*, Vol. 75, No 2, March/April 1996, p 48.

²² In the RAAF, enlisted personnel are called airmen and the term should not be confused with aircrew such as pilots and navigators.

²³ Mazlin, D.J., (ed), *1996 Air Force 75th Anniversary*, Defence Directorate of Publications, Canberra, 1996, p 28.

Notes

²⁴ Rogers, AVM D.N., 'Managing the RAAF Beyond 2000' in Alan Stephens (ed), *New Era Security*, RAAF Air Power Studies Centre, Canberra, 1996, p 234.

²⁵ Report to the Secretary of State for Defence (United Kingdom) on the Independent Review of the Armed Forces Manpower, Career and Remuneration Structures, 1995. *q.v. op cit.*

²⁶ The RMA was first observed by Soviet Marshal Nikolai Orgakov, the then chief of the general staff, who predicted in 1982 that the revolution would give high tech armies an immediate advantage. The work was then adopted by numerous American scholars (Andrew Marshall, John Arquilla and others) who expanded its scope. See Elliott Cohen, *op cit*, p39.

²⁷ *q.v.* Correll, John T., 'Signs of a Revolution', *Air Force Magazine*, August 1995, p 2.

²⁸ Such a concept is discussed in detail in Criss, P.J. and Schubert, D.J., *The Leading Edge; Air Power in Australia's Unique Environment*, Canberra Paper No 62, SDSC, Canberra, 1990 and Chris Coulthard-Clark, *The Qualitative Edge - A Role for Air Power in Regional Cooperation*, AGPS, Canberra, 1993.

²⁹ Boyd's Observation-Oriented-Decision-Action (OODA) Loop concept was first described in Boyd, John R., *A Discourse on Winning and Losing*, August 1987. A collection of unpublished essays and briefings held at the Air University Library. See also David S. Fadok's excellent *John Boyd and John Warden: Air Power's Quest for Strategic Paralysis*, School of Advanced Airpower Studies, Maxwell AFB, Feb 1995.

Chapter 3

The Security Environment

The prevalence of uncertainty [in the world] suggests that we will have to challenge orthodox strategic analysis and straight-line thinking. This applies particularly to our region—Asia—where a self-satisfied view of ‘peace in our time’ seems to prevail.

—Professor Paul Dibb

Head of the Strategic and Defence Studies Centre, ANU

In the past and by virtue of its geographic location, Australia has been one of the most secure nation's in the world. We are now entering an age of uncertainty when this may no longer be the case. Australian security traditionally rested on a policy of forward presence and support from, and a collaboration with the United States and its allies - the great Western alliance. That has now changed. The collapse of Eastern European communism and the fractionation of the once bipolar world has brought with it a new form of global political upheaval. Once repressed nations of Eastern Europe have now entered a painful period of transition from satellite communist states to burgeoning democracies with free market economies. In Australia's region, Asian nations now have developed their economies to such an extent that they seek a greater say in global and regional affairs and have begun to embark upon modernization, restructuring and greater political dialogue. They now seek stronger and more capable armed forces to ensure their security and apart from the Philippines, form part of the fastest growing economic region in the world.

Hence, no longer do traditional belligerents focus on a known threat and under the 'New World Order' for a short time it appeared that the world would become a safer place.

The euphoria soon changed and in the six years since, there has been an explosion of civil and ethnic conflicts which replaced the larger scale country versus country wars. Such conflicts have set the stage for war in the new century but the question remains; will such conflicts continue to increase in the coming decades? If this will be the case, then a serious change to smaller nation's military organization, force structure and operations will be required if they are to remain a relevant and appropriate tool of government.

Australia and the Asia-Pacific Region

Australia's security and economic prosperity is dependent on a stable and prosperous Asia-Pacific. Asian influence on global affairs will increase and in terms of combined GDP, the region is now the world's largest and most dynamic. This gives Asia tremendous leverage in world affairs and no longer can the First World dictate the trade and economic terms.

Australia now sees itself as part of the region even though many Asian nations see Australia as an offshoot of the West. Nevertheless, Asia takes two-thirds of Australia's exports and nine of the ten top Australian export markets are in the region. Additionally, Australia's ethnic Asian population has risen from less than one percent in 1980 to about five percent today giving the Asian lobby a more powerful voice and Australia now accepts a higher proportion of Asian immigrants than Europe. Given these criteria, Australia can validly claim to have vital interests in maintaining a stable Asia-Pacific region.

Although Australia's closest neighbour is Papua New Guinea, its next closest has far more importance. Indonesia is the world's sixth most populous nation, the largest Muslim nation on earth and with over 6,000 islands and 300 ethnic groups, one of the world's most diverse cultures. Australia's relations with Indonesia have been rocky to say the least, but now appear to be entering a new phase as the East Timor issue reaches resolution and the Sukarno succession is resolved.

This does not mean to say that Australia places any more or less importance on Indonesia over other regional nations, nor does it imply favoritism towards one over another. But as long as the threat of global war remains low, the likelihood of armed attack on Australia will depend on strategic developments in Asia and the Pacific, and particularly in Asia itself.¹ But what is 'the region'? The region in question is Australia's region of strategic interest which includes India to the north west across to Japan and the Koreas in the north east. The southern extremity of this area is Antarctica, where Australia along with several other countries continues to hold territorial claims and to maintain a presence. There is a closer focus, however, on the ASEAN countries, Cambodia, Vietnam, Papua New Guinea and New Zealand.

National Power and Strategy

Before strategy and doctrine can be discussed, it is worth reviewing the relationship between government policy, guidance, strategy, operations and doctrine. The model used in Australia is illustrated in Figure 4 and depicts the broad process of taking government policy developed as strategic guidance and producing both planning tools (concepts and

force structure development) and operational tools (readiness and sustainability). At the bottom of the chart, doctrine is developed to guide the employment of the 'force in being'.

The Australian government documents *Defending Australia 1994* and *Australia's Strategic Planning in the 1990s*, provide Government endorsed policy guidance for force structure planning. These documents identify ADF roles and establish broad priorities for capability development, but additional and more detailed planning and analytical papers will be required to identify the way ahead for specific force structure issues. Such papers include master planning documents, operational readiness studies and Operational Concepts Papers. These will assist judgments on new capabilities for the ADF and will be supported by analytical studies to be undertaken within the Defence Department or other appropriate agency.² Such long term planning is thus useful to give general direction for ADF force structure planning and longer term defence development.

THE NATIONAL POWER MODEL AND THE RELATIONSHIP TO DOCTRINE

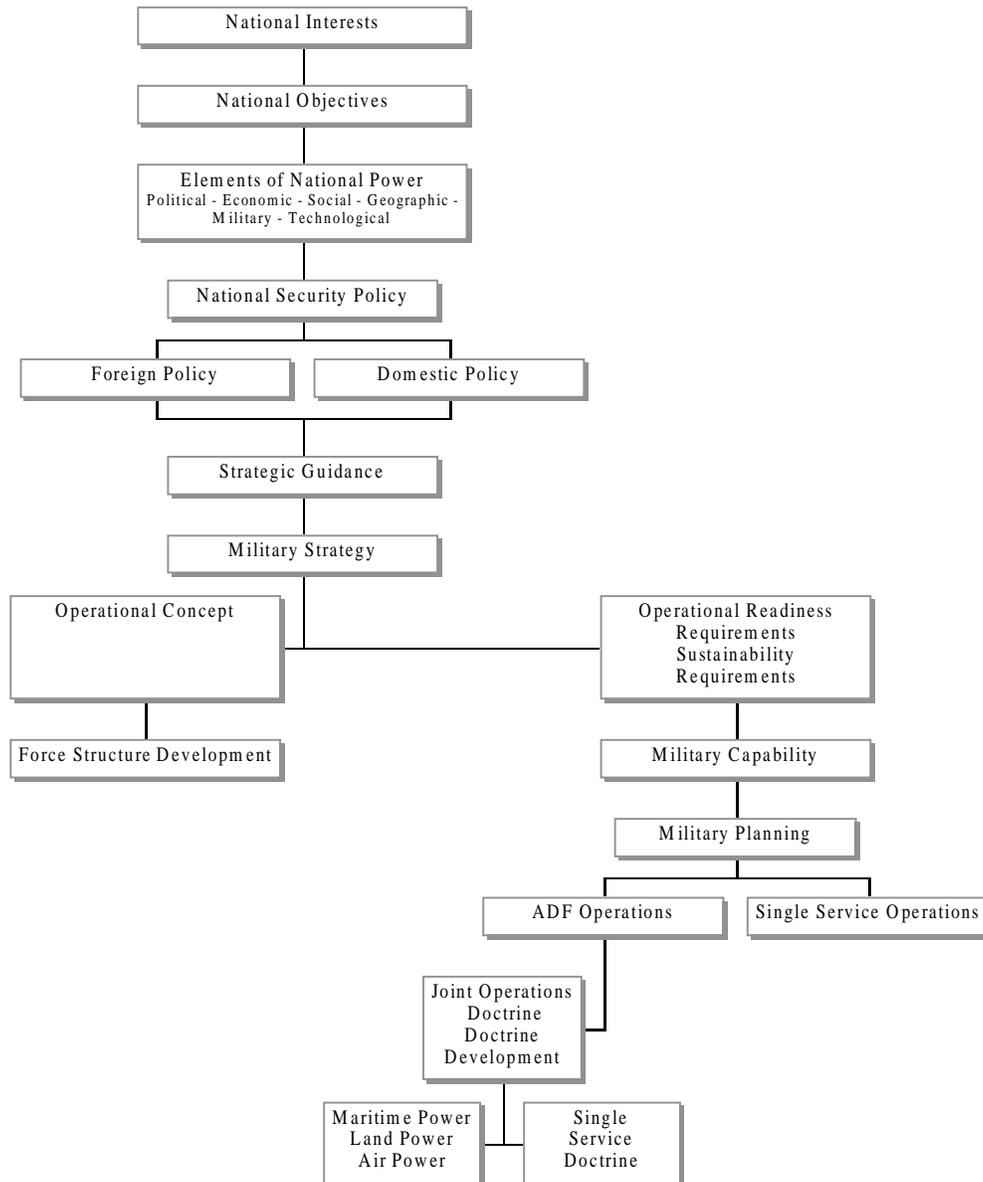


Figure 4. National Power Model

Australia's Present Defence Strategy

Determinants of Strategy

To a large extent, endorsed government policy in the form of strategic guidance pre-ordains the ADF's military strategy, but such a process does not go on in isolation. The

defence strategy must take cognizance of many factors including possible threat(s), current force structure and capability, past experience and so on. Australia's present defence strategy is based upon government guidance released as *Defending Australia 1994* and thus is open to public scrutiny as well as debate by the wider international community.

In determining the appropriate defence strategy for Australia, the following factors also are taken into account:

- as a signatory to the Nuclear Non-Proliferation Treaty (NPT), the Chemical Weapons Convention (CWC), and the Biological Weapons Convention (BWC), Australia has forsworn the use of weapons of mass destruction;
- by adopting the 1977 Additional Protocols to the Geneva Convention, Australia has accepted specific constraints on the actions of its military forces;
- as an island continent, any challenge to Australia is most likely to come through its northern air and sea approaches;
- Australia is a large land area but has a small population;
- Australia only has a small, but highly skilled volunteer defence force;
- Australia must remain aware of its alliances, its alliance obligations and alliance constraints; and
- Australia has obligations under the broader UN treaty.

The appropriate strategy will be developed from government policy and this is an area which is subject to change. The current government was elected in March 1996 and has already set about some reform. In a recent Ministerial speech, the Australian Minister for Defence announced:

The immediate task for defence policy is to map an agenda for practical reform, making sure the forces are developed in the most appropriate and cost-effective way to meet the new strategic environment....Our key defence aim is to develop military forces able to defeat any attack against Australia....That objective must be the core business of the ADF.³

In so doing, regional security will take on added importance.

Threats and Levels of Conflict

One of the hardest concepts for Australian defence planners to come to terms with has been the absence of a clearly defined threat. Post Vietnam War, the spectre of the *Domino Effect*⁴ of Communism consuming Asia vaporized leaving a void in the Australian defence planning threat equation. Empirically, capability plus intent equaled a threat, yet it became harder to create a threat in which to counter as no regional nation offered either. By the mid-1980s, a number of defence reviews were critical of this way of thinking⁵ and Australia embarked upon a different track. The process is best described by another document, *Australia's Planning in the 1990s (ASP90)* which states:

In Australia's current and foreseeable strategic circumstances, defence planning does not proceed on the basis of any particular threat. While defence planning must be alive to the possible emergence of a threat, its central focus is the credible ways in which military capabilities could be used against Australia, how we should respond in such circumstances, and the means by which we can promote the security of our strategic environment. Our planning recognizes that the defence of Australia goes beyond the protection of Australian territory to include matters which impinge on our direct security interests (e.g. offshore resources, and critical Sea Lines of Communication).⁶

Perhaps not surprisingly, other nations are now considering assumption-based planning rather than the non-traditional threat-based. American defence commentator Thomas-Durell Young for one recognizes that other nations, particularly the NATO nations, now face a similar predicament with their defence planning and procurement cycles. He recently wrote:

Defense and Alliance officials now face the difficult problem of translating the implications of a threat ambiguous strategic environment into defense planning and force development methodologies that are applicable to modern military structures and convincing to cost conscious politicians. Although this is not widely understood in NATO, Australia has not designed its force structure on the basis of a clearly identifiable and quantifiable threat since the late 1960s.⁷

So where does this leave defence planners? Despite the lack of direct or quantifiable threat, Australian military planning identifies two levels of conflict to which the ADF must be able to respond. These are major and short warning.

Major conflict involves a fundamental threat to the sovereignty of the nation. The nature of Australia's geography means that any substantial threat would have to cross the air and sea approaches most probably to the north. While not specifically referred to in *DA94*, previous strategic assessments have assessed that it would take five to ten years for any nation to develop the necessary forces to pose a credible threat of this magnitude. An important element in this warning time is the significant defensive capability the ADF provides. Further, if any significant force build-up were to occur, it would be impossible to hide and Australia would have the opportunity to build up its own forces in response.

Short warning conflict refers to conflict that could occur with little or no warning and would be based on forces that are already in place in the region. The level of capabilities that are now extant, however, mean that short warning conflict could be quite substantial and not restricted to low intensity land operations. The dilemma is that the ADF must be trained, equipped and in place to counter the threat posed by short-warning conflict - a conflict that may never occur.

Any state wishing to threaten Australia may employ asymmetric strategies to help them achieve their aim. Such strategies may also be termed the 'indirect' approach, and these can be very effective, especially given Australia's present technological dependence. These strategies might include⁸:

1. The use or threat of use of Weapons of Mass Destruction,
2. Developing a lethal surface-based defence network capable of rapid lodgement,
3. Dispersal of strategic targets to deny Australian air power useful or close targets,

4. Mining port and ship repair facilities,
5. Collocation of key military targets within the civilian infrastructure,
6. Employing special forces for attacks against key facilities (airfields and ports) and directly against key personnel (commanders, pilots, etc.), and
7. Using Australian civilians as hostages.

Such strategies often pit enemy strengths against own weaknesses, even if this is only psychological in nature.

The Shorter Term

The Appropriate Strategy

So what form should an appropriate Australian defence strategy take? Based on these factors, *DA94* and subsequent guidance from the new Howard government⁹ has logically concluded that the appropriate strategy is deterrence by denial - i.e. having the forces to convince any potential adversary that aggression would be defeated or that the costs of aggression would be higher than the prospective gains.¹⁰ A full-scale invasion is not envisaged without complete global turmoil so the strategy also encompasses a 'layered' approach with air and maritime forces able to meet any 'credible' threat offshore. Should they be unsuccessful, the army would conduct counter-lodgement operations until the threat was nullified or repelled. Adding further depth to the strategy would be support from reserves and Australian industry, which would provide manpower and materiel. Such a policy pre-supposes denial of the air and sea approaches through the use of a technological and training advantage. In military planning terms, it seemed the appropriate means to achieve this was through the use of highly capable and offensive air and maritime forces supported by wide area surveillance and robust intelligence capabilities. As *DA94* states:

We therefore give clear priority to the naval and air capabilities required to deny our sea and air approaches to an adversary so that we can limit the lodgment and support of land forces or the mounting of air attacks.¹¹

However, it must be remembered that a such a strategy may not be sufficient to deter a highly motivated aggressor from challenging, and a purely defensive strategy leaves the aggressor with the initiative and at best a position of stalemate is the outcome. The inclusion of an offensive strike capability provides the opportunity to take the war to the enemy and allows pre-emptive action which increases the likely effectiveness of deterrence. In Australian force structure terms, this strike capability is represented by the fleet of F-111 aircraft, the fleet of conventional submarines and the special forces Special Air Services Regiment.

There is also the need to balance forces so that the full range of the more likely, short warning tasks can be performed while not degrading the basic deterrence requirement. Forces required for these two levels of conflict are far from mutually exclusive.

According to one commentator:

The first point to note is that surveillance and intelligence requirements are high for both, with the short warning case perhaps even more demanding. The range of capabilities in the region is such that while a large scale assault would not be possible, the ADF's advanced air and sea capabilities would be the best means of dealing with force projection capabilities already present in the region. If a small scale lodgment did occur, the same highly mobile land forces required for the higher level of conflict would still be required.¹²

Nevertheless, the basis of Australia's strategy and force structure remains the defence of Australia. While the importance of contribution to regional and global security, and contribution to UN peace keeping operations is recognized, these operations will only be carried out from forces developed for the defence of Australia and only when the primary mission is fulfilled. The question for the future is what happens when small, yet highly

capable threats develop which deny Australia its qualitative edge? This is the next dilemma facing the Australian defence strategists, particularly for the air force post-2000.

Self Reliance

The need for a self-reliant defence capability is explicitly identified in *DA94* which acknowledges that 'Australia's security is not so vital to other nations that we can assume others would commit substantial forces to our defence.'¹³ While Australia has for some time pursued a policy of defence self-reliance, it is generally recognised that Australia is still highly dependent on the US for 'technology, resupply, and training assistance'.¹⁴ This is particularly so in the case of logistics support where for example, as a former Chief of the Air Staff stated in 1988, stockholdings of Precision Guided Munitions (PGMs) were so low that they 'would not last one day of intensive operations at the higher level'.¹⁵

Self reliance does not mean self sufficiency or the ability to wage war without assistance of any kind. In fact *DA94* has essentially redefined the meaning of self-reliance as being the ability to defend Australia 'without depending on help from other countries' combat forces',¹⁶ the emphasis being on combat forces. While it could be expected that the US and perhaps others such as New Zealand would probably render some form of assistance given a serious threat to Australia's survival, in less serious circumstances there is a greater possibility of a divergence of Australian and US interests, and thus Australia would need to be able to operate independently. This is one reason Australia plays such a large role in UN peace operations and takes an active role in UN and regional forums; such involvement gives Australia a louder voice in international forums than perhaps it otherwise might have and establishes Australia as a concerned player in world affairs.

The concept of self reliance also has broad bipartisan support. The Liberal-National Party Coalition government elected in March 1996 recently reiterated its commitment to self reliance in stating: ‘We aim to acquire and to maintain the ability to deal with possible military threats to Australia without relying on the assistance of combat forces from another country. This includes the US’.¹⁷ But the Minister went further to state: ‘Nevertheless, the US has a strong record of standing by its allies and we can - and do - expect that we would receive valuable help in a crisis’.¹⁸

But it is in the areas of logistics support and, to a lesser extent, intelligence that Australia would face the greatest challenge in independent operations. For Defence, self-reliance within a limited budget requires a balance between force structure development, preparedness, internal logistics capacity, strategic manufacturing and repair capabilities and reliance on overseas supply and support agreements. Although Australia’s national support base helps to develop defence equipment and facilities and train and sustain defence capability, the country is not as yet capable of full self-sufficiency in these areas.

Alliances

Because of Australia’s size and lack of fully developed industrial capability, alliances have and will remain crucial to Australia’s defence posture. The containment of communism had been high on both the American and Australian political agendas since the end of World War II . By 1954 the so called ‘loss of China’ to the communist cause and the bitter struggle over Korea had convinced American strategists of the need for collective security arrangements in Europe, the Middle East and Asia as a hedge against the *Domino Effect*. Thus NATO, CENTO and the most significant for Asia, SEATO, all came into being.

The South-East Asia Treaty Organisation spawned from the 1954 Geneva Conference on Far East Asian affairs and pulled together eight nations for ‘the purpose of providing for collective defence and economic cooperation in South-East Asia and to protect weak nations of the region against aggression.’¹⁹ But the organization founded upon NATO lines was never effective for several reasons. First, there was a lack of widespread support among south east Asian nations who were fearful of angering communist China. Second, the French withdrew early after the loss of Indochina and third, there was general mistrust between the alliance partners and the other non-allied South East Asian nations. SEATO was disbanded on 20 February 1976, never completely fulfilling its original promise of strong collective regional security.

However, under SEATO arrangements, in 1962 Australia was able to send forces forward to Thailand. The deteriorating situation in Laos and the concurrent communist threat to Thailand led to action by the four main SEATO partners (US, Australia, New Zealand and Great Britain) to station forces on Thai soil as a hedge against the threat from the north and east.²⁰ Australia’s contribution was a squadron of Sabre aircraft based at Ubon as part of the air defence system. The Sabres provided presence, operated mainly in SEATO exercises and remained until 1968, but unlike USAF aircraft also based in Thailand, took no part in Australia’s contribution to the Vietnam War.

If SEATO was considered a failure, then ANZUS was probably considered a success. From the end of the Korean War until the early 1980’s the Australia-New Zealand-US alliance played a central role in Australia’s security strategy. The alliance with the US was seen as providing a significant deterrent to any aggression against Australia²¹. While the alliance also includes New Zealand, the real strength as far as Australia was concerned

was from the combat capability of the US. Recent New Zealand - US disagreements over nuclear ship visits have torn a rift in that side of the ANZUS triangle which still has not been completely mended.

As such, the Australia-US bilateral alliance has recently been 'reinvigorated' by the current Liberal-National Party Coalition government, by allowing an extension of the joint facilities treaty till 2008 and much greater access to exercises in the Australian region. Such exercises will now annually test up to 17,000 US troops together with over 5,000 ADF personnel.²² Now known as the Sydney Declaration, the arrangement flowed out of the July 1996 Australia-United States Ministerial (AUSMIN) talks and consists of three elements which are considered by both Australia and the US as critical:

- First, the US must continue its comprehensive engagement in the region, including alliances and the forward deployment of forces,
- Second, strong and constructive bilateral relationships need to be maintained with countries of the region, and
- Third, the fostering of multilateral processes will contribute to regional security.

The Sydney Declaration thus sets the grounding for the future joint development of the Australia-US relationship, one that will affect both countries in the years to come.

Australia's ties with New Zealand, in contrast, go deeper than the formal ANZUS defence alliance. The Gallipoli 'ANZAC' tradition moulded a special relationship²³, but Australians and New Zealanders had in fact fought together since the Maori Wars of the 1840s. While *DA94* concludes that Australia's security is of no direct consequence to any other country, it does not ignore the close and long-enduring strategic relationship between Australia and New Zealand. While security and more general political interests do not always align, historically there has been general recognition that a threat to either country would also be a threat to the other and both would respond.²⁴ Although the New

Zealand Defence Forces are considerably smaller than Australia's (and considerable concern has been raised regarding their capability level after significant funding cuts in recent years), the addition of extra combat capability as well as political support should not be ignored.

Considerable effort has been made in the last few years to increase interoperability and maximize effectiveness and efficiency of the two countries as part of the Closer Defence Relations (CDR) initiatives. While there may be some modification of individual force structures, there is little prospect of a fully integrated defence capability at this time, but this too is changing. Already Australia trains all the RNZAF navigators and talks about combined pilot training continue. New Zealand A-4 Skyhawks fly out of Naval Air Station Nowra under a contract agreement to provide fleet support to RAN ships and Australia and New Zealand are both acquiring ANZAC Frigates to replace existing obsolete types. As force structure components and operations come together, so too do the defence forces as a whole.

The last extant 'alliance' to discuss is the Five Power Defence Arrangements (FPDA). Signed in 1971 between Australia, New Zealand, United Kingdom, Singapore and Malaysia, these arrangements were originally conceived in 1967-68 as a transitional measure to sustain confidence in Malaysia and Singapore in the aftermath of Indonesia's confrontation and against the prospect of the United Kingdom's impending withdrawal from the region. The Arrangements were formally established by the Five Power Communique of 16 April 1971, by which the five Governments declared that they:

...would continue to cooperate, in accordance with their respective policies, in the field of defence...(and) in relation to the external defence of Malaysia and Singapore, that in the event of any form of armed attack

externally organised and supported, or the threat of such attack against Malaysia or Singapore, their governments would immediately consult together for the purpose of deciding what measure should be taken jointly or separately in relation to such attack or threat.²⁵

The ‘Arrangements’ also specify the development of an Integrated Air Defence System (IADS) with an Australian two-star commander.

At the political level, FPDA/IADS provides Australia with access to senior defence officials and military officers who have a considerable influence in the national affairs of Malaysia and Singapore. The self-interest of the defence establishments in maintaining access to more advanced technology and skills of the ADF helps ensure that ties with Australia are maintained despite occasional difficulties in other foreign policy relations.²⁶ As Malaysia and Singapore progress to become technological coequals with Australia, and with Indonesia pushing for a disbandment of FPDA, its utility beyond 2010 may be doubtful.

As may be expected, Indonesia does not share this five nation view of ‘collective regional security’. Several prominent Indonesians have argued, with increasing vehemence in recent years, that FPDA/IADS is not only obsolete but is also divisive in terms of regionalism and an impediment to the further development of regional security cooperation. For example, Dr Mochtar Kusuma-Atmadja, who served as Indonesia’s Foreign Minister from 1978 to 1988, has recently stated:

We in Indonesia understand the FPDA to be an insurance against Indonesia’s possible reversion to her old ways, exemplified by her confrontation campaign against Malaysia in the early 1960s. A better insurance or guarantee would be to include Indonesia herself in a sub-regional defence arrangement.²⁷

Whether Indonesia gets its way or whether FPDA expands to become a truly regional security arrangement with or without the United Kingdom and the United States, remains

to be seen. Complicating matters more is the most recent defence agreement signed between Indonesia and Australia on 18 December 1995. Although not an alliance as such, this was a significant change in both countries approach to each other and in some ways, breaks Indonesia's traditional 'non-aligned' status. According to the 1996/97 Military Balance: 'the agreement commits both countries to closer cooperation on military exchanges and training, and also to 'consultation on joint responses to outside challenges'.²⁸ Whether it impacts on FPDA or broader security arrangements remains to be seen.

Australia and Regional Engagement

Almost as significant to Australia's layered defence arrangements and policy of self-reliance is the move towards 'regional engagement'. Australia as a nation is a relative newcomer to Asian affairs and for the greater part of the 20th Century, and as inescapable as the geography remains, Australians saw Asians not as partners but as threats. In fact, in the last 100 years, Australians fought in six Asian wars to counter 'the threat' and for the first seventy years, had a discriminating immigration policy against Asians that fueled mistrust and misunderstanding²⁹. Australia had a Eurocentric attitude and in fact openly expressed xenophobia regarding non-European races—an attitude based on historical conditions rather than economic, geographic or political reality.

Such an outlook was bound to change, particularly given the advent of the Cold War, the fractionation of east-west relations and Australia's geostrategic position at the southern edge of the South-East Asian region. Fear of Asia gradually became withdrawal from Asian affairs then in time, progressed to a more realistic and appropriate 'regional engagement' with Asia, a trend which continues today.

The period of insularity was broken in 1989 by the then Minister for Foreign Affairs, Senator Gareth Evans who directed closer ties with Asia and the Australian Defence Force henceforth became committed to greater regional engagement as a tool of foreign policy. Evans described a process of security and confidence building measures which he termed 'regional engagement', a process which would see Australia interacting and involving itself within the region on a broad front.³⁰ The underlying theory which is vital to understanding the process was that Australian security would be ensured through the maintenance of positive security environment in the region, a not unrealistic expectation. But vital to its success was understanding and agreement by the other nations concerned.³¹ This policy then was the genesis of what in part became *The Strategic Review 1993 (SR93)*³² and a year later *DA94*³³, which set the direction of Australian Defence policy for the following 10-15 years. Ironically, although the concept of 'regional engagement' was new to some political pundits, it has been part of the ADF's *rationale* since 1945 and will continue to be so in the future.

In the years preceding Evans' statement, there were several regional initiatives introduced under this mantle. Apart from an extended number of regional exercises (which were to be expected), perhaps the most important was the 'policy of transparency', a policy designed to inform regional neighbours of the process of defence policy development and its methodology, thereby establishing a basis for understanding and hence confidence within the region. Today, however, under the Liberal-National Party Coalition government, the pendulum has swung back towards reinvigorating the traditional ties with the US, much to Asia's chagrin. Nevertheless, it seems regional engagement will also be continued at pre-election commitment levels.³⁴ Australia seeks

the best of both worlds and there has also been considerable political effort to be seen as the 'odd man in' Asia rather than the 'odd man out'.

The desire to engage with, but at the same time apparently trying to deter unspecified regional nations, has led to a tension in defence strategy; evident as Australia attempts to move from what has been seen as a strategy of defence *against* Asia to defence *with* or at the very least *within* Asia.

While structured for individual requirements, increased cooperation between regional armed forces performs a number of useful functions in increasing the security of the region. The benefits include:

- It assists in the development of military capabilities for the less powerful nations.
- It reduces tension between regional nations through increased transparency and understanding.
- It allows dealing on a multilateral basis with extended security issues such as piracy, drug trafficking, and refugee movement.
- Individually strong, cooperative defence forces in unison provide at least some deterrent effect to 'outside players' wishing to act contrary to the interests of the region as a whole. While Australia can do little unilaterally to influence the major power's activities, a strong regional alignment may have much more effect.

Regardless of Governmental policy swings, Australia remains committed to a regional focus. The new government has also supported the regional engagement policy, but is also quick to point out that it is not an alternative to the Australia-US alliance. Australia does not have to choose between the Asia or the US, but can cooperate and engage with both.

On the practical level, the possibility of establishing multi-lateral defence exercises appears to be the prime instigator for further collaboration, and this is exactly what is to happen in the future.³⁵ The obvious sticking points are the level of commitment from individual countries, country-country inter-relationships (there remains some level of

mistrust) and the issue of inclusion (or exclusion) of ‘unwanted’ third parties who feel they may have a rightful part to play.

But what of the future? Certainly in the near term, Australia’s policy makers will have to overcome a number of hurdles, namely; deep seated suspicions held by most countries in Asia, resolution of issues of third party involvement in an environment of bilateralism and a determination of the level of openness verses national security still must be resolved. However, the hard questions remain; what ways can regional nations contribute to each others’ security without being accused of interference? How do we build regional cooperation vertically through deeper interaction and horizontally through more participation yet remain unbiased and more importantly, be perceived as such? And finally, what place should Australia take in the emerging Asia-Pacific security environment of the 21st Century? Perhaps in this regard, only time will tell.

Australian Contribution to Peace Operations

No review of Australia’s regional involvement with Asia would be complete without some discussion of Australian peacekeeping operations, mainly because such operations can be expected in the future.

The first regional UN peace operation was conducted in 1947 when observers were sent to join the UN Commission for Indonesia (UNCI) during that country’s push for independence from the Netherlands between August 1947 and April 1951.³⁶ A second and very similar mission occurred in 1962 when Dutch West New Guinea was transferred to Indonesia after a short armed struggle. The UN Temporary Executive Authority (UNTEA) was established to supervise the orderly transfer and to undertake a Cholera

eradication program.³⁷ The small detachment of helicopters and crews was, however, withdrawn after one of the helicopters crashed.

But by far the most significant peacekeeping operations in Asia were Australia's two involvements in Cambodia. The RAAF first carried Red Cross aid into that country in 1980 after the Pol Pot regime had destroyed most of the infrastructure and decimated the population (the infamous killing fields) and before Vietnam's various interventions had taken effect.³⁸ Much later, in August 1989, the UN proposed an observer mission to monitor the withdrawal of Vietnamese forces and supervise valid elections. In October 1991, Australia supported the UN Advance Mission in Cambodia (UNAMIC) with a communications unit, and after a brokered cease-fire, provided a substantial component of the UN Transitional Authority in Cambodia (UNTAC) which was established in March 1992. The military component of UNTAC eventually comprised 16,000 personnel from over 32 countries and was commanded by Australian, Lieutenant-General John Sanderson. Under UNTAC, free elections were held and a legitimate government was restored to the country. So successful was the outcome of the operation that a more stable Cambodia has since been invited to join ASEAN along with Laos in 1997.

Such peace initiatives auger well for greater regional understanding of Australia's policy of promoting regional stability and well being. Perhaps in some way it is Australia's way of trying to prove its Asian credentials while at the same time trying to avoid the pitfalls of bygone colonial years.

Other Regional Issues

As a partner in the region, Australia must be cognizant of other major regional issues. Countries throughout our region share similar air and maritime environments in that

distances are large, patrol and surveillance assets few and the external threat rated as low. The very geography of the region leads to similar doctrines - the paucity of complex air assets, the need for sound attrition management and the need for reach. Long lines of communications add to the problems of monitoring and preserving regional interests.

Costs of defence necessitate husbanding and sharing of resources, and greater cooperation, all on a regional scale. In the South-East Asian region there will be a growing emphasis on maritime and air assets to protect regional nation's interests, especially off-shore resources and territories, fishing zones and marine environments.

Countries within the region also share common concerns. These include:

1. The monitoring and security of their Exclusive Economic Zones,
2. Marine pollution,
3. Depletion of fish stocks,
4. Piracy, drug smuggling and other illegal activities,
5. Offshore territorial disputes (including the Spratlys, the Paracels, the Kuriles, Pulau Batu Putih Island, and Senkaku, Sipadan, Sebatik and Ligitan Islands to name a few),
6. Undersea boundary disputes (Vietnam disputes boundaries with Malaysia and Indonesia),
7. Access through choke points (Malacca, Lombok, Sunda and Taiwan Straits),
8. Land border disputes (including Vietnam-China, Vietnam-Cambodia, Burma-Thailand, Burma-Bangladesh, India-Pakistan, India-China and Malaysia-Thailand),
9. Insurrectionist movements (most predominant in Philippines, Cambodia, Burma and Bougainville), and
10. Other sovereignty claims (for example: China-Taiwan and the Korean Peninsula).

Each of these 'concerns' will affect the region differently. Each could quickly become a catalyst for conflict, such as the recent Chinese exercises in the Taiwan Straits or the Philippine reaction to Chinese occupation of Mischief Reef in the Spratly Islands. Traditionally, Asia has sought to deal with its own problems in its own way. Through cooperation, particularly between close neighbours, many of the causes for concern can be resolved or at least lessened. Indonesia for example, has offered to broker a peace

between parties who have laid claim to the Spratly Islands³⁹ and such efforts at peacemaking are strongly supported by Australia.

Modernisation of Regional Air Forces and Cooperation

Given such rapid economic regional growth, all countries in our region are seeking to update their defence forces with more capable, high technology weapons systems. None more so than the regional air forces, with potentially over a thousand new aircraft due to be acquired over the next ten to fifteen years. At present, the numbers of new assets being acquired is low (primarily due to high initial cost and foreign government sales caveats) and an arms race is not envisioned. Most regional nations currently operate obsolete equipment and have valid needs to modernize.

Key areas of modernization appear to be in command, control and communications, surveillance systems, strike/fighter aircraft, anti-ship missiles, fast surface combatants, rapid deployment forces (with greater airlift requirements) submarines and electronic warfare systems. All these acquisition programs are expensive to purchase, own and operate. Thus, they become ideal candidates for some form of cooperation.

With modernization comes requirements for training, technology transfer and the ability to conduct more complex exercises. With more standardized types of aircraft⁴⁰, a mutually advantageous sharing of ownership costs (maintenance, training and logistics support etc.) seems inevitable. If countries invested in shared arrangements, the likelihood of misunderstanding and aggression would be greatly diminished. Although each country will progress its acquisition programs separately, one area of mutual benefit is the investment in simulators, whether for basic piloting skills or for more advanced tactical training. Such simulators could be a very effective way of mutual cost reduction.

The Future Security Environment

The future regional security environment is not so certain. The region is developing rapidly and with such developments often come growing pains. Whether tensions arise intra-regionally or from some yet unidentified external source (such as a new hegemon or a new global uprising such as religious agitation), no clear threat can as yet be defined. What can be stated is that nations forego their defence at their peril and it behoves all responsible governments to prepare for the worst.

No country in the region presents a threat to Australia and none is predicted to rise in the next decade. Australia keeps harmonious relations with its neighbours and as already discussed, defence cooperation forms one pillar of Australia's transparent defence policy. But one area that remains of concern is the emergence of regional transnational threats. Such threats could very quickly develop and as quickly destabilize what may become a fragile peace. Included in these areas of concern are:

1. proliferation of weapons of mass destruction (particularly biological and chemical weapons),
2. the development and deployment of regional ballistic missiles,
3. state and/or group sponsored terrorism (such as the *Aum Shinrikyo* of Japan),
4. an increasing narco-terrorism/narco-extortion (centred on the 'Golden Triangle' of Burma, Thailand and Laos but extending beyond those borders), and
5. the growing spread of international crime, particularly economic plunder through sophisticated information warfare techniques (such as cyber theft etc.)
6. a rise in religious fundamentalism (four of the world's great religions; Islam, Hinduism, Buddhism and to a lesser extent Christianity, coexist within the region).

Added to this are population pressures, famine and natural disasters.

Projected Defence Policy

The current Australian government has already announced its agenda to carry the ADF into the next century⁴¹. It has set five priority areas wherein it intends to implement change:

1. First, increase combat capability, through redirection of defence resources (read no additional funding).
2. Second, Defence must be more cost-effective. Savings from broad administrative reform will be channeled back into 'the sharp end', but in the near term, the budget will remain at around \$A10b (\$US7.5b) with projected negative growth.
3. Third, to offer more satisfying careers for Service personnel.
4. Fourth, to have revitalised our alliance relations and ensure they remain relevant to Australia's strategic circumstances.
5. Fifth, an increased agenda for regional cooperation.

This then is the baseline for any future defence policy to carry the ADF forward to 2010, but it lacks any clear developmental focus. Added to these directions should be two other areas specifically targeted for development; a robust, redundant, integrated and secure C⁴I network and a government space policy. The direction and magnitude of the development of future ADF aerospace power, and that of the RAAF in particular, is the issue of the next chapter.

Conclusion

The indications are that the global future security environment will be very different from the recent past. The greatest challenge brought on by the changing world will be in defence forces and their application. Gone are the days of large, massed armies and navies and a bipolar ideological stand-off. This has altered the security environment and has forced a change in the defence posture of many nations. Key to Australian policy development is the nature of the security challenge in Asia. Defying the economic trend,

Asia is booming and is now spending more on arms than any other region. Additionally, there are also a growing number of concerns including unresolved territorial disputes and growing external threats such as piracy and drugs.

Australia's defence posture is multi-faceted in that the military forces have several aims. Prime of these is the defence of Australia from external attack. Other requirements set by government include the development of a policy of self-reliance, an emphasis on maintaining traditional alliances, regional engagement as a means of confidence building, and contribution to UN authorized peace operations.

Projected defence policy will be similar to that at present, but as the world and more importantly the region change, so too must Australia's foreign outlook and interaction with the world change. We need to consider the development of a robust force structure to meet that future security environment whichever way it proceeds⁴² and ponder some innovative ways of applying air and space power to meet Australia's future defence requirements.

Notes

¹ *Defending Australia 1994*, para 2.1

² DI(G) ADMIN 42-1 - *The Revised Higher Defence Process*, Annex A para 20.

³ McLachlan, The Hon. Ian MP, 'Australian Defence Policy After the Year 2000', An Address to a Conference on: *The New Security Agenda in the Asia-Pacific Region*, Canberra, 3 May 1996.

⁴ It was called the *Domino Effect* because the feeling at the time was that non-aligned countries would fall to communism much as a stack of dominoes - one after the other.

⁵ Commissioned by the then Labour government, foremost was Paul Dibb's *Review of Australia's Defence Capabilities*, AGPS, Canberra, March 1986.

⁶ *Australia's Strategic Planning in the 1990s*, AGPS, Canberra, 1990, para 4.1.

⁷ Young, Thomas-Durell, 'Capabilities-Based Defence Planning: The Australian Experience' in *Armed Forces & Society*, Vol. 21, No 3, Spring 1995, p 349.

⁸ Adapted from Bowie, Christopher J., et al, *Trends in the Global Balance of Air Power*, RAND, 1995, p 91.

Notes

⁹ McLachlan, The Hon. Ian MP, Minister for Defence, 'Defence Policy' statement to the Australian House of Representatives, 15 October 1996.

¹⁰ Harvey, Group Captain John, 'Conventional Deterrence' in Mark Lax (ed) *Air Power Presentations 1995*, RAAF Air Power Studies Centre, Canberra, 1996, p 93.

¹¹ *Defending Australia: Defence White Paper 1994*, Australian Government Publishing Service, December, 1994, para. 4.19.

¹² Harvey, Group Captain John, 'Air Power in the Defence of Australia' in Lax, *op cit*, p 7.

¹³ *Defending Australia 1994*, p. 13 para 3.4

¹⁴ Tow, William, T 'American Defence Interests and Australian Security', p.45 in *Australia and the United States: Strategic and Defence Co-operation Futures*.

¹⁵ Evans, Air Marshall S.D., 'Air Power in the Defence of Australia: The Strategic Context', in Desmond Ball (ed.), *Air Power: Global Developments and Australian Perspectives*, Pergammon-Brassey's Defence Publishers, Sydney, 1988, p. 122.

¹⁶ *Defending Australia 1994*, p. x, para 3.3. (emphasis added).

¹⁷ McLachlan, The Hon. Ian MP, Minister for Defence, Address to the Australian Institute of International Affairs Conference on Australia and the United States Into the Next Century, Brisbane, 22 November 1996.

¹⁸ *ibid.*

¹⁹ Dupuy, Ernest R., and Dupuy, Trevor N., *The Collins Encyclopedia of Military History*, 4th edition, (BCA, London, 1993), p 1410. The eight nations were Australia, France, New Zealand, Pakistan, the Philippines, Thailand, Great Britain and the United States.

²⁰ In May 1962, renewed fighting between the US backed government in Vientiane and Pathet Lao forces backed by the Vietnamese, Chinese and Soviets raised fears of an invasion across the Mekong into Thailand. Coulthard-Clark, Chris, *The RAAF in Vietnam*, Allen and Unwin, St Leonards, 1995, p 10.

²¹ *Defence of Australia 1987*, a Government White Paper, Minister for Defence, Australian Government Publishing Service, Canberra, March 1986. p 241

²² Exercise TANDEM THRUST 97 will be the first in the series of major exercises. The intention is to conduct 6-7 combined exercises per year, up from the present 3-4.

²³ On 25 April 1915, Australian and New Zealand troops went into action on the Gallipoli peninsula for the first time. British and French troops were also involved in the campaign to capture the Dardanelles. The Australia and New Zealand Army Corps (ANZAC) 'legend' was formed that day and is celebrated each year much as Veteran Day is in the US.

²⁴ This understanding was given formal recognition in the Canberra Pact of 1944. For further discussion of the strategic importance of the relationship see *The Defence of New Zealand 1991: A Policy Paper*.

²⁵ *ADF Publication 1* Chapter 3, para 305.

²⁶ From time-to-time, Australia and Malaysia in particular, have had strong disagreements which have lead to severance of trade and diplomatic ties, but not defence.

Notes

²⁷ Kusuma-Atmadja, Mochtar, 'Time For A Three-Nation ASEAN Defence Arrangement', *Trends*, Singapore, No 1, September 1990, p 1. For more information and discussion see also Stephens, Alan (ed), *Smaller But Larger*, AGPS, Canberra, 1991, p 53.

²⁸ *The Military Balance 1996/97*, IISS, Oxford University Press, Oxford, 1996, p 172.

²⁹ Known as the 'White Australia Policy', the policy was officially abandoned in 1966.

³⁰ Evans, Senator Gareth, *Australia's Regional Security*, Ministerial Statement, Australian Department of Foreign Affairs, Canberra, December 1989.

³¹ Politically, 'the region' was defined as most of South, South-East and North Asia, New Zealand, parts of Micronesia and Melanesia and half the Indian Ocean, an area covering approximately 10% of the earth's surface.

³² Published as *Strategic Review 1993*, Australian Government Publishing Service, Canberra, 1993.

³³ Published as *Defending Australia 1994*, Australian Government Publishing Service, Canberra, 1994.

³⁴ A strengthening of the Australia-US commitment was heralded with the signing in June 1996 of a wide range of defence cooperative ventures including greater US access to exercise area. The Australia-China relationship is currently strained on a number of issues, some domestic and some international. Less strained are the Australia-Malaysia and Australia-Indonesia relationship which have both been volatile, particularly over the last five years.

³⁵ In 1997, Australia will host several exercises with regional allies, the US and New Zealand.

³⁶ See James, Lieutenant Colonel N.F., 'A Brief History of Australian Peacekeeping' in *Australian Defence Force Journal Peacekeeping Edition*, No 104, January/February 1994, Australian Department of Defence, Canberra, 1994, pp. 3-18.

³⁷ The Australian involvement only lasted from 18 November to 25 December 1962. James, *op cit*, p 8.

³⁸ Vietnam entered Cambodia in 1979 with the intention of overthrowing the Khmer Rouge and installing a puppet government of their own. A year later, RAAF C-130 aircraft painted with Red Cross markings ferried relief aid into Cambodia over several months in 1980 and under the auspices of the International Committee of the Red Cross.

³⁹ Six nations claim some or all of the Spratlys: China, Vietnam, Malaysia, Philippines, Brunei and Taiwan.

⁴⁰ Two that immediately come to mind are the C-130 and the BAe Hawk trainer.

⁴¹ McLachlan, The Hon. Ian MP, 'Australian Defence Policy After the Year 2000', An Address to a Conference on: *The New Security Agenda in the Asia-Pacific Region*, Canberra, 3 May 1996.

⁴² Logically, it can go one of three ways. The environment can remain uncertain and fragmented, it can stabilize, or it can worsen.

Chapter 4

Australian Air Force Structure

Any substantial change in force structure, either an increase or a reduction, is a very long term process, longer even than the major equipment acquisition cycle. This is because the need to change the force structure has first to be recognised and then the political ground prepared for the perceived change.

—Air Vice-Marshal Pete Nicholson
Air Commander Australia

The Australian Defence Force in 1997

The task of Australian national defence falls upon the Australian Defence Force (ADF) which comprises the Royal Australian Navy (RAN), the Australian Army and the Royal Australian Air Force (RAAF). This joint force is commanded by the Chief of the Defence Force (CDF), a four star appointment, from Headquarters ADF in Canberra. The CDF and the Secretary of the Department of Defence, a civilian public servant, are jointly responsible for administering the ADF as well as procurement and facilities.

By world military standards, the ADF is a small but professional force which has always sought the edge in technology rather than strength of numbers. Defending a country almost the geographical size of the US, yet with a total population of less than 18 million brings with it unique problems, especially given the remote and barren nature of

the land. The 1997 strength of the ADF is about 57,800 of which 14,700 serve in the RAN, 26,000 in the Army and 17,100 in the RAAF.¹ Supporting the service men and women are about 23,000 defence civilians who help make up the remainder of the defence work force.

The ADF is presently arranged into eight programs, four under the Secretary and four² under the CDF, which allow greater levels of control, scrutiny and budgetary transparency. The higher ADF defence organisation is illustrated in Figure 5. The central basis³ for this command arrangement is the defence of Australia, but it is flexible enough to react to other contingencies.

Several observations on this structure are warranted. First, the ADF is commanded by a military officer while the department is run by a career public servant. Both are responsible to the minister. Strange as it may seem, this was not always the case. The organization has been evolving slowly over the last 50 years and now has a clearer operational focus. Commander Australian Theatre (COMAST) would be appointed by CDF and would in effect, become the Australian Joint Force Commander in the event of war or operations in the defence of Australia. This system has only recently been put in place and is expected to remain for at least the medium term. COMAST has available the expertise of the Maritime, Land and Air Commanders, who each head up the operational forces of their particular environment.

AUSTRALIAN HIGHER DEFENCE ORGANISATION

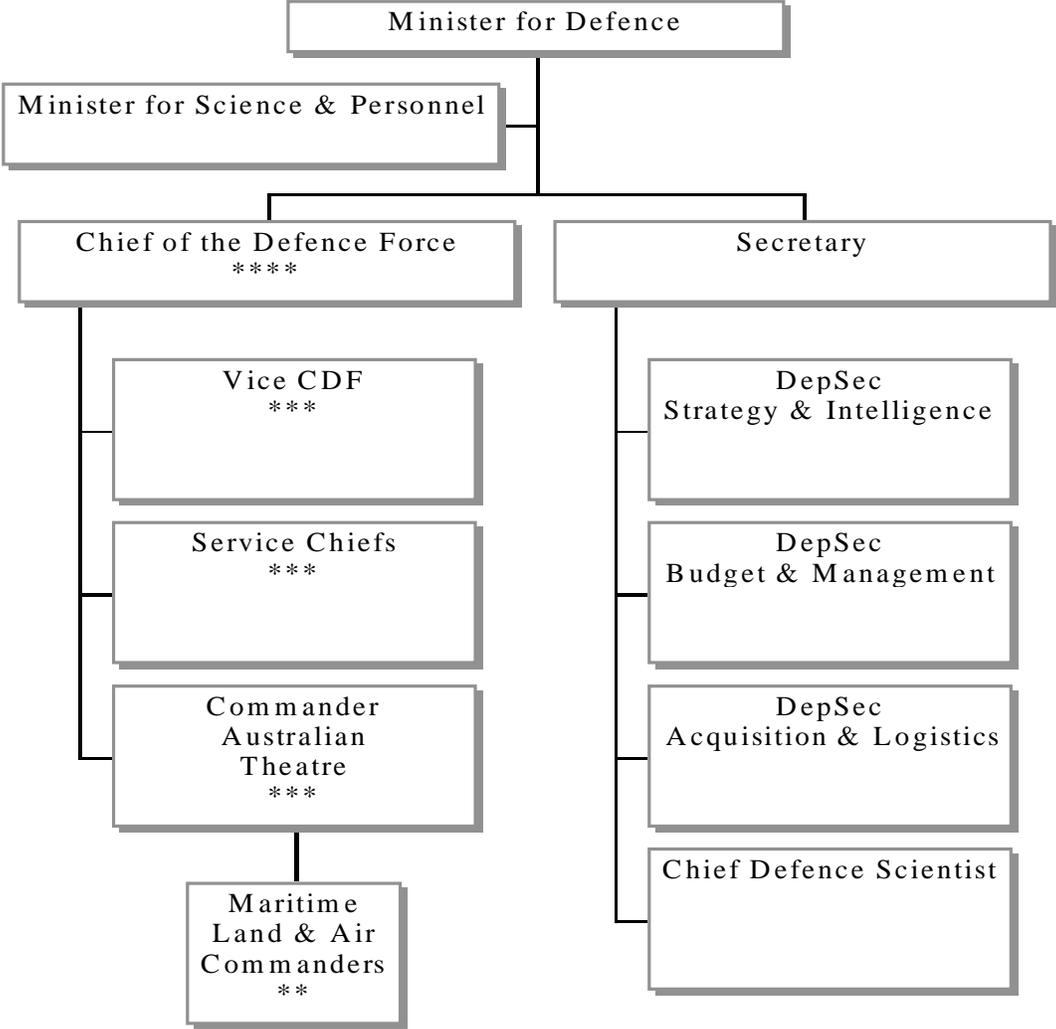


Figure 5. Australian Higher Defence Organisation

Australian Air Power in 1997

The Royal Australian Air Force is not the only provider of military air power to the Australian government. Although the RAAF may provide the greater preponderance of such assets and expertise, the Australian Army and to a lesser extent the Australian Navy also operate in the air medium, mainly in support of their own environment’s operations.

However, this paper will mainly examine the future environment and development of the RAAF, but as the ADF is a joint force, any change to one service will ultimately affect the others. It must also be remembered that should the need arise, any air asset could be employed by the Joint Force Commander to help achieve the overall campaign aims.

In 1997 the RAAF is a small, but well equipped and professional force of just over 17,000 personnel operating 280 combat, training and support aircraft. By comparison, the Australian Army's air arm has 126 aircraft and the Fleet Air Arm has 35. But size is not the only factor. Since the post-Vietnam draw-down, Australia has emphasized a technological or 'qualitative' edge⁴ over all others in the region, through the fielding of advanced equipment, high quality training and solid logistics support. Those halcyon days are now coming to an end and by the turn of the century, Indonesia, Malaysia, Singapore, Thailand, China and India will all be operating more advanced systems. Although Australia does not define any of these nations as a threat, it illustrates that Australia's qualitative edge in equipment is coming to an end.

Air Power Assets

Air power assets available to the ADF in 1997 are shown in Table 3. The Army and Navy consider their assets 'organic' to their individual surface capabilities, so it is the RAAF that operates the preponderance of offensive assets (strike, fighter and long-range reconnaissance). A lead-in fighter and light ground attack aircraft, the BAe Hawk, has recently been ordered which will be capable of contributing to these missions if required. Within the next ten years, Airborne Early Warning and Control aircraft and attack helicopters will also be procured. These platforms provide the ADF with a potent regional

air power capability. But the major questions remain; against what threat and what of the future?

Table 3. ADF Air Assets—1997

<i>Air Force</i>	<i>Army</i>	<i>Navy</i>
17 F-111C	36 S-70 Blackhawk	7 Seaking Mk50/50A
4 RF-111C	43 OH-58 Kiowa	16 S-70B-2 Seahawk
15 F-111G	25 UH-1H Iroquois	6 AS-350B Squirrel
71 F/A-18A/B Hornet	18 AS-350B Squirrel	1 Bell 206B
30 MB-326H Macchi	4 CH-47D Chinook	2 BAe-748 EW Trainers
19 P-3C Orion	19 Rapier	1 F-27 Survey
12 C-130 H Hercules	17 RBS-70	
12 C-130 E Hercules *		+ 6 RNZAF A-4K - under contract till 2001 - for fleet defence training
14 DH-4C Caribou	3 King Air 200 (leased)	
10 HS 748	1 DHC-6 (leased)	
5 Falcon 900		
5 B-707		
65 PC-9		
4 C-47		
* To be replaced in 1998 by 12 C-130Js now on order		

Source: The Military Balance 1996/97

Current ADF Roles

The most recent, and despite a change in government, still current Australian government Defence White Paper, *DA94*⁵, has identified nine roles the ADF must carry out in its primary mission; the defence of Australia.

- command, control and communications;
- intelligence collection and evaluation;
- surveillance of maritime areas and northern Australia;
- maritime patrol and response;
- protection of shipping, and offshore territories and resources;
- air defence in maritime areas and northern approaches;
- defeat of incursions on Australian territory;
- protection of important civil and defence assets, including infrastructure and population centres; and
- strategic strike.

All involve the use of air power. The first four roles are essentially concerned with acquiring or dealing with information, the remainder about preserving Australian national interests. Information is the key to allowing Australia to detect and defeat a threat before it reaches the mainland, maximize the effectiveness of a small force with a large area to defend and to avoid being drawn into a disproportionate response or a war of attrition. The preservation of national interests may require force and hence an appropriate force structure should rightly focus on capabilities to achieve that aim.

The ADF also conducts a number of other roles in peacetime including domestic support, disaster and emergency relief at home and abroad, humanitarian and other operations other than war (OOTW)⁶. The force structure, training and manpower ceilings are set for the defence of Australia mission, not OOTW. Such OOTW missions are conducted only when and where equipment and manpower allow.

The Royal Australian Air Force's Roles

Perhaps surprisingly, official articulation of current RAAF roles are much more difficult to find. The major roles of the RAAF have been developed over 75 years from experience, necessity, government guidance and to a lesser extent, extant capability. The RAAF has always gone to war with what it had. Broadly, the key RAAF roles are:

- Reconnaissance and Surveillance;
- Air Defence;
- Strategic Strike;
- Maritime Patrol;
- Air Transport;
- Air Support (SAR, AAR and AEW&C), and
- Operational Support.

The key question then becomes; How do you structure your force given the constraints of the post-Cold War world to be able to defend Australia with such a small permanent force and undertake those roles in a much more unstable strategic environment? These questions will be examined later in the paper.

Force Structure Factors

Risk and Risk Assessment

In an uncertain world with the concomitant decreased level of defence funding now experienced around the western world, some level of risk (or risk taking) in development of future strategies, force structure, roles and missions is inevitable. According to one commentator, in modern circumstances:

Risk and risk assessment are crucial in national security policy for at least two reasons. First, in a contemporary world there is no shortage of national security challenges, some of them military, some of them not. ...Second, the assessment of risk occurs at a time of declining resources available for national security.⁷

Australian defence planners must expect to deal with issues of risk, since budgets and capabilities cannot support defence against the full range of potential problems likely to arise in the next ten to fifteen years. Nor should they be given budgets or equipment to meet all perceived needs—clearly that would be irresponsible and a waste of valuable resources. However, while likely threats can be countered, sudden changes in strategic outlook or regional stability can give rise to the rapid onset of new and unexpected threats, whether these be military, economic, demographic, ethnic or socially based.

As previously mentioned, assumption-based planning has served Australia well in the past and there is every indication this technique will continue to be used with success in

the future. Unless there is some radical change in the balance of power in Asia-Pacific, such a method of defence policy making is not unreasonable. Clearly then, the challenge for the future will be threefold. First, to correctly predict the force requirements to respond to those 'credible' contingencies. Second, to draw a line between essential and the 'nice to have' and third, and by no means least, to stand against political agendas at the expense of sound national defence strategy. Undoubtedly, how RAAF leaders tackle these challenges will determine the shape and capability of the air force after the turn of the century.

The ADF Force Development Process

Force development is the process of identifying and planning the acquisition of new capabilities required for the ADF within strategic and financial guidance. Force development depends on a number of separate but related areas of activity. These include strategic guidance, resource guidance, military operational concepts, force structure planning, and the formulation and progression of capability proposals, as well as scientific, analytical and committee activities. Most importantly, the capabilities sought must be blended into a total programming and budgeting context including manpower, training, infrastructure and other through-life cost considerations.

The force development process is extremely complex and beyond detailed discussion here⁸. Nevertheless, the sequence for developing proposals from strategic and resource guidance up to the project approval stage involves a number of related steps, namely:

1. strategic and resource guidance;
2. development of ADF Operational Concepts to meet credible contingencies;
3. development of the Ten Year Development Plan;
4. preparation and review of Defence Force Capability Proposals;
5. preparation and review of Major Capability Submissions;

6. inclusion in the new investment component of the Five Year Defence Program; and project approval.

Once the project is approved, then tenders are called, contracts signed and eventually, the capability is brought into service. This whole process usually takes about five years, but given the complexity of modern military systems, the expectation is that it will take even longer in the future. Hence, force structure changes cannot be accomplished quickly and thus, the decisions on equipment purchases in particular need to be very carefully considered.

Factors Affecting Force Structure

Given the long lead time from project proposal to in-service operation, force structure planning must be reasonably long term in its prospects. This means that planners must have the foresight to look into the future to ensure that the nation gets value from its defence dollar and does not waste resources on dated technology or concepts.

There are a myriad of factors that affect or condition force structure development. In the Australian case, force structure will continue to be guided by the defence of Australia, with regional engagement, deployments, peace operations and national civil tasks (disaster relief, etc.) being of much lesser importance. Moreover, the cost of new equipment means that a total rebuild of Australia's force structure would be prohibitive, so any changes will have to be gradual and programmed well in advance. To meet the defence of Australia needs, the force structure must be consistent with government guidance and be based upon several predetermined conditions. First, priority will be given to surveillance, reconnaissance and intelligence assets to provide much needed warning time. Any enemy must then cross the air-sea gap and thus air and naval assets will form the first line of

defence. Should these assets be unsuccessful in stopping a determined enemy, a highly mobile land force will also be required. Finally, as long warning times can allow expansion of force capability before the full extent of the threat emerges⁹, priority must also be directed to meeting short warning conflict scenarios.

Force structure development will be affected by a number of factors. Among them are:

- The nature of the threat or predicted credible contingencies,
- The defined operational requirement and proposed operational concept,
- Technology and its supportability,
- Manpower, and
- Defence budgets and resourcing.

Each of these will not be expanded here, suffice to say that Australia has entered a period of balancing resources against operational requirements. Given a more 'joint' world, individual Service force structure development is now to be placed a distant second against the structural needs of the joint force and the 'quality' of that force may now degrade as the quantity has degraded in the past.¹⁰

What then does this mean for the air force after next? Clearly the answer is multi-faceted. First, there will be fewer aircraft, and consequently fewer aircrew needed to complete the RAAF's assigned roles. This will later impact upon the senior RAAF command appointments of all-pilot/engineer mix at the upper echelons¹¹ and given its logical conclusion, such a mix will no longer be sustainable. Australia post-2010 faces the very real possibility of a non-pilot, non-engineer chief of air force for the first time ever. Second, expensive aircraft like the F-22 (at around US\$100 million per copy) can no longer be afforded by even the world's largest air forces with far larger budgets. This begs the question, does Australia actually need such a capability? If the answer is no, then

a far less capable multi-role platform should be considered, with air-to-air refueling capability and a suite of superior 'smart' weapons to compensate for lack of state-of-the-art aircraft technology. Finally, if the operational and exercise tempo remains unchanged and manpower cuts have already been made to generate savings, logically, any more cuts must come from the acquisition budget.

An Australian Air Force Structure of the Future

Given the determinants of force structure in the Australian defence environment, what then should Australia's force structure of the future look like? Clearly, Australia will continue to be constrained by both budgets and manpower. That said, then the logical approach would be to continue to use advanced technology to meet the most pressing defence needs. If that is accepted, then to maximize future operational capability, there are six key areas that defence planners should concentrate on.

Greater Precision and Lethality

Precision and lethality allow a much more rapid pace of modern warfare. In past centuries, wars often took decades to fight for an outcome. This century, wars generally took years to fight, but in the post-Gulf War era, wars now take only months to fight. In the future, wars may be over in a matter of days or even hours, with higher levels of (discriminate) destruction possible, but with fewer casualties and less suffering than in the past.

With limited number of weapons systems capable of delivering ordnance over long ranges, each weapon must hit the target and have a high probability of a kill. Australia has already gone down this path, adopting PGM technology in the early 1980 and following it

up with the acquisition of missiles such as Harpoon, HARM and AIM-7 Sparrow. Such must continue to be the case. In the near term, Australia should pursue AMRAAM and the next generation of PGM kits or missile technology.¹² In the longer term, development of or at least production under license of an indigenous PGM capability in country will be essential.

Survivability

Given the currently small and ever decreasing numbers of airframes that nations like Australia can afford, attrition management will become crucial. Although the focus in the past has been on the capability of the platform (speed, range, maneuverability, endurance etc.), this is no longer the case. The platform is now just the launch vehicle and it is the weapon that is becoming smarter and more important. In the longer term, there is a high probability that the manned strike aircraft will be replaced by smaller, more maneuverable, stealthy UAVs, but for present considerations, it is weapons technology that is coming to the fore.

Any air weapons system of the next generation must have high survivability. This is for two simple reasons. First, there will be fewer platforms available to campaign planners due to their high cost. Second, as Australia's military capability develops, so to does that of any potential enemy. Sophisticated, deployable air defence systems, advanced EW equipment and deception methods are readily available with the potential to defeat even the most advanced airborne platforms. The ability to survive, release weapons and return safely will mean that the next generation of strike/attack aircraft will likely have multi-spectral stealth features built in or rely on the penetration capability of the weapon it releases.

In addition, and as importantly, the C⁴I systems that are to be employed to command and control future operations must also be made survivable. Such systems must be redundant, integrated and protected against information warfare and electronic warfare techniques that would otherwise seek to render them ineffective. Particularly in a joint and combined warfare environment, interoperability, security and multiple-pathing (redundancy) will help to minimize disruption caused by a technically competent enemy seeking to attack a crucial component of Australia's fighting ability. C⁴I protection is already the *sine qua non* of survivable command and control networks and so such developments as IW hardening and counter-penetration measures must be incorporated in any future developments.

Speed of Deployment and Response

Although Australian defence planning assumes some degree of warning time for a large scale attack on Australia, such may not be the case for smaller scale raids or the more likely, instability in regional areas. If Australia is to first defend itself and second support the region, a rapid, dependable deployment capability for all three services will be essential. A robust airlift capability is one method of ensuring rapid (within 24 hours) response and so heavy, fixed wing (C-130) and lighter rotary wing (such as CH-47 and perhaps V-22 Osprey) aircraft will be needed. Speed of deployment also means speed of resupply.

Better, Robust Logistics and Logistics Support

The oft forgotten logistics tail is also now recognized as of utmost importance. As weapons systems become more complex, any protracted operations will have greater need

for logistics support. Just-in-time delivery techniques, cradle-to-grave item tracking and modularized packaging of flyaway kits are but a few methods Australia should adopt today. In addition, Australia's policy of contracting out deeper maintenance, maintaining an Australian defence industrial base and seeking Australian preferred suppliers all makes sound economic and military sense.

More Versatility and Multi-Role Capability

One of air power's enduring characteristics is flexibility. This will be even more important in the future and particularly as airframe costs spiral. However, many modern systems are designed to be capable of all weather, day/night operations and multiple roles through adaptive software and modular add-ons (such as reconnaissance packs, EW pods and a range of different weapons). Australia should take advantage of platforms and systems that offer a variety of roles. An example of this concept is the recent purchase of BAe Hawk 100 aircraft as a Lead-in Fighter (LIF). This aircraft will primarily be used for advanced flying training for those selected to fly F/A-18 and F-111 aircraft but should a contingency arise, it could quickly be converted to a light ground attack aircraft, airborne forward air controller or even communications relay.

Ability to Force Expand Rapidly

Given the nature of Australia's defence policy, Australia's defence forces will remain small even by regional standards. The 'core force' concept¹³ of the past has lost favour simply because it was impossible to meet manning levels for even a minor, protracted contingency, so the focus evolved to filling the longer lead time appointments first. This,

however, relies on the retention of key personnel (such as pilots, air traffic controllers and electrical engineers) which continues to be a problem.

Like it or not, greater emphasis must be placed on reserves and the possibility of part-time contracting of aircrew, engineers and technicians for a fixed period after they leave the service must now be considered¹⁴. Training periods are now longer than the length of expected contingencies and the war may be lost before fresh, trained replacements can be produced. Criss and Schubert¹⁵ have identified manpower as *the* crucial factor in the ability to sustain operations beyond about six months and with the introduction of national service or a moratorium on resignations extremely unlikely, this situation will not improve in the medium to longer term.

The Air Force After Next

With an understanding of these key features of a force structure for 2010, what will such development involve? Inevitably, the answer is that some current capabilities will be retained (e.g.. manned transport aircraft) and some new capabilities must be acquired (e.g. space based surveillance). The force after next will likely make use of the following:

Long Range and Responsive Airborne Platforms

Given Australia's geostrategic factors and credible contingency factors, long range and endurance, responsive air platforms will still be required. All new airframes should be fitted with air-to-air refueling capability regardless of whether they are currently deemed to be 'long range'. Responsive means that they must be able to undertake the mission at short notice. Ideally, this would suggest little or no maintenance, but such would seem unlikely in the near term.

More System Upgrades

As aircraft themselves become more expensive, an increasing number of system upgrades and life-of-type extension programs will be required. If the aircraft is merely the carrying mechanism for a long range 'smart' weapon, then great sophistication in the quality of upgrade may not be required. The 'smart' weapon and C⁴I supporting system should now be the focus of new acquisition programs.

Greater Use of Space

The air force must make use of space. Exploiting space as a part of the vertical dimension will be crucial to the continued maturation of air power in the Australian environment. Initially, communications, surveillance and reconnaissance from space would be ideal candidates to commence a space program with, particularly as they are less threatening.¹⁶ Already, the ADF makes use of other nation's mapping, meteorology, hydrography, SAR and navigation space systems to great effect. In the future, it may not be necessary to operate a totally military owned satellite constellation, but merely tap into the growing number of commercial systems presently available. Fear of access denial in times of tension could be tempered (again risk management) by making such systems redundant through multiple means, such as redundant but lesser capable terrestrial methods. A good example of this would be Australia's proposed surveillance shield of Jindalee over-the-horizon radars, ground-based radars, AEW&C and eventually, space sensors. Each complements the other, but the loss of one does not shut down the whole system.

Planning to use space is potentially a huge and long term investment and so it is crucial that a sound space policy be developed by government which would allow the

selective and sequenced progression of an Australian space plan. The plan would allow budget allocation, phased development and would likely involve both military and civilian users. A government policy together with budget commitment is required now if space is to become part of the ADF's power projection post-2010. Without coherent government direction, space usage is likely to become *ad hoc*, uncoordinated and rely heavily upon second user involvement¹⁷.

In time, space can also offer more focused intelligence collection, electronic and information warfare opportunities and perhaps even weapons basing. That level of technology, however, is beyond the time-frame of this paper and will not be discussed further, but as a precursor, it is time now that the RAAF started to think in terms of aerospace power. Such a philosophy demands a complete integration of air and space power thinking which in time, will lead to the development of a force structure capable of operating across the continuum of air and space and a robust doctrine to support it.

Non-Lethal Weapons

An emerging field of technological development is that of non-lethal weapons.¹⁸ Such technology was first used with limited effectiveness in 1995 in Somalia¹⁹ by the USMC and in cases when the object is to stop rather than kill, then such technology may become part of the modern air force arsenal of the future. Could we be entering a time when for certain scenarios, not hitting the wrong target is as crucial as hitting the right one or when even high enemy casualties could cause failure in public support? If so, then non-lethal weapons may provide an answer.

One of the problems for air forces during peacetime is enforcing no-fly zones without having to resort to shooting down any transgressor. Non-lethal technologies include

directed-energy weapons to temporarily blind crews, chemical or biological agents that can degrade an aircraft structure, fuel or crew performance, and electromagnetic energy systems that can disable flight controls or on-board computers. The object is to force the violating aircraft to abort its mission, not destroy it. Some other operational scenarios might include:

1. preventing violation of air blockade,
2. preventing reconnaissance and intelligence gathering,
3. preventing combat aircraft from using certain airspace,
4. preventing air strikes against civilians, friendly troops or naval forces, or
5. denying enemy runways, depots and ports.

Unmanned Versus Manned Aircraft

Unmanned Aerial Vehicles or UAVs have come a long way since the earliest use of such systems in World War II. Modern systems are classified according to role and three types are now available. These are Uninhabited Combat Aerial Vehicles (UCAVs), Uninhabited Reconnaissance Aerial Vehicles (URAVs) and Unmanned Aerial Targets (UATs).

In future high threat environments, UCAV systems will be much more survivable and possibly cheaper than their manned equivalents.²⁰ This technology is perhaps in the post-JSF time-frame of 2020, but such systems can already be constructed today. For example, cruise missiles are merely one way UCAVs and development of extant systems such as *Darkstar* into UCAVs that could carry smart munitions would be a relatively simple task.²¹

UAV technology development will perhaps be more important in the reconnaissance and surveillance role. Australia's vast area of land mass with sparse population makes monitoring illegal activities extremely difficult. One solution is a tiered system of

surveillance and reconnaissance assets which would include space based systems, ground based radar systems and airborne response systems including long endurance UAVs supplemented by manned platforms when necessary. As British air power commentator Air Vice-Marshal Tony Mason has so aptly put it, 'Air power is about the exploitation of the third dimension *by* man, not necessarily *with* man'.²²

Better C⁴I and Control Warfare

Key to any modern operation will be command, control, communications and intelligence superiority, and the ability to conduct control warfare. Few military analysts would argue that superior C⁴I is essential for success in today's offensive operations. As such, the development of a redundant, secure, multi-layered C⁴I network must take priority in developing the force structure of post-2010. As an integrated, yet small and dispersed force, for the ADF such a requirement makes even more sense. Miniaturisation, high speed computers, innovative software and pre-existing fibre optic cabling will make this possible within Australia's own industrial capability.²³

Control warfare seeks information and knowledge dominance over an enemy. Such dominance can facilitate 'by a quantum margin the effectiveness of a given amount of combat power by allowing far more to be done by far less'²⁴ Often considered the 'fifth dimension' in warfare, information offers the possibility of expanding beyond the previous dimensions of land, sea, air and space through the exploitation of total battlefield knowledge while denying such knowledge to the enemy.²⁵

According to Nicholson and Stephens, control warfare is distinguished by several features:

...a wide range of sensors which provide real-time data on what is happening in the battlespace; the skillful application of sophisticated computers and communications to facilitate rapid information analysis, decision making and knowledge transfers; advanced command and control systems to turn knowledge into action; and advanced offensive weapons systems, especially high speed, highly maneuverable platforms and precision guided munitions.²⁶

Such techniques are not beyond Australian capabilities and should be pursued for both defensive and offensive operations. Initially, a defence against such methods should be developed so that Australia does not fall trap to the enemy employing such techniques against it as a 'first strike'. The trouble in future will be to decide when information attack becomes a warlike act and who is perpetrating the crime.

More Effective Defence Systems

Anti-Ballistic and cruise missile defence systems have not been seriously considered in Australia in the past, largely due to the cost and the low level of extant threat. In the longer term (perhaps beyond 2015), however, it is likely that these systems will become a threat, not just to Australia, but also to those in the region. Australia should consider the development of some form of mobile ABM-Cruise defence either alone, or more likely as part of a consortium or alliance.

Joint/Combined Operations

The ADF already operates well as a joint force but there remain a number of interoperability issues that must be resolved. Communications, doctrine and asset management are but a few. The future ADF must emphasize requisite joint operations for several reasons. First, jointness offers certain economies of scale and streamlining of the application of military power. Duplication of effort cannot be afforded as resources will

remain scarce. Second, the army concept of ‘combined arms’ should be adopted in training as it will give commanders a better appreciation of the whole, not just their Service’s solution. In any future operation, each component will have its role to play and it is probable that the air force will firstly be required to gain and maintain local air superiority, then destroy strategic targets beyond the surface battlespace, and also support the surface forces²⁷. This is essentially the three air campaigns specified by both ADF and Australian air power doctrine of the present.²⁸

Air Assets for a 2010 Aerospace Force

If we accept the above conditions as mandatory for the future Australian Air Force structure, and also consider that radical change is out of the question, then how do we develop the air assets needed to progress the roles and missions expected of it? Conversely, what platforms should be acquired and developed to fulfill those roles? One possible scenario is depicted in Table 4.

Table 4. Evolution of RAAF Aircraft Types

Role	1997	2000	2007	Post-2010
Fighter/Strike/Recce	F/A-18A/B F/RF-111C/G BAe Hawk (on order)	F/A-18 F/RF-111C/G BAe Hawk	F/A-18 F-111C/G BAe Hawk Enhanced Recce (URAV)	New Strike/Fighter? BAe Hawk Enhanced Recce (URAV)
Transport	C-130E/H DH4 B-707 - AAR	C-130H/J DH4 B-707 - AAR AP-3C	C-130H/J New Light Transport B-707 - AAR	C-130J (Tsport & AAR) New Light Transport
Maritime Patrol	AP-3C		AP-3C	New LRMP (poss C-130J)
AEW&C			C-130J AEW&C	C-130J AEW&C
New			Space Based Surv/Comms EW capability	Full Spectrum Space Full IW capability

Such a proposed force structure is not at odds with strategic guidance, reduces the number of airframe types from 11 to 6, 5 or even 4²⁹ and would be sustainable in the longer term while maintaining a credible level of defence capability. Only one area of possible future airframe acquisition is missing, that of Special Operations and Combat SAR (SOF/CSAR) Helicopters. Although the surface components operate all Australia's rotary wing aircraft, it may also be prudent to consider investment in more capable and specially equipped helicopters designed for SOF/CSAR missions. Such assets would be strategic in nature and would not necessarily be tied to the land or naval concept of operations.

Conclusion

The next generation military will be much smaller and increasingly a joint force, with less traditional Service parochialism. It is also apparent that it will continue to be all-volunteer, forcing greater use of reserves, with technological solutions replacing manpower shortages whenever possible. As Elliott Cohen has recently put it; ‘The balance between quality and quantity has shifted in favor of quality’³⁰. Likewise, the next military will have a greater orientation towards information and space warfare, making the soldier, sailor and airman of the future an information warrior as much as a war fighter in the traditional sense.

In particular, the air force of the future will be characterized by long range, with a high degree of survivability and the ability to concentrate force when and where necessary. High technology solutions must be made affordable and cost effective and increased cost of ownership must not outweigh the gains such technology provides. Australia will need to use technology to improve its ability to engage in combat and win, regardless of the level of threat. In determining key development areas, care must be taken not to simply list all emerging technologies, as such a list inevitably would be too expensive to pursue. It would be more relevant to determine the minimum number of capability areas that can be associated with Australia’s defence and subsequently, the RAAF’s specific roles. Most importantly, defence planners need to determine what they require of technology, not just develop capability based upon existing technological achievements.

Perhaps not surprisingly, the air force post-2010 will continue to be constrained by both manpower and financial resources. This means that smarter ways of employing resources must be found and exploited. One method would be to reduce the number of

different airframes to minimize logistics and maintenance costs. Similarly, investment in smarter weapons rather than expensive airframes may also provide a solution. As force structure is difficult to change, any alterations will have to be done gradually over time. What is certain, however, is that the air force of the future will have also to consider innovative way of employing aerospace power if it is to remain relevant to the defence mission.

Notes

¹*The Military Balance 1996/97*, IISS, Oxford University Press, Oxford, 1996, pp. 177-78.

²These include the Programs of the Vice Chief of the Defence Force and each of the Service Chiefs.

³ADF Command Arrangements, a paper released by HQADF, Jan 1996, para 6.

⁴See Coulthard-Clark, Chris (ed), *The Qualitative Edge*, AGPS, Canberra, 1993.

⁵ *Defending Australia 1994*, Australian Government Publishing Service, Canberra, 1994, chapter 5.

⁶ This definition is very broad and can include peacekeeping, peacemaking, peace enforcement, stability ops, non-combatant evacuations and counter drug, counter terrorism missions.

⁷ Snow, Donald M., 'Security and Politics', *National Security*, 3rd Edition, New York, St. Martin's Press, Chapter 2, 1995, p 39.

⁸ Defence Instructions (General) DI(G) Admin 05-1 and DI(G) Admin 42-1.

⁹ In some ways, this logic is flawed as it now takes up to five years or more to field a new piece of defence equipment. This also assumes meeting recruiting targets, training on sophisticated equipment and deploying to meet the threat.

¹⁰ At the end of World War II, the RAAF was the world's fourth largest air force (after US, Soviet Union and UK). In 1997, it is one of the West's smallest.

¹¹ As of March 1997, of the RAAF's eight most senior appointments (air marshal—3 star and air-vice marshal—2 star), all are either pilots or engineers. This has been the case for the last 10 years.

¹² PGM kits are laser detector and tail fin kits that strap onto a conventional general purpose bomb. They are much cheaper than a missile, but have not propulsion system and are thus range constrained.

¹³ The thinking of the 1970s was based upon a 'core' force of permanent forces who would both fight an enemy incursion and rapidly train up replacements as needed. Training times, weapons and systems numbers all preclude this happening.

¹⁴ Australia's use of Reserve forces has been minimal in the past, due mainly to the permanent force being able to satisfy defence needs. Hence, the Reserves have been the

Notes

poorer cousins of the permanent forces and received piecemeal training and exercise opportunities.

¹⁵ Criss, P.J. and Schubert, D.J., *The Leading Edge: Air Power in Australia's Unique Environment*, Canberra Paper No 62, SDSC, Canberra, 1990, pp. 135-40. Emphasis added.

¹⁶ Australia already has a Defence Space Directorate. See Wren, Squadron Leader Graham G., 'The Role of Space in Australia's Force Development', *Australian Defence Force Journal*, No 118, May/June 1996, p 7.

¹⁷ The incorporation of space as a forth element of defence is unlikely, particularly with force development of space issues currently residing with the Director General of Force Development (Aerospace), an air force officers assigned to a joint billet.

¹⁸ See Casagrande, Ric, *Non-Lethal Weapons: Implications for the RAAF*, Paper No 38, RAAF Air Power Studies Centre, Canberra, 1995.

¹⁹ *Defense News*, 27 February 1995, p 28.

²⁰ There will be no need for cockpits, instruments, environmental control, oxygen nor space and fuel to carry these items.

²¹ Darkstar is a Tier III minus system. Developed by Lockheed-Martin's 'Skunk Works', unveiled on 1 June 1995 and test flown on 29 March 1996, the UAV has many B-2 stealth features and has been specifically designed to avoid intercept by fighters which are considered its biggest threat. Darkstar prototype crashed on its second flight due to unspecified causes. Lax, Mark and Sutherland, Barry, *An Extended Role for Unmanned Aerial Vehicles in the Royal Australian Air Force*, Paper No 46, RAAF Air Power Studies Centre, Canberra, 1996, p19.

²² Mason, AVM Tony, RAF (ret.), *Air Power: A Centennial Appraisal*, Brassey's, London, 1994, p 276. Italics in original.

²³ Australia leads the world in the development of digital data transmission networks using fiber optic cables as well as maintaining a small but efficient software development industry.

²⁴ Nicholson, AVM P.G. and Stephens, Alan, *New Era Security and the RAAF*, Paper No 43, RAAF Air Power Studies Centre, Canberra, 1996, p10.

²⁵ Correll, John T., 'Signs of a Revolution', *Air Force Magazine*, August 1995, p 2.

²⁶ Nicholson & Stephens, *loc cit*.

²⁷ See Bowie, Christopher, et al, *The New Calculus: Analysing Air Power's Changing Role in Joint Theatre Campaigns*, RAND, Santa Monica, 1993, p38.

²⁸ *ADF Publication 6— Joint Operations*, Supplement 3—Air Operations and *The Air Power Manual*, 2nd Edition, RAAF Air Power Studies Centre, Canberra, 1994, pp. 41-43.

²⁹ The 11 considers differing models within the fleet eg RF-111, F-111C and F-111G. It may also be cost effective to consider C-130s for the replacement Caribou (DH4) aircraft, making it 5 types post-2010.

³⁰ Cohen, Elliott, *A Revolution in Warfare*, *op cit*, p 47.

Chapter 5

Air Power Issues

As an organisation, the RAAF will have to draw the line ruthlessly between what is essential and what is merely 'nice to have' and, as the ADF's prime provider of air power, we will have to display principle and determination in advocating the position we believe represents the 'essential' air power needs of our joint force.

—Air Marshal Les Fisher
Australian Chief of the Air Staff

Air Power as a Component of Military Force

For 75 years, Australia has in part relied on air power to both defend the country from attack (as was the case in World War II) and more recently, as an instrument of national policy. Because of long distances between cities, the large and sparsely populated land mass and Australia's relative geographic isolation, air power has been seen as not only the first line of defence, but also the first strike option if required. Australian air power has been effective for a number of reasons. Use of technology, widely dispersed bases and well trained personnel are vital to continued effectiveness both as a deterrent and as a tool of government policy. As US air power authority Elliott Cohen has aptly stated:

...air power becomes effective through an elaborate *physical* structure of a variety of aircraft, bases, and supporting facilities; a *human* structure of

pilots and technicians; and an *electronic* structure of sensing and communication.¹

Aerospace power, together with information (or knowledge) power, has become the dominant force in most circumstances of war. It now has growing applications for ‘fighting’ and maintaining the peace. However, air power cannot do everything and inevitably, as with the battleship and the tank, air power too will become obsolete. It will eventually be replaced by some other dominant form of combat power such as lasers or space weapons. However, that time has not yet come.

There are now pressures for reduced costs which will lead to reduced deployments, training, exercises, and pressure to likewise reduce maintenance and logistics support. There will thus be a continuing emphasis on multi-role/multi-mission capabilities which will result in:

- a reduced number of aircraft types in inventory
- multi-role training of crews or role specialist crews ‘sharing’ aircraft
- a shift towards weapons rather than airframes penetrating target areas
- flexibility to adjust force balance and packaging to suit the scenario
- better mission support equipment
- greater use of space

Additionally, air power in future may devolve responsibility onto controllers and integrators rather than the traditional pilot-warrior class. Having stated the position, what then for applying air power in Australia’s region of influence in the future?

Applying Air Power in the Region

The key features of air power, i.e. ubiquity, speed, flexibility, and responsiveness, make air power a critical element in the defence of Australia. This is because of the nature of Australia’s geography and the small size of its defence forces relative to the size of the

area to be defended. The major limitation of air power, that of base dependence, is already being addressed through the completion of the chain of northern air bases and a progressive move of the RAAF and Army into northern Australia.

There will continue to be three key and lasting elements of Australian defence strategy; denying the sea and air approaches, strategic strike and response to credible contingencies (including anti-lodgement operations).

Denying Sea and Air Approaches

The basis of Australia's defence strategy is defeating a potential enemy by denying the sea and air approaches. A basic requirement to achieve this is knowing what is going on in the airspace, on the sea surface, and to a lesser extent, under the surface. This requires surveillance and information gathering in both peace and war.

Surveillance

Broad area surveillance of 10% of the earth's surface is an essential part of carrying out the defence strategy. Australia needs access to high quality information. In the real world with limited resources, complete information will never be available. Key to the ADF's ability to have 'information' dominance will be:

- the introduction into service of the Jindalee (Over the Horizon Radar) Operational Radar Network (JORN)
- the acquisition of Airborne Early Warning and Control (AEW&C) aircraft
- the completion of a chain of ground based radars
- upgrade of the AP-3C maritime patrol aircraft for the shorter term and an eventual replacement around 2010
- maximization of the use of space.

Each of these projects makes use of the aerospace medium and is either underway or being considered before the turn of the century.

Information

Information and intelligence are also vital. Gathering information is only one facet, with controlling that information the other. Arguably, information control could become the prime offensive ‘campaign’ of the future². If, as some defence commentators have suggested, that information has become a nation’s centre of gravity, then the new ‘control warfare model’ may look like this:

Information Control		
Air Control		
	Sea Control	Land Control

In the past, nations projected land and sea power to fulfill their national aims. When the aeroplane arrived on the scene, air control become paramount before land and sea control could be fought over. Today, information control may become the over-arching form of control warfare, necessary even before control of the air need be gained. Partly for this reason, and partly for situational awareness, Australia places high priority on gathering, filtering and assessing information through reconnaissance, surveillance and intelligence measures. Thus information operations will be a key role for the air force post-2010.

Another factor that must be considered here is the possible trade-off between ‘information’ capability and ‘combat’ capability. At one end of the spectrum, if we have full information regarding a potential enemy’s activities, we would therefore require less combat capability. At the other end of the spectrum, if we have no information of enemy activities, very high levels of combat forces would be required.

The key dilemma for Australia is therefore one of achieving balance - the most effective mix of 'information' (which includes command and control) capabilities and 'combat' capabilities.

Australia's Future Security

The Peacetime Dimension

The security of Australia has two dimensions - peacetime and wartime. While the two are connected in some ways, we simply cannot afford to ignore the peacetime dimension at the expense of focusing on the wartime dimension because of the continued and regular military and non-military threats to sovereignty, primary and secondary industry, natural resources and the environment. Consequently, this paper will now examine the issues that confront the defenders of Australia in both circumstances. It must also be realized that these issues are very separate from domestic support, disaster relief and community assistance programs, humanitarian aid and peace operations. Nor do they include training or exercises designed to test and refine ADF readiness. Nevertheless, they all require the application of some form of air power. That said, there will be a growing requirement in future to monitor and control the following:

- The North-West Shelf and Bass Strait oil and gas fields which produce 90% of Australia's fuel requirements.
- The fishing industry which is now our fifth largest rural industry with exports of over \$1 billion in 1992-93.
- The inflow of illegal immigrants which has grown over the last 15 years and has implications for immigration as a whole and also poses potential health and quarantine risks for both humans and livestock.
- A growing international narcotics trade using Australia as a shipment base.
- A trade in Australian protected flora and fauna.
- The monitoring of marine pollution.
- Search and rescue responsibilities for 10% of the earth's oceanic areas.

This means that Australian air power must support long range maritime patrol, intelligence gathering, reconnaissance and AEW&C roles, regardless of other requirements.

The Wartime Dimension

Should Australia be faced with a serious threat to national sovereignty, then air power would form the first line of defence. Australian air power assets would be expected to defeat an enemy incursion as well as provide offensive action if required. In combating any direct threat to Australia, the concept of operations for the ADF rests upon defeating the enemy as far from our shores as possible. Should that strategy fail, the fall-back position would undoubtedly follow a four phase plan which would include:

1. A halting of any lodgement and the gaining of local air superiority.
2. Offensive action to achieve a stalemate which would minimize territorial loss.
3. A rapid build-up of anti-lodgement forces.
4. The waging of decisive combat operations to evict the enemy lodgment and if necessary, inflict punitive measures on the enemy's home territory.

Such a strategy would obviously involve the whole ADF in joint operations and hopefully, some form of combined operations with allies, regional and otherwise. Nevertheless, the support of allies cannot be assumed. To conduct such operations, the ADF would require fighter/strike, airlift and air support assets (such as AEW&C, AAR etc.).

But defeat of an enemy either approaching Australia or already lodged is only part of the problem. The ADF would also be expected to monitor and control a number of other activities including:

- Maintaining sea and air lines of communication open.
- Protection of coastal shipping, rail and road networks, noting that some Australian rural communities totally rely on these for their supplies and access.

- The protection of the offshore resource production platforms. Part of that protection would include a visible presence and regular surveillance of the offshore sites. It may also include man portable air defence weapons being deployed for such vital asset protection.

Again, maritime patrol, air defence and air support assets would be required.

Core Values

Values, Ethics and Leadership

An air force is more than just aircraft and weapons. The oft used cliché that ‘people are most important asset’ is true, but sadly not usually appreciated in the depths of peace. During such time, it is usually manpower and training that are cut first at the expense of preparedness. In developing the air force after next, it is now time to seriously review the values and ethical base of the force and place particular attention on leadership.

Australian ethical values are based upon the Judaeo-Christian heritage and so it is not surprising that such values and ethical standards are used as a basis for the air force’s values. The RAAF values³ are:

1. **Esprit de Corps**, enhanced by motivated and cohesive teams operating under effective leadership at all levels.
2. **Professionalism** demonstrated through competence, self-discipline and relevant training and processes.
3. **Flexibility**, inherent in the vitality and dynamic responsiveness of the individual and organization.
4. **Dedication** to duty and loyalty to the Service and thus, the nation.
5. **Courage**, both physical and moral.
6. **Excellence**, achieved through a process of continuous improvement.
7. **Ethical Conduct**, involving honesty and personal integrity.

These values can be summed up as loyalty, integrity and confidence. Such values are sound and should be continued to be used and taught in the future.

As the RAAF downsizes and brings new equipment into service, it will be greatly challenged over the next ten years in developing the future leaders of this altered force. For 75 years, the RAAF has been ably led by a small, yet essential group - pilots. While such leadership has generally been sound, in the air force of beyond 2000, the pilot minority may become less relevant to the day-to-day management issues and operations of the force as a whole. Smart weapons and control warfare will undoubtedly come to the fore replacing the aircraft as the symbol of power projection, which suggests commanders in future will have to have skills other than adequate flying ability.

Perhaps the best example of the kind of change predicted is the IBM computer company. Originally started and managed by computer experts, the company blossomed as it was providing a unique service but it gradually lost ground in the face of new and innovative competition. Sales and revenue fell drastically in the 1980s until a business manager was appointed as CEO. Knowing about computers made no difference, knowing a lot about organizations, marketing and having strong business sense meant everything and the company was saved. This is not to say the air force should be managed like a business. Far from it, but the air force deserves to be led by personnel with more than just flying skills. A deep understanding of organizations, operations and doctrine will be essential. In addition, the future leader must also have sound interpersonal skills, political acumen and be of impeccable ethical standing.

In 1989, the then Chief of the Air Staff instituted the General List concept which meant that officers of Group Captain (Colonel equivalent) rank and above would be employable in a much wider range of duties. However, caveating this decision were the requirements that only certain categories could hold certain positions. While this has

broadened career opportunities for some officer categories, others have not been so successful in breaking into the traditional pilot and engineer dominated senior ranks. Such a policy will have to change.

The size of the RAAF means that not all can or even do aspire to senior command positions. That being the case, and given the need for the best candidates to fill both RAAF and joint positions, it is also time to consider streamed career development beyond Group Captain rank. At general list, officers should be streamed either into the single service route or the joint route. The single service route will lead to wing, group and eventually, component command (ACAUST). The joint route will lead to base, joint task force or COMAST appointment and for a very few, appointment as CAF or even CDF.

Independence, Jointery and Air Mindedness

Much has been discussed about the ‘independence’ of air power and unfortunately the term has been misused in the past. Originally coined to suggest that the air force is the most qualified of the services to employ air power effectively and efficiently, independence has been taken to mean ‘doing its own thing’ which goes against strategic guidance, joint doctrine and Australia’s concept of operations. This in turn, has led some to suggest that given the preponderance air assets already amongst the army and navy, perhaps it is time to consolidate and revert back to only two surface forces where the beach formed the natural demarcation for purposes of command, control and employment of force.

Such logic ignores the full nature of air and space operations. While the surface forces each rightly have supporting air arms to help them win the surface battle, neither has the need nor requirements to fight the air battle on a theatre wide scale. The air battle includes gaining and maintaining control of the air, deemed essential for conducting joint,

unhindered operations, deep strike beyond the surface battlespace and joint force support which applies to all three environments. Arguably, an independent air force can best bring such assets to the theatre and best employ them to meet the joint force commander's requirements. It is perhaps for that reason that the CDF recently announced that the three services would continue to be maintained for the foreseeable future.

New Directions

This paper has covered a myriad of issues, in particular the focus on new directions for aerospace power projection in the Australian environment. Innovative methods and revolutionary technology have characterized air operations from the earliest times, so it should come as no surprise to find the RAAF at the forefront of change and development.

Some changes will be more radical and controversial than others, yet each promises to promote more effective and efficient operations in a world of growing uncertainty. Although many of these changes and potential changes have been discussed already, a further two must also be considered. These are the general move into space and doctrinal development.

A Move Into Space?

As previously mentioned, Australia is now on the verge of a move into space. But this is not new. Australia became the third nation into space with the launch of a small research satellite known as WRESAT from the Woomera rocket range in 1967.⁴ With British support, Australia continued to develop a rocket program until the mid-1970s. The space project was eventually canceled due to escalating costs. Given the constraints on the Australian Defence Force that are likely to continue well into the next century, the

redevelopment of a fully indigenous space capability is very unlikely. However, commercial opportunities and piggy-backing on allied nation's satellite launches holds far more promise. In addition, the next generation of light satellite (lightsats) offer a cost effective method for most nations, including Australia, to join the space club.

What then are Australia's options for space? Generically, military space missions fall into four functional categories: space support, force enhancement, space control and force application. These divisions are illustrated in Figure 6.

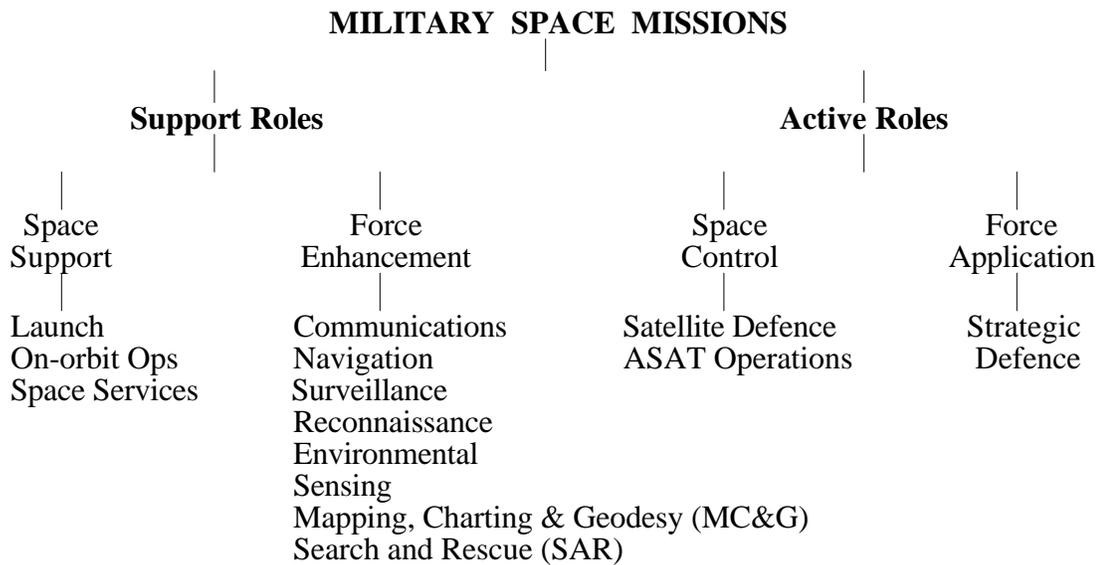


Figure 6. Military Space Roles and Missions

While not all applications are relevant to the Australian situation, in general, Australia must now consider space as an alternative to terrestrial based military systems. It is toward force enhancement that Australian efforts should swing. An indigenous communications, surveillance, remote sensing, mapping and SAR capability would appear to be ideal candidates to begin with which also offer little in the way of threat to the region while offering many positive gains. Should space become an operating environment for

the ADF, and should they arise, then responses to credible contingencies could receive valuable support from space based sensors. Examples of such support are listed at Table 5.⁵

Table 5. Space Support for Credible Contingencies

CONDITION	POSSIBLE SITUATION	POTENTIAL SPACE SUPPORT
Peacetime	Forward deployed forces in Malaysia, Cocos Island, PNG and SW Pacific	Strategic warning, Surveillance, Comms, Navigation, Weather and MC&G
Increased Tension or Special Operations	Potential for limited military operations	As above plus near real-time reconnaissance and C ³ I
Low Level Conflict	Enemy forces harassing shipping, remote settlements and outlying territories	As above plus global comms, weather and navigation
Escalated Low Level Conflict	Increased sea and air harassment, frequent intense raids, direct confrontation	As above with increased emphasis on near real-time reconnaissance and intelligence
More Substantial Conflict	Attempts by enemy to secure line of approach and invade Australia or territories	All systems at full war capacity

The table is illustrative only, but serves to identify some of the possibilities and application of space sensors. The ADF and the RAAF in particular must commence development of space based assets today for operations post-2010.

Doctrinal Development

The other area requiring work is doctrine. RAAF doctrine will continue to emphasize the fundamental importance of strong air defensive and offensive capability as a deterrent and to increase warning time through adequate intelligence and surveillance assets. Yet as the force develops so too the doctrine must mature.

Doctrine must remain fluid and be continually re-evaluated, tested and amended where necessary. To that end, the RAAF has established a review and publication process

based on a three year cycle.⁶ The approach is a systematic, continuing process based on five elements and involving several sequential stages within the process of reviewing, refining and endorsing doctrine. These four elements are:

1. The Air Power Doctrine Board (recommends to CAF for approval)
2. The Air Power Doctrine Working Party (coordinates, monitors and finalizes staff work for proposed changes)
3. The hierarchical command chain of the RAAF (responsible for the process of revision)
4. The AAP 1000, The Air Power Manual (record of doctrine).

The RAAF preferred doctrine development cycle is illustrated in Figure 7.⁷ This method has been proven rigorous and should continue to be used in future.

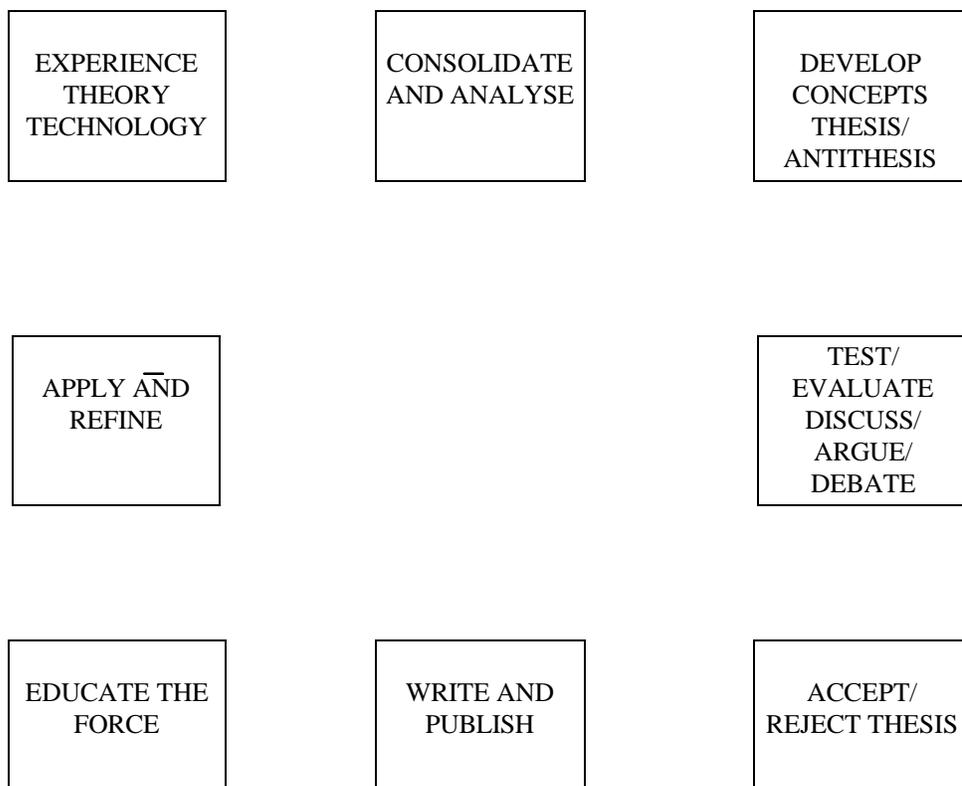


Figure 7. The RAAF Doctrine Process

To date, RAAF ‘basic’ doctrine has followed an evolutionary path, with the three iterations as illustrated in Figure 8. The 1998 version has been proposed by the acting Director of the RAAF Air Power Studies Centre, but is yet to be endorsed.⁸ This is a natural development from the earlier versions and is particularly suited to the Australian environment. Such a revision would support the changing strategic environment and yet retain flexibility for the RAAF to conduct a myriad of divergent operations.

1990	1994	1998?
Control of the Air	Control of the Air	Theatre Control
(OCA, DCA, SEAD)	(OCA, DCA, SEAD)	(Air Control, Surface Control, Information Control)
Air Strike	Air Strike	Strategic Strike
(Land Strike, Mar Strike)	(Land Strike, Mar Strike)	(Land Strike, Mar Strike)
Air Support for Surface Forces	Air Support	Force Application
(ASW, ASuW, Recce, Surv, AEW&C, BAI, CAIRS, SEAD, EW, Airlift)	(ASW, ASuW, Recce, Surv, AAR, AEW&C, BAI, SEAD, CAIRS, EW, Airlift)	(ASW, ASuW, Recce, Surv, BAI, CAIRS, BDA)
		Force Multiplication
		(AAR, AEW&C, EW, Space, Intelligence, Airlift, SOF ops)
		Force Support
		(CSAR, Logistics, Training, Recruiting, RDT&E, Base Defence, SEAD)

Figure 8. The Evolution of RAAF Air Doctrine

In the future, doctrine and doctrine development will become more important. This is for several reasons. First, it must be used for the education of RAAF members, sister Services and those outside the military as to how and why the aerospace power component is so important to projecting military power as a whole. Second, it helps develop an understanding between Australia and her allies, which in turn is significant to

interoperability, and third, it can be a valuable precursor to force structure development, particularly if the force structure is lacking or needs a change in direction.

The last area to consider is doctrinal education. The RAAF has taken the unprecedented step of including doctrine education in all of its professional education courses, including both officer and airmen ranks. This has been a major step forward and must be continued. No longer does a knowledge and understanding of the application of Australian air power belong to a chosen few, but by teaching doctrine, history and lessons learned, the whole RAAF corps has a better understanding of their contribution to air and space power in the Australian environment.

Conclusions

Despite its small size, the Royal Australian Air Force is a respected and professional force. For over 75 years, the RAAF has been a key component of Australia's defence posture, but as the world changes, so too must the RAAF respond to those changes.

Aerospace power, together with information (or knowledge) power, has now become the dominant force in most circumstances of war. The key features of air power, i.e. ubiquity, speed, flexibility, and responsiveness, make air power a critical element in the defence of Australia and this will continue to be the case for the future. Beyond the turn of the century, the rationale for the ADF and the RAAF in particular will continue to be the defence of Australia. There will continue to be three enduring components of defence strategy; denying the sea and air approaches, strategic strike and response to credible contingencies (including anti-lodgement operations). This suggests the continued

requirement for a balanced, professional force, and one capable of rapid response, well trained and equipped, and prepared for a broad range of missions.

As the RAAF downsizes and brings new equipment into service, it will be greatly challenged over the next ten years in developing both the most appropriate and cost effective force. Leadership will be key as new technologies, methods and roles are introduced. As the RAAF moves in new directions such as space and UAVs, less emphasis on piloting skills will be required from those at the top. This will mean a radical rethink about postings, officer education and training and promotion criteria for the air force after next.

In the post-2010 period, the RAAF will remain as the major provider of aerospace power in the Australian context. At the same time, Army and Navy aviation will also play a more prominent role in supporting the surface campaigns. The requirements for aerospace power and its potential uses are secure until a new weapon or system is invented to effectively counter it, but certainly current indications are that such a capability is a long way off.

Notes

¹Highlight in original. Cohen, Elliott A., 'The Meaning and Future of Air Power', *Orbis*, Vol. 39, No 2, Spring 1995, p192.

²Harvey, Group Captain John P., 'Current Air Power Issues' in Lax, Mark (ed), *Air Power Presentations—1995*, RAAF Air Power Studies Centre, Canberra, 1995, p 31.

³ Mazlin, D.J., (ed), *1996 Air Force 75th Anniversary*, Defence Directorate of Publications, Canberra, 1996, pp. 6-7.

⁴ WRESAT was launched aboard a US Redstone rocket into a polar orbit in November 1967. Morton, P., *Fire Across the Desert: Woomera and the Anglo-Australian Joint Project 1946-1980*, Commonwealth of Australia, 1989 provides a full description. Also noted in Wilson, Andrew (ed), *Jane's Space Directory 1996-97*, 12th Edition, Jane's, London, 1996, p 428.

⁵ Drover, Wing Commander K., *Space Power: Military Imperatives in Australia's Environment*, USAF Air University, Maxwell AFB, Alabama, 1989, p 53.

Notes

⁶ *AAP 1000 - The Air Power Manual*, 2nd Edition, RAAF Air Power Studies Centre, Canberra, 1994, Chapter 14.

⁷ Drew, Dr. Dennis, 'Inventing an Doctrine Process', *Airpower Journal*; Winter 1995, Air University Press, Maxwell AFB, p 44. Also discussed in Stephens, *op cit*, pp. 27-31.

⁸ Stephens, Dr. Alan, *Air Power Doctrine Revisited*, Paper No 44, RAAF Air Power Studies Centre, Canberra, 1996, pp. 20-27.

Chapter 6

Concluding Remarks

I want to be able in 2021, when celebrating the foundation of the RAAF, to look back at the previous twenty-five years' history...and say: these were its best years; this was when the Australian military came of age and gave this nation what it sought from its defence force, a safe environment and a secure future.

—Air Marshal Ray Funnell
Australia's First AWC Graduate, Class of 1972
and former Chief of the Air Staff

The global security environment is changing. With the end of the Cold War, nations are now re-evaluating their security and defence needs and realigning themselves within their own spheres of influence. In Asia-Pacific in particular, this has meant a general re-evaluation of security outlook; from inward focus concentrating on insurgencies and ideological upheaval within borders, to outward focus concentrating on protection of territories, economic zones and ensuring freedom of trade and access. As such, many nations in Asia have commenced a rapid and in some cases massive modernization of their older, less capable military hardware. Perhaps the greatest modernization effort has been to air forces, with emphasis now on acquiring a power projection capability. Military air forces with long range, rapid deployment ability and advanced weapons systems have ensured a less certain balance of power, with a number of regional nations now seeking hegemony over the remainder.

Other changes are occurring which will affect the future design and development of military forces. Global trends indicate a move towards economic blocs, population pressures in several regions and a broader awareness of the environment. Most notable of these trends is the ceaseless technological revolution which is allowing even small nations to own an effective military force. Such a change in the security environment has not been missed by Australian defence planners, who for many years have developed the ADF against non-threat specific scenarios. Assumption based planning techniques have been used whereby Australia developed its forces not against a specified threat, but against a military capability that could credibly be brought to bear with only a short warning. Longer warning would, theoretically at least, allow time to strengthen extant forces to defeat the new threat before it reached Australian shores. Such a planning strategy will continue to be used well into the next century.

As well as defence of Australia, the ADF is also chartered to maintain strong alliance relationships with a number of countries, most notably the US. The form these alliances take has to date been bilateral, but with consideration of security issues within Asia-Pacific organizations such as the ARF and APEC, this may change in the near future. Together with alliances, Australia has also embarked upon a regional engagement with Asia to enhance international relations, security and trade within the region. This has been achieved through a number of confidence building measures and exercises and is now set to expand even further. In all these activities, the RAAF is a major player.

This means that the extant roles of the ADF will continue as is to focus on surveillance and information gathering as prime peacetime activities. Armed force would only be required when a threat arose, and then only in defence of the country itself.

Ideally, any threat would best be defeated offshore, thus giving priority to the development of air and naval forces able to defeat the enemy as far away as possible. As such, the current RAAF roles are also expected to remain unchanged which means that some form of air defence, strike and air support campaign capability will continue to be required.

Australian defence planners will continue to be constrained by both budgets and manpower, thus advanced technology will be employed to offset deficiencies and meet the most pressing defence needs. As the RAAF downsizes in the next few years, the challenge will be the ability to provide sufficient and effective aerospace power to fulfill the needs of the government and the expectations of the Australian people. Given these constraints, to maximize future operational effectiveness, defence planners should concentrate on six key areas:

1. Greater precision and lethality,
2. Survivability,
3. Speed of deployment and response,
4. Better logistics,
5. Versatility and multi-rolling, and
6. The ability to expand the force rapidly.

This will have impact upon future the air force which will take at least ten years to develop. That means a reconsideration of future directions now, before lead times lengthen to the extent that in-place force structure becomes irrelevant to future defence needs. In considering the composition of that future force, although the roles will likely remain unchanged, the means to achieve them will not stay static. As well as the traditional fixed wing aircraft such as C-130s, there will also be a need for more unusual

methods and smarter ways of stretching valuable defence dollars. In essence, the RAAF post-2010 must consider the following imperatives if it is to maintain that qualitative edge:

1. Long range and responsive air platforms
2. Make greater use of space
3. Introduce URAVs as the preferred reconnaissance platform
4. Continuously improve C⁴I and establish a control or information warfare centre
5. Develop more effective defensive systems for airfields and other key installations.

Because aerospace power is expensive to own and operate, to be cost effective, aerospace assets will also be used in a greater range of security scenarios. Peacekeeping, peacemaking and peace enforcement operations are the logical next step for RAAF operations. More system upgrades rather than equipment replacement strategies, the introduction of non-lethal weapons to broaden the range of missions and more combined operations will also become the norm. In the post-2010 era, aerospace power will remain a vital component of military power offering the Australian government a range of options and responses. Aerospace power's inherent characteristics of speed, flexibility and pervasiveness may make it a weapon of choice to either defend the nation from a distance or strike the first blow against an enemy.

The paper concludes that as a vital component of military power, the air force post-2010 will be expected to undertake all the roles presently allocated to it, but in addition, prepare to undertake information warfare operations and be flexible enough to respond to the full range of possible scenarios from domestic support to general war. The RAAF will remain a significant part of Australia's defence equation and will continue to contribute to peace and stability within Australia's area of influence well beyond 2010. Undoubtedly, RAAF development will continue to remain true to the air force motto—*Per Ardua Ad Astra*—Through Adversity to the Stars.

Glossary

ABM	Anti-Ballistic Missile
ADF	Australian Defence Force
AEW&C	Airborne Early Warning and Control
AMRAAM	Advanced Medium Range Air-to-Air Missile
ANZAC	Australia and New Zealand Army Corps
ANZUS	Australia, New Zealand, United States
APEC	Asia-Pacific Economic Cooperation (forum)
ASEAN	Association of South-East Asian Nations
AUSMIN	Australia-United States Ministerial (talks)
BWC	Biological Weapons Convention
C ²	Command and Control
C ³ I	Command, Control, Communications and Intelligence
C ⁴ I	Command, Control, Communication, Computers and Intelligence
CAF	Chief of Air Force
CDF	Chief of the Defence Force
CDR	Closer Defence Relations
CEO	Chief Executive Officer
COMAST	Commander Australian Theatre
CSAR	Combat Search and Rescue
CSP	Commercial Support Program
CWC	Chemical Weapons Convention
EEZ	Exclusive Economic Zone
EU	European Union
EW	Electronic Warfare
FPDA	Five Power Defence Arrangements
GDP	Gross Domestic Product
GNP	Gross National Product
HARM	High Speed Anti-Radiation Missile
IADS	Integrated Air Defence System
IW	Information Warfare
JORN	Jindalee Operational Radar Network

LDCs	Less Developed Countries
NAFTA	North American Free Trade Association
NATO	North Atlantic Treaty Organization
NPT	Nuclear Non-Proliferation Treaty
OAS	Organization of American States
OODA	Observation-Orient-Decision-Action
OTHR	Over The Horizon Radar
PGM	Precision Guided Munition
RAAF	Royal Australian Air Force
RAN	Royal Australian Navy
RMA	Revolution in Military Affairs
RNZAF	Royal New Zealand Air Force
SAR	Search and Rescue
SEATO	South-East Asia Treaty Organization
UAT	Unmanned Aerial Target
UAV	Unmanned Aerial Vehicle
UCAV	Uninhabited Combat Aerial Vehicle
UN	United Nations
UNAMIC	UN Advanced Mission in Cambodia
UNCI	UN Commission for Indonesia
UNTAC	UN Transitional Authority in Cambodia
UNTEA	UN Temporary Executive Authority
URAV	Uninhabited Reconnaissance Aerial Vehicle
VLSI	Very Large Scale Integration
WMD	Weapons of Mass Destruction

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