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NEW ERA SECURITY AND THE RAAF

By

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INTRODUCTION

The Royal Australian Air Force has been serving the nation for seventy-five years. That service has included operations in two world wars (the first as the Australian Flying Corps), the major conflicts in Korea, Malaya and Vietnam, and numerous smaller conflicts. In recent years active service has focused more on peace operations, which despite their name have on occasion been no less dangerous than armed conflict. Military actions have been complemented by civil aid, such as flood and famine relief and search and rescue.

Throughout that three-quarters of a century of service the RAAF has earned a reputation for excellence in peace and war as it has undertaken its mission: 'To prepare for, conduct and sustain effective air operations to promote Australia's security'. This paper examines the key issues which will affect the Air Force's ability to continue to fulfil that mission to the same high standards as it sets off on the demanding flight path towards its centenary.

In an uncertain world, one thing is certain. The task will be neither easy nor predictable. The next twenty-five years will present challenges which the Australian Defence Force has never previously experience. How successfully those challenges are met will depend in part on the Air Forces' ability to deal with new ideas, new technologies, and social and institutional change. Those changes, which will sometimes be dramatic, are embodied in the concept known as 'New Era Security'.

New Era Security presents the RAAF with a fundamentally different security environment from that of its first seventy-five years. For most of the RAAF's existence Australia's security outlook has generally been predictable (which is not to say it has been easy to manage). Before World War II Japan clearly represented a threat to the region, as did Germany to British interests in Europe; while from 1945 to the start of the 1990s the containment of communism and the tensions of the Cold War dominated Western security perceptions. As a junior member of the Commonwealth and the Western alliance, Australia ostensibly sheltered in the first instance under the protection of the British Empire and in the second under the 'Pax Americana'.

The success or otherwise of that approach to national security might be questioned. However, as far as the armed forces were concerned, and particularly the RAAF and the RAN, the arrangements at least simplified concepts of operations and force structure planning. Both services were, to all intents and purposes, Pacific outposts of the RAF/RN or USAF/USN, designed largely to fight alongside their British or American mentors in some distant theatre. At the risk of over-simplification, the nature of major conflict was also considered predictable: specifically, war would be fought between nation states and with conventional weapons.

Adding to the general sense of predictability was the organisation of Australia's armed forces. Until the early 1790s the three services were administratively independent, an arrangement which tended to insulate them from the imperative to develop sophisticated operational concepts, and instead fostered narrow thinking. While in the crucible of war Australian air, land and naval forces almost invariably combined effectively, their peacetime autonomy sometimes meant that they did not

come together as quickly as they should have; and that when they did, lives were lost and resources wasted because independence had been pursued at the expense of cooperation.

None of those relatively predictable conditions now applies. The organisational arrangements were among the first to change. It has taken almost twenty years for the full benefits of the Defence reorganisation of the early 1970s to become apparent, but in recent years the Australian Defence Force has achieved a degree of integration few military organisations in the world can match. The RAAF must now be viewed primarily as the major air power element of a cohesive, integrated defence force. The consequences of that change are both beneficial and complex. On the one hand, combat potential should be significantly enhanced; on the other hand, the men and women of the RAAF must ensure that, in a more competitive and demanding defence environment, they maintain professional mastery of their unique military skills. As the new Chief of Defence Force, General John Baker, noted in an important report some years ago, it is the Air Force's duty to ensure that the unique skills and combat power it represents are widely understood and appreciated.¹

Institutional integration has been accompanied by greater independence in national decision making. Several external events forced that shift. In the wake of Great Britain's withdrawal from east of Suez, President Nixon's Guam Doctrine, and the West's defeat in Indochina, successive Australian governments endorsed the notion of defence 'self-reliance'. That notion has been the centrepiece of the two most recent White Papers, *Defence of Australia 1987* and *Defending Australia 1994*. It is important to recognise that 'self-reliance' does not equate to 'self-sufficiency'. There is neither the intention nor indeed the need for Australia to be completely self-sufficient, especially in relation to major equipments, but the nation does have the capacity for self-reliance. This approach to security planning has profound implications for several important aspects of defence policy and operational capabilities, including force structure, doctrine, and command and control arrangements.

Defending Australia 1994 suggested the prescriptions it contains for national defence will be valid for about fifteen years, that is, until 2010. That nominal strategic currency will coincide with one of the most critical periods in the RAAF's history. On present indications, by 2010 the Air Force's two most important combat aircraft, the F-111C/G and the F/A-18, will be approaching obsolescence and may be replaced by a single type. The Boeing 707s are also scheduled for retirement that year. Although the P-3 and C-130 series of aircraft have been progressively upgraded and replaced by newer models, the types will have been in service for more than forty and fifty years respectively.

Thus, while there is every reason to be confident that in the next fifteen years the RAAF will remain capable of meeting its obligations to the ADF and the nation, beyond 2010 the outlook is complex to say the least. The fact that a challenge is complex does not, of course, mean that it can be ignored. On the contrary, vital decisions must shortly be taken. Because of the lead-time in the defence force-

¹ Baker, Brigadier J.S., Report of the Study into ADF Command Arrangements, Headquarters Australian Defence Force, March 1988, pp 4-16, 4-17.

structuring process and the increasing service life of major platforms, it will be the decisions made in the next few years which will determine the RAAF's capabilities in a quarter of a century's time.

To what extent, therefore, should RAAF planners seek to accommodate such recent phenomena as the so-called 'revolution in military affairs', or operations other than war, or peace operations? And under what circumstances might the Air Force have to fight to defend national interests? For example, respected international commentators like Martin van Creveld, Alvin and Heidi Toffler and Samuel Huntington have suggested that the dominant model of conflict for the past three hundred and fifty years – large-scale war between sovereign states – is in the process of being replaced with 'low intensity conflict' between essentially tribally-based groups, or by a 'clash of civilisations'.² For three-quarters of a century the RAAF has been shaped and trained primarily to conduct the former. How much weight should be placed on those provocative post-Cold War theories of conflict? On the same theme, do events such as the illicit traffic of drugs, terrorism, illegal migration and environmental vandalism constitute a greater danger to our national well-being than 'traditional' military threats? If so, how should the ADF respond?

Some strategists have argued that no major military threats to Western interests will materialise for the next fifteen years, as it will take that long for potential hostile superpowers or rogue States to achieve the necessary level of economic development to support the required capabilities. Thus, the argument continues, Western defence forces should 'leap-frog' the forthcoming generation of main platform technologies (aircraft, tanks, ships) and start to invest instead in the next generation so that they are best prepared when the 'high risk' era arrives in 2010. Is that kind of thinking relevant to the RAAF?

Finally, *DA94* introduced the concept of the ADF becoming involved in conflict other than the direct defence of Australia.³ In view of the fact that force structure decisions to date presumably have been driven by the defence of Australia, will or should that approach change in the future; if so, how will it affect the RAAF?

Sensible judgments on all of those difficult questions are possible without indulging in pointless futurology. For example, any new combat aircraft the Air Force might be operating twenty years from now is either already flying or on the drawing boards. And any RMA will be characterised, not by 'Star Trek' concepts, but by information dominance (intelligence, surveillance and reconnaissance; and command, control, communications and computers) and precision weapons. The RAAF of 2020 will probably *look* much as it does today, but it will *do* things very differently.

Important conditions which will affect the use of force by developed countries in most circumstances can also be identified. Public support and therefore political tolerance for military actions other than those which clearly serve vital national interests is likely to be low. Casualties have become a centre of gravity, an attitude which places a premium on substituting technology for people and fighting at a distance.

² van Creveld, Martin, *The Transformation of War*, The Free Press, New York, 1991; Toffler, Alvin and Heidi, *War and Anti-War*, Warner Books, London, 1995; and Huntington, Samuel P., 'The Clash of Civilizations?', in *Foreign Affairs*, Summer 1993, pp 22-49.

³ *Defending Australia*, Defence White Paper 1994, AGPS, Canberra, 1994, pp 103-107.

Commanders will increasingly have to consider the preservation of the environment as well as the preservation of human life when making military decisions. Those kinds of trends seem likely to strengthen.

This paper thus has two main objectives. The first is to discuss and, ideally, propose improvements to the ways in which the RAAF can contribute to ADF operations in accordance with *DA94*; and the second is to identify sensible concepts and measures which will ensure that the RAAF continues to make a positive contribution to national and regional security in the years beyond 2010.

The Security Environment

The extent to which the fundamentally different security environment postulated by van Creveld and others affects the Asia-Pacific region is questionable. Compared to the 'tribalism' which is now characteristic of some areas of Europe and Africa, the nation-state seems a robust enough institution in this part of the world, especially in Southeast Asia, where the progress of the Association of Southeast Asian Nations has been one of the success stories of international relations over the past three decades. That success will continue, Vietnam having recently joined the organisation and Burma, Cambodia and Laos set to become members by the end of this decade. Nor is there particular reason to believe that the 'clash of civilisations' postulated by Huntington is about to undermine the traditional order. It is noteworthy that no unilateral military action was taken by Islamic states and/or special interest groups in Bosnia, notwithstanding three-and-a-half long years of often shocking aggression by Serb forces against Bosnian Muslims. And in Oceania, there are grounds for optimism that Australia's official policy of 'multi-culturalism' is demonstrating that fundamentally different interests and cross-cultural values can coexist harmoniously given the right conditions.⁴ Also close to home, the security agreement concluded between Australia and Indonesia in December 1995 indicates that the imperatives of common interests and the wish of most nation states to coexist harmoniously are, in the long-term, going to be more powerful than different cultures. The same conclusion can be drawn from the Middle East peace process which, while painful, is gradually restoring some kind of civilised order to that most troubled region.

That generally encouraging outlook is reinforced by positive developments in Southeast Asia with regard to the three corner-stones of national security, namely, foreign relations, economic development and defence. The political success of Asean has already been noted, and there is every reason to believe that the association will continue to prosper and expand. Economically, the Asia-Pacific Economic Cooperation forum is representative of an increasingly constructive approach to regional trade, while economic growth generally has been good. Finally, collective security initiatives such as the Asean Regional Forum, supplemented by a considerable number of sturdy bilateral understandings, are indicative of a relatively predictable security environment in which responsible states rather than irrational sing-interest groups will continue to be the dominant players. The Five Power Defence Arrangements might serve as a model for the extension of existing bilateral understandings and arrangements into multilateral agreements.

⁴ See for example *Multicultural Australia, The Next Steps Towards and Beyond 2000*, Volume 1, A Report of the National Multicultural Advisory Council, AGPS, Canberra, 1995.

That assessment leads to an important conclusion. For obvious historic reasons, many Asia-Pacific states are wary of the long-term potential or perceived ambitions of China, Japan and North Korea. Given the security conditions outlined above, there is every likelihood that, in the event of a defence emergency, collective action organised on a regional basis and conducted by a grouping of nation states would be the preferred response. The implications of that conclusion for the RAAF are discussed in detail later in this paper. Briefly, however it indicates that in the interests of being able to contribute suitable capabilities to a range of contingencies, the RAAF's force structure should continue to contain the basic elements of a balanced air force; that is, there should be strike, air defence, transport, maritime and land attack, and reconnaissance capabilities.

The Economic and Political Context

The last decade has been difficult for Australians as economic performance has declined in relation to much of the region. Annual growth rates among the so-called Asian 'Tigers' – countries like Singapore, Taiwan, South Korea and Hong Kong – have hovered around double-figures; others like Malaysia, Indonesia and Thailand have consistently been around the 8 percent level. By comparison, Australia's growth rate has been as low as zero and has rarely exceeded 4 percent of Gross Domestic Product. In combination with a national debt which has mounted at a disturbing rate, those figures caused something of a crisis of confidence during the late 1980s and early 1990s. If that trend were to continue, Australia's capacity for independent defence action would be one of many national endeavours which would suffer a relative decline. A number of defence commentators have in fact questioned the ADF's capacity to retain its position as the region's most advanced military force, a reputation it has held since the end of the Second World War.⁵

Recent developments suggest that such forecasts have been unduly pessimistic on at least two counts. First, Australia's relative economic performance appears to have steadied. Positive growth rates, albeit modest, have been sustained for eighteen consecutive quarters, the longest period since World War II. Continued growth at around three to five percent of GDP seems likely.⁶ In 1994 Australia's economy was among the fastest growing of the industrialised countries and had a significantly lower inflation rate than most of its competitors. And, through the compulsory superannuation scheme, the national savings base which has been the essential missing ingredient is at last underway. At the same time, a number of regional states find themselves facing the difficult transition state common to newly industrialised economies when rising living standards and expectations drive up wage levels, and consequently place at risk one of the major comparative advantages on which their growth has been based, namely, cheap labour and production. Several economies which have enjoyed a buoyant recent past are likely to sustain high growth only at the expense of high inflation, increasing deficits, adverse balances of trade, high unemployment and decreasing credit worthiness. For those economies which continue to prosper, Australia's favourable geographic location and natural wealth will see us become an even more important source of essential goods and services. For example,

⁵ See for example Cheeseman, Graeme, *The Search for Self-Reliance: Australian Defence Since Vietnam*, Longman-Cheshire, Melbourne, 1993, pp 108-114.

⁶ Budget Speech and Statements 1 and 2 of Budget Paper Number 1, 1995-96, AGPS, Canberra, 1995.

it is expected that by 2010 Asia will consume 24 percent of all electric power generated in the world, up from 16 percent, a rise which will increase the demand for Australian thermal coal and natural gas alone by about 50 percent.⁷

Australia's strong underlying economic health was recently recognised by the World Bank. Instead of rating national wealth by the traditional system of dividing Gross National Product by population, the World Bank applied a new, more predictive methodology which took into account such assets as human and natural resources, education, health, factories, infrastructure and natural capital (land, timber, etc).⁸ Under that broader and more informative model, Australia was identified as the world's wealthiest country.

Encouraging economic prospects are underpinned by a stable and resilient system of government and a comparatively numerate and literate workforce. While educational standards throughout the Asia-Pacific are improving, in general the Australian workforce is distinctive as a highly advanced *information* (vice *industrial*) society, in contrast to the educationally more stratified and less mobile nature of some other regional societies. Indeed, authoritarian regimes in less open societies will inevitably face destabilising challenges from within as a consequence of the ready access to information which increasingly is a catalyst for change.

In short, contrary to some pessimistic assessments, Australia's economy is likely to remain at about 70 percent of the aggregate Asean GDP, a performance which will both ensure that we continue to play a prominent economic role in the near region and support a suitable level of defence spending. That favourable position will be enhanced by our robust and open political system and information-rich human capital. Our defence strategy should seek to exploit those economic and social advantages.

Control Warfare

Within the currency of *DA94*, the RAAF's existing force structure and its endorsed/proposed improvements (updates for the F-111s, F/A-18s and P-3s; acquisition of C-130Js and possibly AEW&C; the introduction of the Jindalee Operational Radar Network; precision weapons; and so on) are adequate for the basic strategy of depth in defence, that is, to defend the air/sea gap with advanced technology. For the next fifteen years ADF commanders can confidently expect the RAAF to remain a pre-eminent regional force in terms of control of the air, strategic strike, and surface force attack. The challenge after 2010 will be to maintain that same degree of military excellence against the background of the regional developments outlined above. The RAAF's response should, we believe, turn essentially on the exploitation of *control warfare*.

The critical factor in warfare has always been to concentrate sufficient force at the decisive points of the adversary's centre of gravity at the right time to ensure a convincing and favourable result. The concept of 'control warfare' has not changed that objective, but it has revolutionised the way it is achieved.

⁷ 'Australia well positioned to meet Tigers' massive thirst for energy', in *The Australian*, December 1, 1995, pp 8-9.

⁸ *The Australian*, September 18, 1995, p 1. Under the conventional GNP/capita method, Australia ranked 23rd behind most of western Europe and Japan, Hong Kong and Singapore.

In their provocative book *War and Anti-War*, Alvin and Heidi Toffler argued that the Gulf War of 1991 was the first fundamentally different mode of conflict for some three hundred years, a mode they defined as ‘third wave’ warfare.⁹ In their view, first wave warfare was characteristic of agrarian cultures and was fought between part-time armies; while second wave warfare was characteristic of industrial cultures and was fought by well-armed professional armies. By contrast, the Coalition in the Gulf represented a knowledge-based culture which exploited high technology and information – the latter transformed into *knowledge* – to paralyse their opponent.

Acknowledging the significance of information is not, of course, original. Competent military commanders have sought an ‘intelligence’ or ‘knowledge’ advantage for thousands of years. What is new is the *extent* to which knowledge can be exploited. By utilising high technology, computer based systems, a commander can dominate the collection, analysis and dissemination of information in real – or near-real time to an extent not previously possible. That information dominance can confer an understanding of the relative disposition of forces which allows decisive *control* over battlespace actions and reactions. In other words, information 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. It is important to appreciate that information will not by itself win a battle: ultimately, force is likely to be necessary. Further, the Tofflers themselves placed a caveat on third wave warfare by pointing out that it has not eliminated the other two forms. It *is* the case, however, that if information warfare is feasible, then its application will overwhelm pre-existing modes of conflict.

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 skilful 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 manoeuvrable platforms and precision guided missiles. When the Coalition applied those kinds of capabilities in the Gulf against Saddam Hussein’s ‘second wave’ army, the outcome was one of the most one-sided wars ever fought between major force concentrations. The contrast with the appalling eight-year war of attrition between Iraq and Iran in the 1980s could scarcely have been more dramatic.

It is essential to appreciate that the Iraqi forces which fought in the Gulf were large, powerful (in a traditional sense) and well-equipped.¹⁰ But as the Coalition demonstrated, the objective of control warfare is not necessarily the destruction of the enemy’s armed forces but rather the imposition of our will by *paralysing* his war-fighting system. It was no coincidence that a key objective of the air campaign in the Gulf was to establish information dominance as quickly as possible. Leadership, not fielded forces, was the primary target, through attacks on command, control, communications and intelligence systems, the disruption of which fatally impaired the Iraqis’ flow of information. Severely constrained by his lack of information and

⁹ Toffler, *War and Anti-War*, p 74.

¹⁰ At the time Kuwait was invaded Iraq fielded the largest army and air force in the Middle East, both hardened by eight years of war against Iran, Department of Defense, Conduct of the Persian Gulf War, Final Report to Congress, April 1992, pp 9-20

outdated 'second wave' thinking, Saddam Hussein had little understanding of what was happening in the battlespace surrounding him and his forces.

Use of the term 'battlespace' instead of 'battlefield' introduces another fundamental change in war-fighting concepts. For thousands of years a central consideration in campaign planning has been the imperative to seize and hold ground. That is now a dangerously outdated belief. As the Australian Army's Brigadier Peter Dunn has noted, the kinds of capabilities which have made control warfare possible have also made the 'basic defensive tactic [of land forces] of seizing and holding ground ... a recipe for defeat'.¹¹ Specifically, he continues, 'the ability of ground (and maritime) forces to seize, hold and control areas of territory (and sea) has been seriously reduced by modern weapons systems'. Dunn concludes that geographically fixed – that is, static – forces will 'almost inevitably be annihilated by precision weapons', failing only to mention that more likely than not, those weapons will be delivered from some kind of airborne platform.

To some extent, however, it is irrelevant whether a particular military capability is applied by one or a combination of air, sea or land forces; all that matters is that the appropriate hardware and skills exist in the most effective form. The probability is, however, that that form will define itself implicitly, even if it is denied in official doctrine, as military planners seek to structure their forces to maximise the likelihood of victory and minimise the possibility of defeat. In that context, it is instructive to note that currently some 60 percent of *all* defence spending on new equipment in advanced nations is being directed towards air-related systems.¹² That trend is apparent in the ADF, where the Navy is in the process of equipping each of its destroyers, frigates and patrol vessels with helicopters, and in the Army, where the growth of the Aviation Corps is perhaps the most notable aspect of the present development program. In the age of control warfare none of that should be surprising, as it is largely on the inherent capabilities of air power – speed, range, freedom of manoeuvre, perspective and flexibility – that control warfare turns.

A general point on the current nature of warfare between states emerges from the preceding discussion. At the risk of stating the obvious, in the age of New Era Security, ideas are more important than they have ever been. In fact, there are far too many examples where the importance of relating capabilities to ideas has *not* been obvious to commanders. Without the right ideas, without being translated into effective strategies, new technologies are likely to be of limited utility. A simple yet telling example was the development in the mid-nineteenth century of rifled gun barrels, an innovation which, as the American Civil War demonstrated, increased enormously the killing power of handguns, rifles and artillery.¹³ Yet fifty years later French generals went into World War I clinging to the doctrinal belief that men imbued with the 'offensive spirit' could overcome such material obstacles. Appalling

¹¹ Dunn, Brigadier Peter J., 'Time x Technology x Tactics = RMA: Why We Need a Revolution in Military Affairs and How to Begin it!', *Defence Force Journal*, Number 116, Jan/Feb 1996, pp 11-18.

¹² Meilinger, Colonel Phillip S., quoted in Group Captain John Harvey, 'Maritime Air Operations', Presentation to the RAN Sea Power Conference, Sydney, 1995. The figure of 60% includes space systems.

¹³ In 1858 an 18-pounder Armstrong gun was seven times more accurate at 1000 metres than a smooth-bore muzzle loader, and 57 times more accurate at 3000 metres. Macksey, Kenneth, *Weapons and Military Technology*, Viking, 1993, p 47.

slaughter was the inevitable outcome. By contrast, at Hamel on the Western Front in July 1918, the commander of the Australian Corps, General John Monash, for the first time brilliantly combined the relatively new weapons of tanks and aircraft with the traditional infantry and artillery to break out of a seemingly intractable static defensive morass.

Martin van Creveld has pointed out that ‘technology does not just represent an assemblage of hardware but a philosophical system ... technology affects not only the way war is conducted and victory is sought, but the very framework we use for thinking about it’.¹⁴ Commanders who continue to cling to the notion of seizing and holding ground as the centrepiece of campaign planning have failed to grasp that point. Control warfare is a four-dimensional activity, in which the fight to dominate knowledge and then translate that power into combat action takes place, not on the battlefield, but in a battlespace.

The RAAF and Control Warfare

For the past half-century offensive air power has been the decisive expression of military power for the liberal democracies, even though many analysts have been reluctant either to recognise or acknowledge that fact. Air operations in general and offensive action in particular have been *the* capability which has given allied military forces a war-winning advantage in major conflicts. When that advantage has been used forcefully and with resolute political support, the desired end-state has invariably been achieved. World War II, the Six-Day and Yom Kippur wars and the Gulf War are examples.¹⁵ When those essential conditions have not been observed, failure or at best an uneasy stalemate has resulted, with Korea and Vietnam illustrating the point.

The absolute dominance of modern air forces in the Gulf and, to a lesser but nevertheless impressive extent, over Bosnia, confirms that the coalition of which Australia is a long-standing and respected member will be able to apply compelling air power where and as it chooses in the national interests for at least the next fifteen years, more likely the next forty. Not too much should be made of the occasional outbreak of hysteria in the press regarding the probable widespread availability of new air-to-air missiles (for example, the Atoll, Mica and Python 4) which, it is alleged, will ‘change’ the balance in the fight to control the air, or of the so-called air force ‘arms race’ in the Asia-Pacific region. Those are primarily the noises of arms salesmen and their opponents. The great majority of potential users of advanced air weapons systems lack the essential infrastructure (maintenance, supply, intelligence services, research and development), airborne support (tankers, electronic warfare, airborne early warning and control), and skill (raining and experience) to employ their new equipment successfully for more than a couple of days against the traditional practitioners of air power. It may be possible to acquire hardware overnight, but the

¹⁴ van Creveld, Martin, *Technology and War*, The Free Press, New York, 1991, p 232.

¹⁵ The effect of the combined bomber offensive against Germany has of course been controversial, a situation largely attributable to selective reading of the United States Strategic Bombing Survey. That survey in fact concluded that the offensive made an important contribution to Germany’s defeat, but many commentators, for subjective reasons, have preferred to remember only John Kenneth Galbraith’s extraordinary inference that the allied bombing somehow *accelerated* German war production. Recent, more intelligent assessments of what was by 1944 a devastating campaign include Richard Overy’s *Why the Allies Won*, London, 1995, pp 123-133.

same does not hold true for the full range of operational and support skills. Years are needed.

The single and important condition on that implied relative superiority for the RAAF is, as *Defending Australia 94* acknowledges, the American alliance. As long as the alliance is maintained, then, as the Gulf War and current research and development programs (stealth, Joint Advanced Strike Technology program, unmanned air vehicles, smart stand-off weapons, non-lethal weapons, C4I, etc) indicate, it simply will not be possible for any aggressor to challenge that superiority materially or intellectually. The Gulf War also showed that great progress has been made in resolving the hitherto often vexed problems of command and control and targeting.

The pressure on political leaders to exploit that dominance across the full spectrum of conflict will continue to increase. In so-called 'low intensity conflict', 'peace operations', 'military operations other than war' and so on, the demand in the developed world to minimise casualties and collateral damage – that is, to substitute technology for body bags, to fight at a distance – will add to the attraction of air as the military option of first choice. That option will become even more appealing when emerging technologies such as non-lethal weapons and sighting and targeting systems which can look through dense jungles and bunkers become available, as they will in the next few years.¹⁶

Against that background, we would argue that two RAAF capabilities warrant special attention in the future: strategic strike, and command and control (noting that the successful conduct of these roles, like most others in the ADF, will be largely dependent on first establishing control of the air, a situation which has been a 'given' for Western defence forces for more than fifty years).

Theses on the 'transformation' of war and the changing nature of conflict sometimes argue that strategic strike has become outdated. It also is not uncommon to hear military analysts and serving officers claim that the ADF is capable only of operating at the tactical level of war. In fact, in the environment of New Era Security, nothing could be further from the truth.

The essence of strategic operations is to strike directly at an enemy's centre of gravity – the target set which if successfully attacked is most likely to lead to his capitulation. Through the work of strategists like the American airman John Warden, the strategic centre of gravity is now recognised as national leadership, with a primary decisive point typically represented by the command and control system.¹⁷ While in an authoritarian regime that system might centre on a single individual, it will still comprise communications and information networks and their associated electrical power supplies. As states become more technologically and economically advanced and increasingly rely on their information systems, they will become increasingly vulnerable to attacks against that network. In combination with the successful introduce of wide area surveillance and reconnaissance systems and precision-guided

¹⁶ For a summary of emerging non-lethal weapons technologies, see Casagrande, Wing Commander E. E., 'Non-Lethal Weapons: Implications for the RAAF, *APSC Paper Number 38*, Air Power Studies Centre, Canberra, 1995.

¹⁷ Warden, John A., 'The Enemy as a System', in *Airpower Journal*, Spring 1995, pp 40-55.

munitions, that shift in the way nations function has revolutionised the nature of warfare. A brief excursion into history illustrates the point.

Two main difficulties were encountered during the combined bomber offensive against Germany in the Second World War. First, British and American leaders found it difficult to agree on the enemy's centre of gravity. Throughout the campaign, target priorities shifted between oil production, transport systems, military factories, civilian morale and so on, with the result that the necessary degree of pressure was not always sustained. Second, the difficulties associated with that lack of focus were compounded by the deficiencies of the weapons systems. Notwithstanding the USAAF's claims that its crews conducted 'precision' bombing, in truth, in order to achieve the required amount of destruction, the allies had to use very large numbers of aircraft dropping vast tonnages of bombs. Thus, while the offensive was ultimately effective (in the last eighteen months of the war the destruction inflicted was enormous and greatly damaged the German war economy),¹⁸ it was also often very costly in terms of wasted effort, friendly losses and collateral damage. By contrast, as the 1991 Gulf War demonstrated, in the New Security Era, small numbers of aircraft using precision weapons are capable of strategically paralysing hostile nations while causing relatively few casualties on both sides.¹⁹

The point here is that advanced weapons technology coupled with the growing reliance of states on 'information' and its subsidiary components has fundamentally altered the necessary *scale* of strategic attack. It is instructive to note that in the case of, say, Queensland – a reasonable model for a middle-sized economy – in 1992-93 a mere six steam plants produced 99 percent of the electricity generated in the state.²⁰ Successful attacks on those few stations would cause chaos by disrupting the communications and information systems, as well as most industrial, business and domestic activities. The same kind of effect could be achieved by carefully targeted strikes against telecommunications facilities, financial services and the like. Detail on the vulnerabilities of those and similar services is freely available from public sources. In short, a handful of advanced platforms like the RAAF's F-111s armed with the right kind of precision weapons is now all that is required to mount potentially devastating strategic strikes.

The same concept applies at lower levels of combat. Because of the growing reluctance of developed states to accept casualties – enemy as well as friendly – new tactics have become necessary. Many less developed states fight very well when they are allowed to close with their protagonists: the point is to deny them that opportunity by using technology to fight at a distance. Nato air strikes in Bosnia provide the model. As the developed world's refusal to get bogged down on the ground in places like Bosnia, Cambodia and Somalia has illustrated in the past few years, unless vital national interests are at stake, land forces will not be placed in harm's way in substantial numbers for extended periods. Indeed, one of the major obstacles to the employment of Nato's most potent weapon and major comparative advantage in

¹⁸ See Overy, Richard, 'World War II: The Bombing of Germany', in Stephens, Alan (ed.), *The War in the Air, 1914-1994*, APSC, Canberra, 1994.

¹⁹ Department of Defense, *Conduct of the Persian Gulf War, Final Report to Congress*, April 1992, Chapter VI, pp 199-201, 244.

²⁰ *Year Book Australia 1995*, Australian Bureau of Statistics, Canberra, p 550. Those plants were Stanwell, Calide B, Tarong, Gladstone, Swanbank A and Swanbank B.

Bosnia – offensive air power – was the presence of friendly troops on the ground. Instead of playing a useful military role as they might once have, those troops instead became an encumbrance, serving only as potential hostages. No competent war planner should have failed to notice the fact that once those troops were moved out of the way in September 1995, for the first time Nato air power was able to strike the Bosnian-Serb heavy guns around the UN safe areas, rapidly forcing their removal. The guns were not, of course, the real target in effect, Nato warplanes were attacking the Serb leaderships' will to continue their aggression. It is now accepted that Operation 'Deliberate Force' was the major factor in forcing the belligerents in Bosnia to the negotiating table, the end result of which was the Dayton peace accord.²¹ It is the *objective* of a mission which determines whether it is strategic, not the target or the types of platforms used.

Command and control is the second major RAAF capability of special concern in relation to control warfare. As the Iraqis' ineptitude demonstrated, far more than front line fighting units and weapons are needed to win wars. It always has been extremely difficult to get the right amount of force in the right place at the right time, a strategic outcome expressed in the principles of war as concentration of force, economy of effort and surprise. An edge in achieving that outcome can offset a substantial inferiority in platforms and weapons. An effective command and control system is essential in the first instance to achieve information dominance, and then to execute the campaign to achieve strategic paralysis. That this is recognised by the ADF is evident both in the 1994 White Paper, where command and control is accorded a high priority, and in the recent restructuring of the strategic- and operational-level command and control arrangements.²²

The inanimate components of the command and control edge are well-enough understood and are all in-place within the RAAF – organisational arrangements, intelligence services, and advanced communications and computing systems. The key to success, however, is understanding *how to use* information. In other words, people are the critical component. Consequently, that is where Air Command is placing much of its effort. The command and control system is constantly exercised to enable commanders and staff officers to learn how to make optimum use of the high quality information they are provided with. For example, in 1995, Exercise Kangaroo 95 was preceded by a four-month staff exercise for precisely that purpose. Regardless of any other lessons which emerged from K95, senior officers at Air Command concluded that the staff exercise alone justified the effort involved.²³ That kind of expertise is unique in the region.

Continuing development of the command and control system must remain an Air Force priority. The system should be regarded as a *capability* in its own right, in precisely the same way as strike, fighter, maritime and transport aircraft have traditionally been viewed as 'capabilities'. It is currently the case that the advantage the RAAF has held for decades in the region by virtue of its superior platforms is being eroded. The extent of that erosion is, however, often overstated, as there is far

²¹ Operation 'Deliberate Force' was conducted from 30 August – 20 September 1995 and involved around 3500 sorties by NATO aircraft against some 60 Bosnian Serb targets which contained about 330 aim points.

²² *Defending Australia*, pp 37-38; CDF Press Release, 19 January 1996.

²³ Stephens, Alan, 'Air Command Australia' in *Asia-Pacific Defence Reporter*, Nov/Dec 1995.

more to possessing a 'capability' than simply buying new aircraft. As long as sufficient resources are committed, the RAAF's command and control system can constitute an information edge for the ADF for many years.

'Low Intensity' Conflict

The outlook for the use of the RAAF in so-called 'low intensity' is more problematical but some useful observations can be made. As has already been noted, Bosnia may offer some useful lessons regarding the value of air strikes in geographically, politically and racially complex limited wars. At this stage any such lessons will, however, have to be applied with great caution.

In the fight against activities like terrorism and drug trafficking which arguably are at least as harmful to national security as armed conflict, there is no substitute for numbers on the ground. Protecting entire urban communities from individual violence is a manpower intensive business. Nevertheless, surface forces involved in anti-terrorist and counter-narcotics work have become increasingly dependent on airborne technology, with the most obvious contribution coming from the ubiquitous helicopter. Rotary-wing aircraft crews using infra-red detection and tracking systems and night vision goggles have made twenty-four hour surveillance from the air largely possible. Additional support in the fight against drugs has come from fixed-wing aircraft used for detection, communications, and command and control. The United States Customs service operates Grumman E-2C and Lockheed P-3 Airborne Early Warning aircraft to detect and intercept the attempted illicit importation of drugs in light aircraft. On occasions, USAF Airborne Early Warning and Control aircraft have also been employed, as have highly advanced Airborne Battlefield Command and Control Centres. Those kinds of systems are currently undergoing considerable technological improvement through the introduction of synthetic aperture and phased array radars, low-light television and electronic support measures. The use of unmanned air vehicles to carry sensors into high risk areas will further add to the value of airborne surveillance.

Airborne surveillance and detection systems have also become an integral part of anti-terrorist operations. Monitoring national boundaries and infiltration routes is one obvious application. However, because terrorists often travel singly or in small groups on public transport and superficially may be indistinguishable from the general populace, trying to detect them with airborne sensors clearly has its limits. Some nations have successfully used pre-emptive or 'demonstration' air strikes to deter or punish terrorism, with the American raid against Libya in 1986 and Israel's frequent use of the tactic the most notable examples. But like the surveillance of terrorists the stratagem plainly has limits. Difficult questions must be answered: will a strike be politically acceptable to world opinion; is there a suitable target; what is the likelihood of retaliation; can collateral damage be controlled? At the same time, the enormous improvements made in airborne sighting systems and precision-guided munitions should facilitate contingency-specific uses of air power against terrorists. When, for example, the location of a terrorist group is known and there is little risk of unintended casualties, an air strike using a single PGM (possibly with an inert

warhead) will offer a very high probability of success without placing friendly forces at risk.²⁴

Notwithstanding the limitations of the systems outlined above, it is important to appreciate that the detection, classification and interception capabilities used by air forces in counter-narcotics operations are precisely those needed to monitor off-shore resources and to control the refugee and migration flows which many commentators believe will be the prime source of international friction in the near future.

Managing the Future

This paper has not suggested that air forces alone are the answer to future national security requirements. The evidence that joint operations win wars is irrefutable. What has been argued is that, first, a fundamental change is taking place in military affairs, and that change demands fundamentally new thinking; second, that military forces which most effectively exploit the air will enjoy a major advantage in New Era Security; third, that the coalition of which Australia is a long-standing and respected member will dominate any war in the air for decades to come, and that air power represents our greatest military comparative advantage; and fourth, that even if operating alone, the ADF, primarily through the medium of RAAF capabilities, has the potential to conduct war-winning strategic operations.

As far as joint operations are concerned, no better example of their importance can be found than the defence of the air bases. For many years there was uncertainty between the RAAF and the Army regarding responsibility for the defence of air bases. Additionally, the Air Force tended to pay only lip service to the task, preferring instead to preserve its technicians' time for aircraft maintenance. Neither of those attitudes could be allowed to persist once the focus of Australian defence shifted to the north; in particular, credible protective arrangements had to be made for the RAAF's vital bases at Learmonth, Derby Tindal, Darwin and, by the end of this decade, Scherger.

There is now agreement that the RAAF will assume responsibility for ground defence inside and within the immediate vicinity of air bases, and the Army will take over outside those areas. As a result of that new approach, Air Command currently has some 80 percent of its people undergoing ground defence training. And in a significant and symbolic break with past practices, it is now a requirement for all ground staff, regardless of their technical specialisation, to contribute to base defence. During major exercises the standard working day for all ground staff consist of eight hours in their primary specialisation followed by four hours on guard, with guard duty rising to eight hours in periods of intense activity. Further development of doctrine for air base defence is continuing in conjunction with the Army, with whom an effective working relationship was established during K95, especially when RAAF Base Tindal's ground defences were tested under realistic operational conditions.

²⁴ See Criss, Group Captain P. J., 'Employing Smart Technology in Low Intensity Conflict', *APSC Paper Number 6*, Canberra APSC, 1992.

At the same time, the ADF must continue to explore options for conducting air operations from bases well behind the front lines, with a far more capable fleet of air-to-air refuelling tankers being one obvious solution.

Air base defence is not the only element of RAAF doctrine in need of review. *The Air Power Manual* identifies three distinct air campaigns: control of the air, air strike and air support.²⁵ Because of the importance attached to information dominance, an argument could be made that 'information control' should be added as a fourth campaign, to precede or at least accompany the fight to control the air as a necessary precursor to most other combat activities. It may of course be the case that a distinct fourth air campaign is unnecessary, and that the fight to control information could be assimilated into one of the existing campaigns. For example, as far as offensive action is concerned, it may be sufficient to treat an enemy's information systems simply as one of a number of decisive points, a another set of targets which would be prosecuted during air strike operations. Similarly, the need to protect friendly information systems might be incorporated into any one of the existing three campaigns. However, the importance of information dominance is such that, at the least, its place in RAAF doctrine demands serious attention.

Also in need of serious attention is the way in which the activities of individual fighting men and women are managed in third wave warfare. No question is more important to the ADF. While the information revolution can be slowed down by autocratic or hierarchical regimes, it cannot be contained. As numerous commentators have observed, the Soviet Union was a victim of the microchip.

For centuries military forces have been organised on strict, hierarchical lines, in which command authority has been partly defined by privileged access to information, and the ability to use that information has been strictly controlled. That is no longer the case. For the first time in history, access to potentially decisive high-quality information is not the sole preserve of a nation's elite, be they political, corporate or military. CNN Television's coverage of the Gulf War, which on occasions was monitored by senior commanders in the Pentagon as the most current source of intelligence, represents the most telling example. Other noteworthy illustrations of every individual's new-found capacity to know what is going on include the use of low-ranking American soldiers of personal cellular telephones during the invasion of Panama in 1989 and of commercial purchased GPS sets during the Gulf War in 1991. Those examples, however, pale into insignificance compared to the potential of the Internet, which anyone with a notebook computer and a telephone line can now access, almost anywhere, anytime.

Commanders will not be able to prevent people from using the Net: the genie is well and truly out of the bottle. *Nor should they want to.* On the contrary, military organisations which encourage individuals to use information networks will have an enormous capability to acquire high-quality knowledge – and, therefore, *power* – compared to those which proscribe networking. Empowerment of the individual strengthens the resiliency of the organisation and its capacity to understand, cope with and exploit change. Those are precisely the circumstances which characterise warfare.

²⁵ *The Air Power Manual* (2nd ed.), Air Power Studies Centre, Canberra, 1994.

The implications unquestionably are revolutionary. If the new opportunities are to be exploited to the maximum, a new kind of organisational model will be necessary. The critical question is: how can a military force network? How can information exchanges take place across a war-fighting organisation, as well as up and down, without commanders losing control or, more precisely, being able to exert sufficient control? If the desired outcome is to be achieved, two apparently conflicting organisational structures will have to be reconciled: the existing military hierarchy, which is best suited to command and control, that is, to exert power, and networks, which are the most effective way of exchanging information and knowledge. Perhaps the traditional military practice of 'centralised control, decentralised execution will have to be applied in extremis,²⁶ while carefully noting Carl Builder's warning that the diffusion of power inherent in networking will have a corrosive effect on hierarchies.²⁷

As far as information itself is concerned, the main factor in effective operational control of the tactical means in war remains making correct (or best) decisions in circumstances of ambiguity. In the age of New Era Security ambiguity will be caused by too much uncorrelated, non-associated *information* creating 'noise' in the *knowledge* data base, compared to the situation in the past when decisions had to be made on the basis of too little information and a depleted knowledge base. For this reason, the application of new technologies associated with data fusion will be extremely important because they offer the prospect of using intuitive and specialist knowledge as a way of correlation and association of seemingly random information entering the knowledge base from all directions.

At first glance, air forces might seem better placed to cope with those kinds of New Era challenges than, say, armies. Air forces traditionally have had a more open leadership style, while the means through which they apply combat power (aircraft) almost invariably operate in small, relatively independent, manoeuvrable, high speed, flexible packages; that is, they inherently possess many of the qualities which characterise information networking. It is significant that in expressing his concerns regarding the traditional preoccupation of armies with seizing and holding ground, Brigadier Dunn has proposed a new structure for the Australian Army based on precisely those air power qualities.

On the other hand, a good argument can be made that, while technologically air forces have been in the vanguard of military progress, intellectually they have trailed the field. In particular, too many of the pilots who traditionally have provided the bulk of the senior leadership seem to have viewed flying as an end in itself, when in fact it is the delivery of air power to the battlespace which should be the sole objective of an air force.²⁸ As the essence of air forces has always been the man in the machine over

²⁶ One approach here could be the adoption of some corporate organisational practices such as flatter management structures and far greater devolution of responsibility.

²⁷ Builder, Carl, 'Military Power in the New Century', a paper presented at the conference *Revolution in Military Affairs*, Australian Defence Studies Centre, Canberra, 27-28 February 1996.

²⁸ For comment on the role of pilots as leaders in air forces, see Dennis M. Drew, 'The American Air Power Doctrine Dilemma', in Vallance, A.G.B. (ed.), *Air Power: Collected Essays on Doctrine*, Bracknell, 1990; Stephens, Alan, *Power Plus Attitude: Ideas, Strategy and Doctrine in the RAAF, 1921-1991*, AGPS, Canberra, 1992, pp 181-85; Builder, Carl H., *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the US Air Force*, Transaction Publishers, New Brunswick, 1994.

the target, just how those pilots deal with other phenomena of New Era Security such as the increasing utility in combat of unmanned aerial vehicles, and the dominant battlespace leadership role being assumed by non-pilot aircrew in AEW&C aircraft, will be both fascinating to observe and critical to the future of air power.²⁹

The difficulty the RAAF (and the other services) will experience developing an organisational arrangement which facilitates the maximum possible exploitation of the age of New Era Security should not be underestimated. The consequences of a successful resolution of the problem would, however, be profound. As a start point, two actions would appear to be critical: first, a review of RAAF doctrine within the context of the end of the Cold War, the RMA (in particular the information revolution), and the overriding importance of joint operations; and second, a review of recruitment and training practices in relation to the possible effects of the RMA, UAVs and AEW&C platforms on the RAAF's traditional model of leadership.

²⁹ See 'Pilots to Leave Cockpit in Future Air Force', in *Aviation Week and Space Technology*, February 5, 1996, pp 26-27.