

Friends in High Places

**Air Power in
Irregular Warfare**

Sanu Kainikara (ed.)



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After two years, he was posted to the RAAF Air Power Studies Centre, producing air doctrine, examining aerospace trends and conducting long-term planning. It was during this time that he completed his Masters degree with first class honours. Following this, he was selected as Australia's student to USAF Air War College, graduating with the Commandant's Prize for Excellence. He was subsequently appointed Base Commander of RAAF Richmond, Australia's largest and busiest base.

In following years, Air Commodore Lax held appointments at Air Command as both Director Plans and Development, and at Defence Headquarters as Director Military Strategy in Strategic Policy Division. Just prior to promotion to Air Commodore, he served as Australia's Senior National Representative at US Central Command Headquarters for the War on Terror. He was then posted back to Air Force as Director General Policy and Plans, working to the Deputy Chief. In January 2005, he returned to Strategic Policy Division as Director General Military Strategy, and in 2006 took up a new position—Director General Strategic Policy—responsible

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Wing Commander Neilsen attended the United States Air Force Air War College, graduating in 2006 with a Masters Degree in Strategic Studies. He was awarded the Red River Valley Fighter Pilots Association Award for this paper, judged to be the best professional studies paper on the joint use of air power in support of national military objectives.

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FORWARD

This book is an attempt to capture the ongoing discussion regarding the role of Australian air power in irregular warfare within a single volume and provide a springboard for a more vigorous analysis - leading in turn to the development of Australian air power doctrine on irregular warfare. Since the 11 September 2001 attacks that started the current round of irregular warfare operations, the Air Power Development Centre has published a number of *Working Papers* and *Pathfinders* on issues related to irregular warfare. It appeared, however, that there was only limited discussion on air power in irregular warfare happening within Australia, and that we had to rely on offshore information and debate. This book hopes to address this critical deficiency in our thinking.

After reading this book, the reader will be left in no doubt that air power has a key role in the conduct of irregular warfare. Air power will not win an irregular war (or indeed any war) by itself (but nor will any other singular form of combat power), but without it, its conduct will be inordinately expensive in terms of both blood and treasure. The primary air power roles of counter air, precision attack, ISR, air mobility, and battlespace management are all key aspects of the ADF's ability to plan, conduct and assess irregular warfare operations. The words you will read as you progress through this book will make this clear.

Many people will no doubt be surprised to see my inclusion of *counter air* in the list of air power roles relevant to irregular warfare. Unfortunately, many people seem to have forgotten that the current spate of irregular wars started on 11 September 2001 with a surprise attack from the air against the Twin Towers of the World Trade Centre in New York and the Pentagon in Washington D.C. Indeed, over the past eight years, the Royal Australian Air

Force's air combat capability has undertaken several counter air operations over Australia in support of several high profile events, such as the Commonwealth Games, the visit by the US President, the meeting of the Asia-Pacific Economic Committee (APEC), the Commonwealth Heads of Government Meeting (CHOGM), etc. This indifference to the importance of air control is actually quite a systemic one – probably because the last time Australian forces were subjected to fatal enemy air attack was during World War II. Sixty-four years is a long time to retain this information, but the ADF has, for the most part, managed to do so – but the security of Australia's skies, or the skies above our deployed forces, must never be taken for granted.

The Royal Australian Air Force has not only conducted the abovementioned counter air operations, but has also conducted air mobility operations, battlespace management and ISR operations against insurgents – for a period longer now than World War II. Indeed the only air power role that has not been undertaken against insurgents by the RAAF is *precision strike*, although the RAAF today is the most capable it has ever been in this arena with advanced sensors, practiced targeting tactics, techniques and procedures, and a variety of precision guided munitions. While not actually carrying out kinetic strikes against insurgents, the RAAF has nevertheless facilitated the effectiveness of allied precision strike operations by ensuring its targeting and joint terminal air controller capabilities and doctrine are first rate and fully interoperable. Moreover, the RAAF is ready to undertake such strikes if called upon to do so by the Government.

At this juncture, it is important to say that the papers contained within this book generally have a predilection towards precision strike – the offensive aspect of air power. This capability is very important in the battlespace as it is one of our key asymmetric capabilities against a typically asymmetric foe. It is noteworthy

that most of the papers in the book do not address the key issue of ISR - Intelligence, Surveillance and Reconnaissance - in any detail. ISR provides the ability to *find, fix, track* and *assess*; with only the *target* and *engage* aspects being non-ISR in nature within the *kill-chain* – or the F2T2EA process. ISR is *the* critical capability that allows the application of our key capabilities to the fight – whether they are delivered by air power or Special Forces. ISR ensures that the application of force is precise, proportional and discriminate. It is, therefore, a truism that precision effects require precision intelligence.

On the matter of doctrine, there are some glaring deficiencies within our current philosophical thought processes on irregular warfare. For example, in the current (fifth edition, published in 2007) of the Air Power Manual (APM), there is only one fleeting reference to *counterinsurgency* within the section on *Integrated Air* – and there is no mention of *irregular warfare* or *terrorism*. Within the Future Air and Space Operating Concept (FASOC), also published in 2007, there is no mention of any of these terms. However, the 2009 Defence White Paper clearly states that our involvement in irregular warfare will continue for some time into the future.

In 2006, a considerable doctrine effort was undertaken by the US Army and US Marine Corps with the production of their counterinsurgency doctrine (FM 3-24 or MCWP 3-33.5); unfortunately of its 282 pages, there are only five on air power. Similarly, in 2008 the Australian Army produced its counterinsurgency *developing* doctrine (LWD 3-0-1), but like its US equivalent, there are only three pages on air power out of its 176 pages. To meet the irregular warfare debate within the US military, the USAF developed specific doctrine on air power in irregular warfare in 2007. Of note, there is currently no joint ADF doctrine on irregular warfare, and none appears planned.

It is therefore of critical importance that the RAAF develop its own doctrine on how air power can shape and affect irregular warfare.

This is not to say that the RAAF has not developed key irregular warfare capabilities, or that it has not adapted itself to comprehensively meet current irregular threats. It is correct to say, however, that its efforts over the last eight years have not always been undertaken with the best of doctrinal guidance. Furthermore, it is also true that without doctrine being developed, further capability development in irregular warfare will lack focus and considered analysis.

So, this book is the start of Air Force's efforts to develop its doctrine on irregular warfare. As a result, I commend this book to you in the hope that it engenders much debate on this most significant of topics to the RAAF, and Australia.

Group Captain Rick Keir

Director, Air Power Development Centre

July 2009

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EDITOR'S PREFACE

Wars are traditionally defined by the defeat of the adversary and the destruction that hostilities bring about; but for the non-combatant population of the affected nations, the debate regarding the right and wrong of war and nuances of its conduct, and the political and military principles underlying the employment of force, has very little meaning when weighed against the death and deprivation that is often delivered. However, these factors are often of minimal influence on the intentions of nations to use force, whenever it is felt necessary, in the pursuit of perceived and actual security concerns.

The contemporary trend is for conflicts to be waged below the level of total war, with an alarming proclivity visible amongst the contestants to ignore, or at best pay lip-service only, to the humaneness enshrined as an irrevocable constant in a 'fair war.' Military forces are now preparing to meet and defeat adversaries who are not the traditional foes of nations—another nation with conventional military forces at its command—but irregular forces that depend on asymmetry, terrorism, guerilla tactics, insurgencies and criminal activities to question the legitimacy of a nation state for reasons of ideology, both political and religious. How does a conventional military force defeat a dispersed but intelligent and ruthless adversary acting on behalf of blind faith—blind faith that they are in the right and all others are wrong? Not easily, and never fully, would have to be honest answer.

Under these circumstances military forces must investigate and cultivate all possible avenues that can provide them with viable options to counter the operational tactics of these non-state adversaries so that the environment can be secured for diplomatic, economic and political initiatives to be brought in and given an

even chance to succeed. Joint military operations that leverage the unique characteristics of each Service is one of the methods that conventional forces are adopting to create the necessary effects. Air power is an intrinsic and critical element within the holistic military capabilities of a nation and forms an indelible part of the broader national security apparatus. Air power's contribution to the successful prosecution of irregular wars is varied and crucial, deserving an in-depth analysis regarding its role in the strategic national security policy, especially in relation to the current global security environment.

This book is a compilation of disparate thoughts, but all on the same subject—the employment of air power against non-state entities committed to violent action against the state. Four of the chapters in the book have been previously published by the Air Power Development Centre as Working Papers at different times, ranging from February 2004 to August 2008. The first chapter gives an account of the RAAF contribution towards the Malayan Emergency of the early 1950s and was presented as a paper at the 2008 RAAF History Conference and subsequently published in the proceedings of the conference (*Air Expeditionary Operations from World War II until today*). The last chapter, which is a study of the Israeli experience in the employment of air power in irregular warfare, was written specifically for this book. The papers have been carefully edited, mainly to focus them towards the aspect of employment of air power in irregular warfare that they cover and not for change of style, or for that matter, substance.

The book has been produced also to draw a tangible thread through the work of professional airmen and others who have been intellectually stimulated by the debate regarding contemporary conflict and the status of air power in the conduct of irregular war to articulate their thinking process. In trying to provide a holistic view of the possibilities regarding the employment of air power in

irregular wars, it was felt necessary to gather these independent think pieces and flag the common themes. It is hoped that this book will contribute to the limited quantum of work dedicated to 'air power in irregular warfare' and be the beginning of more involvement on the part of professional airmen in developing a clearer and more robust understanding of air power in contemporary conflicts.

Sanu Kainikara

Canberra

July 2009

CHAPTER I

INTRODUCTION

BY DR SANU KAINIKARA

For more than five centuries nation-states have concentrated on developing the means to defeat other states—through diplomacy, alliances, military war-making capabilities and strong economies—based on the belief that wars of any consequence could only be fought between two sovereign states. There was implicit acceptance that only a state could threaten the existence of another state. The last two decades have demonstrated the changing world order. The world has transitioned into a period wherein the easy global access to the most advanced technological innovations, capable of enormous destruction, provides a small group of people with no ‘nation-state’ allegiances—pursuing their own religious, political or ethnic agenda—the wherewithal to deliver lethal blows to existing society at a time and place of their choosing. This has redefined the traditional concept of national security which is now more amorphous than ever before in history.

The conduct of war has also altered with the changes being wrought in the causes for going to war. The carnage of World War II brought about an international effort at preventing a repeat of such large scale state-on-state wars, which succeeded to a certain extent, in that, barring the Korean War, no protracted conventional conflicts have taken place thereafter. However, the Cold War also saw the re-emergence of ‘small wars’ or *guerrillas* (from the Spanish word meaning ‘little war’) a term that first came into common usage in the late nineteenth century to denote any conflict against

non-regular forces—small bands of soldiers fighting against the regime of a nation in an effort to redress actual or perceived grievances, normally underpinned by religious, ethnic or political issues. Small wars soon came to mean conflicts fought by state forces against small groups of non-state entities. These small groups—insurgents or irregular forces—recruit supporters through a combination of historical allegiances and more often coercion and intimidation, knowing fully well that in order to have an even chance of succeeding they must constantly gain more adherents. Increasing the numbers cannot be achieved through intimidation alone and, therefore, irregular warfare is quintessentially political in nature, aimed at winning over the hearts and minds of the larger population. An irregular force aims to remain active and avoid being destroyed, long enough to have enough people join its ranks, physically or in tacit support. This popular support will make its destruction by military means impossible.

HISTORICAL PERSPECTIVE

Irregular wars (IWs) have always been the natural recourse of combatants faced with an indomitable force that they cannot confront directly. For example, as the Roman legions advanced deeper into North Africa, they were constantly harassed by nomadic archers on horse and camel back. The archers were aware that they could not face the ‘high-tech’ warfare capabilities of the Romans and, therefore, adopted the classic concept of asymmetry to even the capability spectrum. Since the nomads’ camps were always moved ahead of the Roman Army, after a certain time of pursuit, the Romans withdrew, rather than go deeper into unknown and definitely hostile territory. This is perhaps the first instance of asymmetry neutralising a powerful conventional force, thus forcing a strategic withdrawal. It is interesting that the Roman invasion of

Palestine in Asia Minor, or the 'real' Middle East, also gave rise to the word 'zealot', which is now commonly used to describe a religious fanatic. Zealots were a group (a member being a zealot) that came into existence at the beginning of the Jewish rebellion in 66 BC and was composed of people who were prepared to take up arms against the Romans occupying Palestine.

It must be noted that irregular forces practising the concept of asymmetry do not always succeed in driving the larger conventional force out of their area of interest. The Romans also developed and demonstrated the first anti-guerilla (read 'anti-insurgent' in contemporary terms) strategy. They secured the most valuable areas of the conquered nation with overwhelming military presence and then offered the conquered people the option of living in safety under Roman rule or facing certain death. Life outside the secured areas was made intolerable and the pacified zones were allowed to expand, at times over a period of generations. Under these circumstances, insurgencies will find it difficult to sustain a reasonable movement that will disrupt the normality of daily life within the state and will slowly recede into oblivion.

Irregular wars—encompassing insurgencies, guerillas, organised crime and terrorism—are fundamentally political in nature and normally begin as criminal activities. As the movement grows, the 'military' actions of the insurgents in the conduct of irregular wars merge with the aims of surviving long enough to gain sufficient depth of support.

From this, it is possible to develop a strategy to counter irregular forces, without being as ruthless as the Romans in early history and with the understanding that the ultimate victory will always be political. At the outset, it is necessary to identify criminal activities that have the potential to gather momentum to become insurgencies and contain them effectively. Once the insurgency has developed, it is then necessary to isolate the movement and deny it

any support from the general populace. Establishing and enforcing the rule of law and military actions have lead roles in both these phases. However, from the point at which the insurgency transitions from criminal activity to an irregular war, the non-military elements of national power will also have to commence containment activities. Being essentially political in nature, and since subjugation on the lines of the Roman strategy is not a viable option in contemporary scenarios, the only long-term solution will also be a political settlement, almost always aided by military victories.

Irregular war, irrespective of its cause, methodology and viciousness, has first to be contained in terms of the inherent violence that is involved, mainly through military means, before any other action can hope to move towards settlement and a return to normalcy. Although irregular war is not a new phenomenon in the larger context of warfare, there does not seem to be a fundamentally accepted military strategy on which contextual applications of conventional military capabilities can be built to counter such a threat. The primary basis on which a successful and sophisticated military strategy is built is the unambiguous understanding of the desired end-state underpinned by an analysis of its achievability. This is applicable regardless of the type and nature of the adversary, because this is what defines victory.

IRREGULAR WARS TODAY

For the past two decades or so, there has been a noticeable movement in the conduct of war towards irregular actions, a trend that has been further reinforced in the contemporary conflicts on Israel's borders and in Afghanistan, Iraq and Pakistan. While state-on-state conflicts cannot be completely ruled out, the probability of their occurrence in the near-term has diminished considerably.

In fact, wars are less likely to be conceived in the traditional Clausewitzian model as a clash of regimes and their military forces, with the attendant adherence to international law of armed conflict and the humaneness that is required of the warring parties in the treatment of both combatants and civilians. Wars of the future will be fought amongst the people, and armed forces of sovereign nations are more likely to be embroiled in protracted irregular wars that will be costly in resources and human lives. Short and sharp military actions may no longer provide the surgical victory that they were able to deliver at times, not so distant past. While the probability of conventional wars cannot be completely disregarded, competent military forces will be able to read the writing on the wall and gather the tools necessary to fight and win irregular wars.

The current trend in conflicts is that it tends to be protracted for two primary reasons. First, no contestant will actually enter into combat unless there is a reasonable assurance of success, that too with minimal casualties and attrition. The basic tactics revolve around waiting for the opportune moment to engage, which will be fully to one's own advantage. Second, the military objectives are to create amicable conditions for other elements of national power to exercise their competencies until the conflict situation is resolved, which could be a long time. Therefore, military forces should not be sent into combat situations unless they are fully prepared to stay the duration of the conflict—there is nothing called a 'swift fight' any more. Irregular wars can drag on for generations, mainly because the cause of the conflict in a majority of the cases will be ideological differences that cannot be suppressed by victory on the battlefield. One ideology can only be neutralised by another, which in itself is a long drawn-out process.

Military forces, especially in the West, are now adapting themselves to counter irregular forces—through altering their force structure, adapting capability development, developing fresh

concepts of operations and even attempting to enshrine irregular warfare in philosophical level doctrine. All these actions are to be commended, since the fights of the future are mostly going to be irregular wars. However, there is a need to constantly be aware that irregular warfare *per se* has been a discernible part in the conduct of warfare throughout history, only its *modus operandi*, duration and ruthlessness have differed. Even though this was the case, military thinkers, strategists and planners throughout history have always developed military forces that have the complete set of capabilities to fight and win a conventional state-on-state war and then adapted them to the requirements of irregular wars. History indicates the optimum way forward for contemporary military forces—develop a force with the full suite of capabilities, based on the defence of the nation, with sufficient built-in flexibility for the force to adapt to irregular warfare and even then be superior to the irregular forces that it will confront. Making fundamental changes to the structure and capabilities of the force to cater purely for irregular warfare may well turn out to be a folly of catastrophic magnitude. There is a delicate balance to be maintained here.

Even with the rising incidence of irregular wars, the reality is that it has not fundamentally changed the enduring principles of war and conflict. Since the 1980s, a number of new extrapolations of the conduct of warfare have been articulated, starting from the *Revolution in Military Affairs* first articulated by the Soviet Union, to the concept of the Fourth Generation Warfare (4GW). While the concepts developed during the Cold War exemplified modern manoeuvre warfare between conventional military forces of nation-states, 4GW is a reflection of the pre-occupation of strategists with the post-Cold War phenomenon of non-linear operations between conventional forces and non-state entities. Such conflicts, which in this book have been termed ‘irregular warfare’, encompass all forms of warfare that is not fought between two sovereign states

and in the conventional manner, and have blurred the traditional differences between the many modes of conflict. In fact many adversaries of the West, who are currently in combat with them, increasingly employ a combination of irregular and conventional tactics to conduct successful operations.

Attempts to define these emerging trends in warfare, in terms of reinterpreting the evolving nature of war, tends to inject an ever-changing quotient to the fundamental theories of war, making them dynamic concepts which is unrealistic for contemporary military forces. While the characteristics of irregular war differ somewhat from those of conventional conflicts, the primary nature of war remains unchanged—it is a violent clash of wills. Essentially only the conduct of war changes and, therefore, the need is to adapt the tactics rather than the far more enduring theory of war.

AIR POWER IN IRREGULAR WARFARE

While irregular warfare has been a part of war since the earliest days of conflict, air power is a comparatively new entrant, being a military capability for only a century. However, it speaks a great deal about the flexibility and versatility of air power that it was adapted to irregular warfare almost immediately. One of the earliest instances of air power employment in irregular warfare is the involvement of No 1 Squadron of the Australian Flying Corps in directly supporting the activities of Colonel T.E. Lawrence—'Lawrence of Arabia'—in the Middle East (region between El Kutrani and Maan some 50 miles east of Amman) from May to September 1918. On 16 May 1918 Colonel Lawrence was flown from the British Headquarters to the plains near El Kutrani by Captain Ross Smith of No 1 Squadron and thereafter the unit was involved in the activities of the irregular forces that Lawrence commanded. Subsequently, two aircraft of the squadron joined

Lawrence in the desert at Ramleh on a semi-permanent basis. The aircraft were used to harass the Turkish railway garrisons, observe their troop movements and generally reinforce the Arab faith in British military supremacy.

In the inter-war years, again, there are examples of the innovative use of air power in irregular wars. The RAF was able to put down rebellions against the Empire in the Middle East by deploying a number of squadrons, which then flew over the tribal areas and intimidated the rebels into submission; a precursor of the role played by air power in the recent elections held in Iraq. Likewise, during World War II a large number of clandestine missions were flown in support of resistance movements in German-occupied Europe—both the ground operations and air power contribution being irregular warfare.

Despite historical evidence to the contrary, there is now an ongoing debate regarding the utility of air power when applied to irregular wars, based on the belief that such wars will form the majority of contemporary military engagements. There is a widely held view that irregular warfare is the exclusive domain of land forces with air power, at best, limited to support roles only.

From its inception, air power has been criticised as a military capability that cannot achieve any end-state independently. While it is true that land forces were able to achieve the desired end-state by themselves before the advent of air power into the military arena, they are equally curtailed in their capability to achieve victory without air power in contemporary conflict, be it conventional warfare or irregular wars. There is a belief that irregular wars, since they are often fought ‘among the people’, are only conducive to the use of land power or ‘boots-on-the-ground’. The concealment of the adversary within the general population is touted as an insurmountable problem for the effective employment of air power’s precision strike capabilities. There is a fallacy circulating

that air power can only shape the battlespace, through control of the air in conventional conflicts; nothing can be further from the truth. In fact, shaping the battlespace through the isolation of the areas in which irregular forces have taken refuge, one of the cardinal principles of irregular warfare, can only be effectively done through the employment of air power in the precision strike and intelligence, surveillance and reconnaissance (ISR) roles—control of the air being a prerequisite for the success of these operations.

Adversaries adopt irregular warfare to counter the overwhelming conventional military superiority of their opponents, in contemporary scenarios the United States and its Western allies. In other words, they use asymmetry to even the disparity in combat capabilities. Such tactics can only be countered by adapting the same concept to suit the strengths of a conventional military force and this can only be done if the force possesses sufficient air power capabilities. Air power's unique capability to insert, sustain and extract ground forces rapidly and the ability to provide timely ISR and strike support permits relatively small numbers of land forces to effectively dominate disproportionately large areas in insurgent territory. This is asymmetry against the irregular force at its best. This is exemplified in the Coalition operations in Afghanistan, largely dependent on Special Forces which in turn are almost completely reliant on air power for success and security.

It was General Douglas MacArthur who said, 'New conditions require, for solution—and new weapons require, for maximum application—new and imaginative methods. Wars are never won in the past.' Nowhere has this been better demonstrated than in the application of precision firepower by air power facilitated by Special Forces on the ground during Operation *Enduring Freedom* in Afghanistan. Air power has subsequently proven to be the lifeline for these small task forces operating in the field, providing

mobility, ISR, precision strike and medivac when necessary, with a responsiveness not seen before.

Irregular warfare is still evolving at the operational and tactical levels with the evolution cycle much shorter than the evolution of operational strategy in a conventional military force. This is a challenge to be carefully considered. There is a demand for conventional military forces to move away from developing high-end war fighting capabilities and to concentrate purely on dedicated irregular warfare capabilities. This argument does not take into account the fact that it is the high-end capabilities of the conventional force that give it the flexibility to adapt and counter emerging irregular warfare trends in an expeditious manner. Considering that the adversary is both intelligent and determined, it can be expected that even the asymmetry that air power enabled Special Forces provide now to the conventional force will be neutralised sooner rather than later. Carefully nurtured high-end capabilities will once again become the cornerstone in developing fresh operational strategy and employment tactics.

The other side of the coin is that resources for the development of conventional military forces will always be constrained and air power, being perhaps the most resource dependent, will be under great pressure to limit expenses on high-end capabilities. Flights of conceptual fantasy will need to be trimmed with pragmatic evaluations of future requirements and the balance that will be required to ensure national security. However, purely tailoring for irregular warfare is not a viable option for a conventional force charged with the defence of the nation.

AIR POWER, IW AND DOCTRINAL DEMANDS

A state's conventional forces will be required to combat irregular forces, the commitment being ongoing, considering the penchant for such warfare to become protracted. It is now understood that IW is not merely a scaled down version of conventional conflict, but a form of warfare that has its own unique characteristics and therefore demands a definitive doctrinal approach to its conduct. Such developments have to be undertaken with a clear understanding that countering irregular forces—in whatever manner they manifest themselves—will have to be a joint military endeavour, conducted within an integrated multi-agency national security approach.

Effective air-land integration (ALI) is the fundamental requirement for the success of any irregular warfare concept. Integration is a force multiplier, but requires concerted attempts at improving joint training and the seamless integration of the command and control structures of both air force and army. The development of a joint operational level ALI Doctrine, amply supported by individual domain philosophical level doctrines, and educational programs supplemented by realistic exercises for commanders to appreciate the nuances of the employment of air power in a land-centric operation, are absolute necessities for the success of conventional forces in IW.

Historically, air power has always been employed based on an unquestioned tenet of 'centralised control and decentralised execution'. There is now, at least in the IW context, a necessity to perhaps study the level at which the 'centralised control' is actually applied to increase the flexibility and responsiveness of air power. There is merit in considering the lowering of the centralised control, especially of non-force limiting air assets, so that in a fast moving battle, local tactical advantages can be better exploited.

Delegation of authority in the control of air power assets to slightly lower level air commanders than is the current practice may be able to create greater asymmetry against irregular forces.

The employment of air power in IW has another dimension that must also be considered by planners at the highest levels of government and military. Air power has taken on additional new roles without having shed any of the old traditional ones. This has greatly increased the load on all personnel to become professional masters of their domain at the required level—from the tactical to the strategic. This is a factor that must be taken into account while determining operational deployment durations, training and education schedules and the overall development of strategic thinkers and leaders.

Irrespective of the evolution in the conduct of war taking place in the realm of irregular warfare, for air power the core functions of counter air, precision strike, air mobility and ISR will remain enduring for the conduct of the entire spectrum of conflict. Air power plays major roles in irregular warfare—counter air missions have become mandatory requirements in national security operations against possible irregular adversaries; air mobility is critical to the success of Special Forces on the ground and is a vital enabler in globally deploying and sustaining ground forces; airborne ISR is crucial in providing a persistent and time critical ability to find, fix and track fleeting adversaries; and, most importantly, the ability of air power to prosecute an adversary with precision, responsiveness and extreme discrimination has made it the preferred attack option to create the necessary effects in a large number of cases.

Global instability stems from causes other than military aggression. Therefore, the employment of conventional military forces as instruments of statecraft, in the absence of appropriate non-military capabilities, is incorrect. The solution would be to expand,

strengthen and deepen the non-military elements of national power, predicated on the emerging trends in instability. A lasting solution to any irregular war can only be brought about by an integrated national security strategy that combines all elements of national power optimally in a contextual manner. In countering an irregular adversary, the military forces should only be used in rapid operations to secure very narrowly defined objectives that in turn will facilitate other elements of national power in achieving the desired end-state. Sadly, this is not often the case and, therefore, conventional military forces of the 'democratic' world will have to be content with adapting to unsavoury situations in circumstances that may bring unforeseen challenges to the fundamental ethos of a fighting force.

The harsh reality of the brave new world.

Friends in High Places: Air Power in Irregular Warfare

CHAPTER 2

THE WAR OF THE RUNNING DOGS: THE MALAYAN EMERGENCY

BY AIR COMMODORE MARK LAX, CSM (RETIRED)

Editor's Note: The following chapter is an edited version of the original paper presented at the RAAF History Conference that was held in Canberra on 1 April, 2008. The full version of this paper can be found in *Air Expeditionary Operations from World War II until today*, published by the Air Power Development Centre in May 2009.

The 16 June 1948 murder of three British plantation owners by Communist terrorists sparked off an insurgency war known as the Malayan Emergency, so called to ensure insurance claims to British and Commonwealth expatriates would be honoured. British and Commonwealth operations against the insurgents were to last 12 years and at their height, occupy over a quarter of a million men. For the Malaysian Armed Forces, a further 29 years of fighting would ensue. The Emergency, or 'War of the Running Dogs', became the third postwar overseas deployment undertaken by the RAAF after British Commonwealth Occupation Force (BCOF) and Korea. The Emergency left a lasting legacy for the RAAF with the establishment of a permanent presence at Butterworth and regular contributions to exercises and operations.

While the Royal Air Force (RAF) had deployed fighters and flying boats in 1948, the real build-up to counter the Communists commenced in 1950. The RAAF would eventually provide Lincolns, Dakotas, Sabres and Canberras to the campaign, but the majority of the air power was provided by the RAF (fixed-wing) and Royal Navy (rotary). The Malayan Emergency has over the years had both its detractors and supporters of the utility of air power, but the thrust of this paper will be on the expeditionary nature of the campaign and applicable lessons for today. It considers the parallels today with the current insurgencies. Some things never change.

However, in order to discuss the role of expeditionary air power in this jungle war, the origins and development of the Malayan Emergency and how politics played its game must be briefly covered. The real origins of the Malayan Emergency can be traced back to 1929 with the formation of the Malayan Communist Party, the MCP, which aimed to overthrow the British Administration and replace it with Communist rule. Its roots were in the Chinese community, but the Communist elements did not have broad support. By 1937, the MCP had gained some hold of the Malay labour force and was thus outlawed by the British Colonial authorities. By early 1941, and given the possibility of the loss of the Malayan Peninsula, the British sought to establish a network of subversive agents who would work for the Allied cause should the country be overrun. The MCP was the only semi-organised group capable of such activity and was thus funded and organised into the Malayan People's Anti-Japanese Army, or MPAJA, which by 1945 had grown to about 4000 guerillas and 6000 ancillary personnel.

With the British reoccupation at the end of the war, the MPAJA formally disbanded in December 1945. However, the Communists re-emerged, now as the Malayan People's Anti-British Army (MPABA) and rekindled the original aim of overthrowing the

Colonial Administration. The level of disorder became such that on 18 June 1948, the British enacted emergency powers, calling on the military to assist in restoring law and order. The Malayan Emergency had officially begun.

In an effort to encourage popular indigenous support, the MPABA renamed itself the Malayan Races Liberation Army, or MRLA, and instituted a three-phase plan to achieve their aim. The phases were:

- to cause terror and economic chaos in rural areas by assassination and sabotage,
- to 'liberate' selected rural areas and establish local Communist administration, and
- to 'liberate' urban areas and declare a Communist republic.

They estimated a period of six months to complete the plan and two years to a fully established Communist state. In the event, they could not complete any phase, but the government authorities, police and military took 12 years to stop them.

The decision to send an expeditionary Australian force to support the British in Malaya was seen by Prime Minister Menzies as crucial to halting the southward march of Communism, so apparent to some at that time. On 21 April 1950, the British formally requested direct Australian support in Malaya. A flight of Dakotas from No 38 Squadron and one of Lincoln bombers from No 1 Squadron and their supporting personnel were sought, not just for Malaya, but for the whole Far East theatre. Ground forces would not be sent at the start as the Korean conflict was consuming the few capable Army units remaining after the end of World War II. At this point, it must be acknowledged that this was primarily a ground campaign and Australian troops would eventually serve from 1955 to 1959, but their actions and those of their British and Malayan allies is beyond the scope of this paper.

What must also be remembered in post-mortems such as this is that the anti-terrorist activities conducted by the security forces were not a military operation but a civil action, carried out by the police with the assistance of the combined military forces. This would eventually require a whole-of-government approach. In 1950, a new strategy was devised by the first Director of Operations, Lieutenant General Sir Harold Briggs, who held a distinct military/political appointment—a dual-hatted arrangement. The new plan, not surprisingly, was called the Briggs Plan—the idea being not merely to kill the terrorists but to prevent them from regrouping and continuing their activities. The Briggs Plan entailed:

- the reorganisation of the Police Force along the lines of the British ‘Bobby’—a people’s friend rather than perceived oppressor;
- the creation of an effective indigenous intelligence system; and
- the conduct of psychological operations against the Communist terrorists (CTs) and in support of the people.

Concomitant with this change of direction was No 1 Squadron’s arrival at Tengah and No 38 Squadron’s arrival at Changi, in July that year.

The Communist terrorist forces had grown steadily from the late 1940s, reaching a peak in 1951 of about 8000. Then due to the action of the security forces, their numbers began to steadily decline to about 600 by 1960. Known as CTs or bandits, they were organised into military and civilian components. The civilian component was called the *Min Yuen* or *People’s Movement* and consisted of mainly ethnic Chinese who had sided with their Communist kin.

In February 1952, General Sir Gerald Templer took over. He was a redoubtable Englishman of letters and a dominating figure. He

further refined the Briggs Plan and set the security forces five tasks to restore order. These were:

- to kill CTs and keep them on the move, thereby increasing the chances of contacts and kills by ground forces;
- to disrupt the CTs' bases and command organisation;
- to lower CT morale;
- to induce the CTs to surrender; and
- to assist food denial to the CTs by crop destruction.

Nevertheless and despite these improvements, the CTs continued to elude the Security Forces, with casualties mounting on both sides. Security Force retaliatory action came in three phases. Initially, a period of defensive action (1948–1951), gave way to one of offensive action (1952–1954). By 1954, the Security Forces had contained the threat and a final phase of consolidation began (1954–1960).

By the time Templer handed over duties to the next High Commissioner, Sir Donald MacGillivray, in May 1954, the tide was on the turn and the 'dual-hatted' role ceased. Security patrols with the support of air power now had regular contact with the terrorists and sought about their elimination. In addition, thousands of rural Chinese were relocated into cleared or 'White' areas which were defended and patrolled, thus removing the CTs' sources of food, intelligence, funding and popular support. Uncleared or 'Black' areas were continually swept and eventually cleared of Communist activity and this succeeded in forcing the CTs deeper into the jungle. The final blow appeared to be the announcement in early 1956 that 'a constitution providing for full independence and self government for Malaya would be introduced at the earliest possible date'. The CTs' call for 'liberation' from the Imperialist masters became invalidated overnight. Ironically, it was international politics not offensive action that ended the Emergency in 1960.

COMMAND AND CONTROL

The primary dilemma facing the combined military forces was the vexed issue of command and control of a combined expeditionary force in coalition, operating remote from their homeland.

The World War II British command system had changed only slightly in postwar Malaya, and by June 1951, the command structure was as shown in Figure 1. However, a very close relationship had to develop between the General Officer Commanding (GOC) and Air Officer Commanding (AOC) in order to prosecute the campaign.

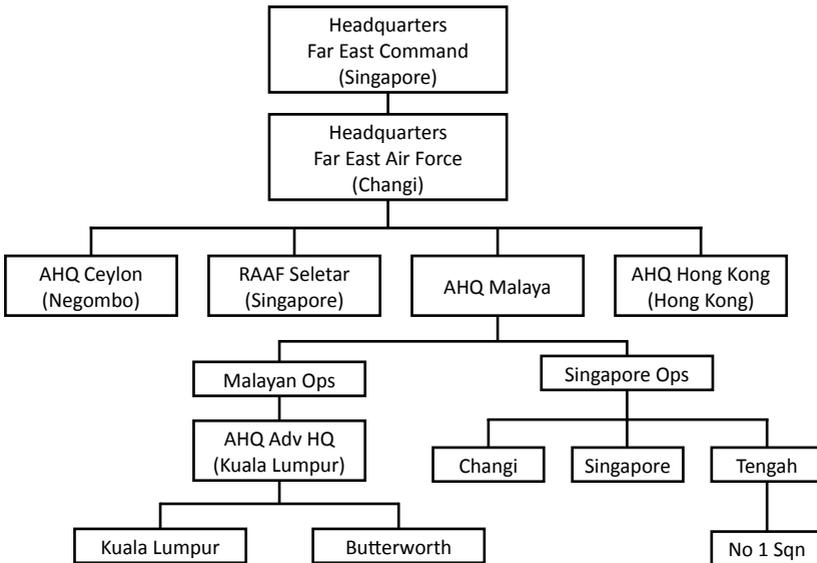


Figure 1: Command and Control circa 1952

Once in Malaya, the RAAF elements came under the authority of Air Headquarters (AHQ), Malaya, initially located in comfortable

Singapore, but with the arrival of Air Vice-Marshal Scherger as AOC in 1953, moved to Kuala Lumpur to be collocated with the land commander. Air Headquarters held prime responsibility for RAF and Commonwealth Air Force operations in the theatre and had three broad roles. In priority order these were as follows:

- The air defence of Malaya, Singapore, British North Borneo and Sarawak (now East Malaysia).
- Cooperation in defence with Army and Navy.
- The anti-terrorist campaign.

At the time of the RAAF's arrival, the AOC Malaya was an RAF Air Vice-Marshal and RAF Stations were commanded by RAF Group Captains. The RAAF's link to the RAF command chain was made through Group Captain 'Paddy' Heffernan, a prewar RAAF officer with considerable flying experience. Heffernan commanded the newly formed No 90 (Composite) Wing. However, all directives, tasking and reports went through the RAF system, with the RAAF units acting in a subordinate role.

This organisation remained extant for the duration of the RAAF's deployment. Most interestingly for the era, the position of AOC loosely alternated between the RAF and RAAF, with two RAAF officers holding the command appointment from 1953. The arrangement was relatively simple. When an RAF officer was commanding, the RAAF would have the second-in-command and vice versa. This arrangement worked well for operations but was to be the cause of some discontent in a number of areas, most particularly with regards to discipline authority. When an RAF officer occupied the post, he would also be given the RAF disciplinary warrant. However, when an RAAF officer occupied the post, the RAF gave their warrant to the RAF officer who was second-in-command, and not to the RAAF officer appointed as AOC.

In a purely operational sense, the control of operations was not as simple as Figure 1 would indicate. A much more complex command system was in place, especially since this was a police action. In considering the Security Forces as a whole, the Advanced Headquarters Joint Operations Room in Kuala Lumpur had contact with 15 other military agencies.

These agencies all fed information and task requests to the Joint Operations and Intelligence Centre or JOIC. Generally speaking, the air forces were not involved with the detailed planning of operations, but devised their own plans once the request for air support had arrived. In addition, air support requests from other agencies had to be cleared by local police before sorties could be mounted, thus rendering more in-built delays which often allowed the CTs to escape. From 1950, the overall offensive campaign was planned by the Director of Operations Committee and was executed by local War Executive Committees at the state level. Requests for air support were generated by local army or police commanders, channelled through battalion or district and then to brigade or State Police Headquarters to the JOIC. The JOIC would task the individual air strike, reconnaissance or transport sortie.

What looks simple at first sight was not so when considering inherent problems with this system, particularly the sources of delay within the overall command chain. As operations progressed, however, the command authority and reporting chain became even more cumbersome, causing inevitable backlogs and lengthy delays to requests from and to the lower levels.

By mid-1955, a more responsive and streamlined system was introduced, bypassing some of the levels in an effort to avoid hold-ups. A standard request up the chain would inevitably be subject to over-scrutiny. After consideration by the Commanding Officer of the squadron, requests were passed through the RAF Station Headquarters to the Senior Air Staff Officer (SASO) in the

Headquarters in Kuala Lumpur. Some routine and administrative tasks would have been actioned at this level, but more substantial requests and discipline problems would have to be progressed further. There was also a strong political-military interface. If higher level action was required, after consideration by SASO, the request would be passed to the AOC. The AOC was subordinate to the General Officer Commanding, who was also the Joint Force Commander, with similar subordinate Navy, Army and Police component commanders. Decisions of international importance or of high political profile were finally referred to the Commissioner General for South-East Asia, who was the British Foreign and Commonwealth Office appointed head of South-East Asian affairs.

These nine levels of command did not include the interface with Australian authorities, military and civil, for matters that had political or wider ramifications for Australia. In one sense, there were few serious political issues, since Menzies remained pro-British and support for the Commonwealth Strategic Reserve and, later, SEATO remained part of his Government's platform. Yet, as in the past, the Australians serving under British control effectively had all but their responsibility for postings, promotions, conditions of service and pay transferred to the RAF.

The final change to the command structure in Malaya came with Independence in August 1957. At the request of the new Malaysian Government, British and Commonwealth forces continued to fight the anti-terrorist campaign, but instead of reporting to the High Commissioner or Director of Operations, the Commander-in-Chief Far East Air Forces and AOC Malaya took their orders from and reported to the Federation's own Director of Emergency Operations, now a Malaysian. Additionally, as the term AOC Malaya conjured up thoughts of past colonial days, it became politically expedient to rename the position AOC Headquarters 224 Group, a term used previously in World War II. By April

1959, with operations petering out, Headquarters 224 Group moved back to Singapore to concentrate on other operations in the Far East.

EXPEDITIONARY AIR POWER

At the outset, the capability of air forces fighting this insurgent war would inevitably be limited, given the nature of the target, the terrain and vegetation, and the inherent inaccuracies of aerial reconnaissance and bombing of the time. Air power would definitely be in support. However, air transport and reconnaissance would prove critical to successful operations while air strike was to play an important but lesser role, one of which was vaguely described as 'to hit, to carry and to reconnoitre'. In retrospect, the main achievement of the bombing campaign was that such bombing kept the enemy on the move. It did not allow the CTs to consolidate gains or establish base camps, nor subjugate the local villagers. Air strike cannot claim great victories in this campaign but without it, the job of the ground forces would have been much more difficult.

The Malayan campaign held one big difference from previous operations. There was no air threat, although early in the campaign, the CTs were reported as using Bren guns against low flying aircraft. Even the airfields remained secure. The closest the CTs came to disrupting the air operations was in late-1952 when activity in Johore threatened the Singapore water supply and loaded aircraft would have to take off, fly for a short time, release their bombs and return, all in about 20 minutes. Air supremacy was a given.

What can be stated is that the role of air power increased to meet the need. At the Emergency's height, operations included transport support, psychological warfare (leaflet dropping and

aircraft broadcasting propaganda—known as ‘sky shouting’), reconnaissance, camp spotting, troop insertion/extraction, medical evacuation (medevac) and offensive air support. While most of those air activities would seem usual for jungle operations, the bombing campaign has since come in for much criticism. However, the utility of such offensive air power should also be placed in chronological context as, pre-1952, the Briggs Plan could not be fully implemented by ground forces alone which opened the proverbial window of opportunity for air action. As the ground forces were in no position to do much before early 1953, air power was virtually the only way of applying pressure to the CTs by destroying camps and keeping them on the move.

After 1954, bombing operations took on lesser importance than had been the case of the previous years. From the low point of mid-1951 when high levels of violence and CT activity appeared to be giving the insurgents the upper hand, the situation steadily improved in favour of the Security Forces. The decision to grant independence and institute economy measures saw the withdrawal of much of the heavy air effort by 1958, including the RAAF.

The Malayan Emergency was declared officially over in July 1960, by which time only about 500 terrorists remained—living mainly in the remote border region between Malaysia and Thailand. In the event, the ideological war continued for a further 29 years when, with the collapse of Communism in the Soviet Union and dwindling support from China, the CTs’ struggle came to an end.

COMBINED AIR EFFORT

Under Operation *Firedog*, as the air campaign was to be known, other than the RAAF, the RAF, the RNZAF, the Royal Navy Fleet Air Arm and the Malayan Auxiliary Air Force (MAAF) all played a part. Likewise, we have been conducting combined expeditionary air operations from our Flying Corps days—Timor, the Solomons, Iraq and Afghanistan deployments are not new and many of the same issues apply.

The Royal Air Force provided the mainstay of the air campaign in all roles bar offensive strike. In all, up to 14 RAF Squadrons provided bombing, transport, reconnaissance and communications support. The Royal Navy, provided helicopters from January 1953. These proved extremely valuable for leaflet dropping, troop lift and insertion/extraction, and medevac. However, the noise of the beating blades gave their presence away, so their utility as spotting aircraft was lost. The success of the Royal Navy helicopters, particularly for medevac, made quite an impression on the AOC Malaya, Air Vice-Marshal Scherger, and was no doubt instrumental in his pushing to acquire the Iroquois when he became RAAF Chief of the Air Staff some four years later.

While the RNZAF offered Canberras in 1958, their utility was marginal due to speed and small bomb load, as were those of our No 2 Squadron. However, Kiwi Dakotas and Bristol Freighters provided air transport support for most of the Emergency and did sterling service. The MAAF provided a number of Tiger Moths, Harvards Chipmunks and three Spitfires, mainly used for light reconnaissance.

AUSTRALIAN BOMBING CAMPAIGN

The use (or perhaps misuse) of Lincoln bombers in the Malayan Emergency has become the source of intense debate among air power scholars, particularly with regard to their cost-effectiveness. No 1 Squadron crews commenced operations in Malaya on 20 July 1950, four days after arrival. Acting in what was termed the 'close support' role, operations progressed well after a firm, and effective, plan had been introduced and refined. Despite later commentary that records that the campaign was about killing CTs and, therefore, was a complete waste of resources, in a review of the Squadron's bombing operations at the end of the deployment some eight years later, the then Commanding Officer, Wing Commander Robertson, noted that the aims of offensive air support were to:

- kill CTs and keep them on the move, thereby increasing chances of contacts and kills by ground forces;
- disrupt the CTs' bases and command organisation;
- lower CT morale;
- induce CT surrender; and
- assist food denial to the CTs by crop destruction.

The Lincoln aircraft proved very effective in achieving, even if only in part, most of these aims.

CONCLUSION

There are no doubt any number of enduring lessons that apply to current expeditionary air operations, but these are the main points. First, air power cannot win insurgency wars by itself, but without it, the job becomes virtually impossible and extortionately expensive. Second, air power provided but one arm of the whole-of-government approach necessary to solve this problem—it provided

options for the use of both soft and hard power at times when only air power could deliver. Third, the doctrine of centralised control and decentralised execution could not be reinforced any stronger than in the Malayan Emergency experience. Fourth, for the campaign to have any chance of success, the command and control has to be sorted and practised well before real operations commence. Finally, future insurgency wars will undoubtedly present commanders the same problems—locate, contain, neutralise.

Undoubtedly, the debate regarding the effectiveness of air power in insurgencies such as this will continue as analysts and historians cannot say that the outcome rested with air power. That air power made any difference has also been argued but in cases such as this police action, as with today's peacekeeping operations and operations in Afghanistan and Iraq, the value of air power lies in its flexibility and responsiveness. The ability to substitute for large numbers of ground forces and the ability to support quickly those who are forward deployed on the land or sea makes the use of air power in theatre a necessity, not a luxury. As this paper has demonstrated, RAAF operations in Malaya did just that. By the rapid movement of troops and police, the spotting of camps and by harassing and denying the terrorists in their havens, air support operations combined with a relentless ground campaign, anti-Communist propaganda and a strong political will to remain engaged succeeded in disrupting the CT activities long enough for the political solution to take effect.

CHAPTER 3

OFFENSIVE AIR POWER IN COUNTERINSURGENCY OPERATIONS: PUTTING THEORY INTO PRACTICE

BY WING COMMANDER GLEN BECK

Editor's Note: This chapter is an edited version of Air Power Development Centre Paper No. 26, published in August 2008. The original paper was written by the author (when he was a Squadron Leader) as a student at the Canadian Forces College (2006–2007) in fulfilment of one of the requirements of the Course of Studies.

INTRODUCTION

The early twenty-first century has seen a resurgence in insurgencies and in counterinsurgency warfare. Despite this, most Western militaries are primarily structured to fight conventional wars. Modern offensive air power with its capability to create far-reaching and decisive strategic effects is well suited to conventional warfare, but there is a lack of understanding of its capabilities and limitations when applied to counterinsurgency warfare. During Operation *Iraqi Freedom*, air power delivered devastating battlefield effects leading to the swift defeat of Iraq's conventional forces. When, however, the enemy transitioned to insurgent warfare, there was a limited understanding of how air power could best

contribute. This was evident in the actions of the US 3rd Infantry Division who released their air liaison element soon after the capture of Baghdad, wrongly believing they had nothing more to offer.¹ Airmen were also sent home by the United States Air Force (USAF) because it was not sure how air power could contribute to the counterinsurgency campaign.² The application of offensive air power needs to be explored and developed so that it can contribute more effectively to the counterinsurgency campaign.

This paper will argue that it is crucial to understand thoroughly the fundamentals of counterinsurgency warfare before employing lethal force. In examining this notion, this paper will look to answer the question, 'How does the use of offensive air power best align with counterinsurgency theory?' and propose a framework for understanding how offensive air power can best be applied in support of counterinsurgency operations. It will examine the strengths, weaknesses and risks resident in the application of each of the roles of offensive air power. The capabilities required to undertake these roles will be assessed and evaluated in terms of how well they are likely either to support or jeopardise the fundamentals of the counterinsurgency campaign. The scope of this paper is limited to the analysis of the employment of offensive air power. While accepting their criticality to the success of counterinsurgency campaigns, other air power roles, such as intelligence, surveillance and reconnaissance (ISR) and rapid mobility, are not examined in this paper.

THE FUNDAMENTALS OF COUNTERINSURGENCY WARFARE

Know thy enemy and know yourself; in a hundred battles, you will never be defeated. When you are ignorant of the enemy but know yourself, your chances of winning or losing are equal. If ignorant both of your enemy and of yourself, you are sure to be defeated in every battle.³

Sun Tzu

Detailed knowledge of one's enemy has always been of critical importance in warfare. In counterinsurgency warfare it is even more crucial, as the enemy is not relying on overt force to achieve victory. Counterinsurgency wars by their very nature are not defined by a series of short battles; they tend to be complicated affairs which play out over many years.⁴ Only when the underlying nature of the conflict is understood and a corresponding strategy developed can any analysis of the potential contribution of offensive air power be assessed.

Types of Insurgencies

'Counterinsurgency' is not simply one generic form of warfare. Every insurgency is different, and the best way to defeat a specific one will depend upon its characteristics. Insurgency can generally be defined as a struggle between a non-ruling group and the ruling authorities where the non-ruling group deliberately uses a combination of politics and violence to further its cause.⁵ To analyse this in more detail, it is beneficial to understand the nature of insurgency in terms of ends and means. Specifically, what are the political ends that the insurgents are fighting for, and by what means are they trying to achieve these goals?

There are four broad areas that define what insurgents fight for. These are ideological motivators, nationalism, ethnic nationalism and religion.⁶ Terrorism is a unique grouping that will be looked at separately.

Ideological-based insurgencies were a common occurrence during the post-World War II period, where the battle for influence between the superpowers led to them supporting regional insurgencies. Generally, the goal of ideological insurgents is entirely political and they are not easily defeated. The final outcome will depend on the support of the general populace to the cause and the ability of the government to control the entire country. The outcome is less predictable when an insurgent group is well funded and resourced externally, or can gain sanctuary and support in a part of country that the national government cannot influence.

Nationalist insurgencies are fuelled by the desire to restore self-determination and self-rule for a nation or peoples that are governed by a foreign power. This was typical of the many anti-colonial conflicts throughout the Middle East and Africa during the 1920s to 1950s. These insurgencies are generally well supported by the populace and therefore they are likely to be successful.

Ethnic nationalist insurgencies often result when minority ethnic groups find themselves under-represented or disempowered. This may be due to the political structure of the country, deliberate oppression from the ruling regime, or a legacy of the colonial era that left different cultural and ethnic groups vying for power. These conflicts are often protracted and difficult to predict. Again, the final outcome will usually come down to the support of the populace more than the specific political goals of the insurgents.

Religion has proved to be a unifying motivator for many Islamic insurgent groups, such as Hezbollah, Islamic Jihad and Hamas. Although it is not usually the sole reason for fighting, religion

can be a motivating and unifying characteristic among otherwise disparate groups with various goals. Many insurgencies do not fall neatly into a single category. There may be one or more sources of motivation behind each insurgency. These diverse sources of insurgent motivation complicate the formulation of an effective counterinsurgency strategy.

Terrorism

Terrorism is a more difficult phenomenon to quantify within the spectrum of insurgencies. It has been asserted that terrorism is in fact a tool of warfare which may be employed by insurgents to achieve their goals.⁷ In this regard it is being used to describe a method as opposed to a cause or organisation. Terrorism has become an emotive term in the modern era, with insurgent groups often being labelled 'terrorists' because of the methods they employ. Because of their use of terrorism as a method, few inherently political organisations fighting ethnic minority counter-insurgencies are considered terrorist organisations. When trying to understand the fundamental nature of insurgent groups it is important to understand the distinction between the motivations of the group and the methods they employ.

As distinct from terrorism as a method, it is becoming universally accepted to describe stateless ideologically-based groups, such as Al Qaeda, as terrorist organisations. These groups do not fit into traditional insurgent profiles as they are not fighting for a particular ethnic group or a definitive end-state. Loosely speaking, they can be thought of as an 'insurgency against the West', where their goals are simply to undermine Western hegemony, influence and culture through acts of terrorism.⁸ The lack of a defined objective makes it difficult to develop a coherent strategy with which to combat them.

The lack of a discernible end-state objective means it is unlikely that stateless terrorist groups will be completely eliminated. A more realistic goal is to reduce their capability and support to a level that they can no longer undertake regular large-scale attacks. Such a goal may not be easy to accept politically because it is not definitive, but in the short term it would appear unrealistic to set the objective to eliminate the threat completely.

The Hearts and Minds Campaign

Insurgent groups resort to terrorism because of their awareness that they will not be able to overthrow the government, either politically or through the use of direct force. The methods of insurgency involve eroding the strength, will or legitimacy of the government over a long period of time. The insurgents' aim to destroy gradually the incumbent government's military capabilities, thus reducing its ability to control the violence. The aim is for the government and the people to grow weary of the struggle, thus forcing a favourable negotiated settlement for the insurgents.⁹ The counterinsurgency war is widely acknowledged to be a 'hearts and minds' campaign, a concept articulated by Lieutenant General Sir Gerald Templar when conducting the successful Malayan counterinsurgency; 'The shooting side of the business is only twenty-five percent of the trouble. The other seventy-five percent is getting the people of this country behind us.'¹⁰

The concept of 'Centre of Gravity' is one that can be helpful in understanding the nature of the counterinsurgency campaign. The Centre of Gravity is essentially the heart of the problem, the source from which all protagonists derive motivation, fundamental strength, and the will to fight.¹¹ For the insurgents, the Centre of Gravity will be the support for their cause from the population. Without this popular support the insurgents become isolated and unable to achieve their political goals. The incumbent government

also relies on the support of these people, but the Centre of Gravity is slightly different. US counterinsurgency theorist Max Mainwaring put it best when he described this Centre of Gravity as being the credibility of the incumbent government.¹² Fundamentally, both sides will be battling for the hearts and minds of the population. More specifically, each side will be trying to attack their opponent's Centre of Gravity while protecting their own. The government will be trying to reduce support for the insurgents while improving their own legitimacy. Simultaneously, the insurgents will be trying to rally support for their cause while attacking the credibility of the government.

In rallying support for their cause, the insurgents are essentially conducting what Western militaries refer to as an Information Operations (IO) campaign.¹³ Whether it is espousing political ideologies such as Marxism, or religious ideologies such as Islamic fundamentalism, the central tenet is to convince the general populace to embrace the cause. The methods used to achieve these goals may range from a charismatic approach, where a leader may build ideas and support around their individual popularity, to a practical approach, where the strategy revolves around providing support to the public in areas where governmental action is deficient. A good example of such an operation was Hezbollah's provision of food, shelter and other aid to the victims of Israeli attacks in Lebanon during 2006.¹⁴

When attacking the Centre of Gravity of the incumbent government, insurgents are able to use both active and passive means. Through their very existence, insurgencies put political pressure on governments; sometimes simply by surviving they are furthering their cause through highlighting the impotence of the government to stop them. Conversely, even legitimate action taken by the government will be subject to manipulation to reinforce the righteousness of the insurgents' cause. Insurgents have been

known to carry out deliberate terrorist attacks to encourage a disproportionate response from the government that could lead to an increase in popular support for the insurgency. From a strategic perspective, this means that every response to the insurgents' actions must be analysed for its potential to diminish the popular support of the incumbent power.

External Government Support

Besides the 'direct' form of counterinsurgency warfare where there is an incumbent government directly combating a domestic insurgency, there are also counterinsurgency campaigns where either the insurgents or the incumbent government are being supported externally. This paper analyses only external support to the incumbent government. When an external government supports the incumbent government, the dynamics of the counterinsurgency campaign are altered. The fundamentals of the insurgency are not affected, but the ability and desire of the external power to support the incumbent government becomes a crucial variable.

The support provided from an external government may be in many forms, such as security assistance, advice, training, reconstruction teams, medical assistance and direct combat forces. The level of external support will vary with the state and nature of the insurgency and the ability of the incumbent government to cope with the problem. In the worst cases, where the incumbent government is weak and cannot operate independently, the focus of the supporting forces will initially be on creating the secure conditions necessary for the normal functioning of the government. Once a suitable level of security is obtained in an area, the scope of other non-military activities, such as reconstruction of infrastructure and economic growth, can more easily take place. The aim is to create the conditions where the incumbent

government can operate effectively and defeat the insurgency without external support.

External Government Centre of Gravity

An external government which is providing support for a counterinsurgency campaign will also have a Centre of Gravity which is vulnerable to attack. For modern democracies the Centre of Gravity will be the ability to maintain popular support for the campaign within their own populations. A lack of support, regardless of the cause, will put pressure on the sustainability of the campaign and will ultimately limit how long the external government can remain involved.

Western policymakers and the public generally want short conflicts with clear success criteria, definitive exit strategies, and decisive victories.¹⁵ The characteristics of modern Western democracies are largely incompatible with the fundamentals of counterinsurgency warfare given that campaigns tend to be of long duration, decisive victories are elusive, measurement of progress is difficult, and often there is no definitive victory. Therefore, from the outset, Western governments involved in counterinsurgency campaigns must be careful to maintain their own public's support.

The Role of the Media

The media's fundamental interest is to sell news; therefore, it will naturally gravitate towards stories which are provocative or create debate and interest. Over a long campaign, where national interest may not be clear and where progress is difficult to quantify, the media is likely to question the decision to provide external support. While success in a counterinsurgency campaign is difficult to define, measure and demonstrate, the cost in dollars, equipment and lives is clearly visible. This results in increased media criticism

of the campaign, putting pressure on the external government's Centre of Gravity.

When stories on redevelopment and rebuilding successes are available, they will often not be given much coverage as they do not readily qualify as either captivating or controversial news. On the other hand, any negative effect resulting from military operations, such as inadvertent damage to buildings or civilians (defined as collateral damage), incorrect targeting, or even incidents of inappropriate behaviour, will receive wide coverage in the media.¹⁶ This is clearly evident from a study done by the Canadian Journalism Foundation which shows that the majority of Canadians believe that the combat elements are more readily reported than the reconstruction elements because they are more 'exciting'.¹⁷

The external government providing the support needs to be aware of these media realities, regardless of the government's ability to mitigate the situation through public relations strategies. It highlights that in counterinsurgency warfare mistakes or errors, regardless of whether they are intentional or not, will have a direct negative impact on the external government's Centre of Gravity.

Public Support – The Pressure to Respond

While public support for protracted counterinsurgency warfare is difficult but fundamentally important to maintain, governments can also be under pressure from the public and the media to 'do something'.¹⁸ This is where air power could be seen by governments as an attractive option, since it provides a relatively low-risk, high-visibility response option. Air power provided the initial response to the September 11 attacks on the United States. Within weeks of the attacks, US bombers aided by Northern Alliance forces and a small number of Special Forces were targeting Al Qaeda

and Taliban fighters in Afghanistan. The effects achieved were favourable with the Taliban regime being removed from power.

For an external government, the Centre of Gravity—support from the home population—has several vulnerabilities. The length of the campaign makes ensuring long-term support difficult, progress is difficult to define and measure, and consequently the media is likely to focus on the negative. Paradoxically however, there may be public and media pressure for some sort of initial military response. The tension which exists between the immediate pressure to do something and the challenge of maintaining long-term public support is difficult to reconcile in counterinsurgency conflicts. External governments and military planners must understand this before committing forces in support of a counterinsurgency campaign.

Developing Effective Strategy

An analysis of the fundamentals of insurgencies highlights some general principles which can be applied to developing an effective counterinsurgency strategy. In counterinsurgency operations, there are often three distinct participants—the insurgent group or groups, the incumbent government or power, and in some cases external supporting powers. Effective strategy development will therefore be reliant on a thorough understanding of each of these parties.

Understanding the Insurgency

Understanding an insurgency should not be thought of in purely military terms of knowing the enemy's order of battle, strategy and tactics. An understanding of the fundamental nature of the insurgency and a thorough knowledge of the insurgents' machinations, motivations, methods, goals, strengths and weaknesses will be key to determining an effective counter-insurgent

strategy. Although four broad categories from which insurgencies are generated have been identified, an insurgency can also be a combination of different categories and groups. Within these groups there could also be many subgroups and factions which are driven by different combinations of factors.

Clearly, such a complex interdependent system cannot be neatly thrown into a single category to which a simple solution applies. A detailed understanding of the motivations, methods and interactions of the groups involved is required before a meaningful strategy can be developed. Although the desired strategic end-state may be readily identifiable, the ways and means of achieving it can only be determined through a holistic understanding of the insurgent environment.

Understanding Incumbent and Supporting Nations

Developing a coherent counterinsurgency strategy will also require an analysis of the vulnerabilities, strengths and weaknesses of the incumbent and supporting governments. The strategy must be built on the incumbent government's strengths, while protecting its weaknesses. As counterinsurgency campaigns are generally long-term endeavours, a broad spectrum approach involving military and non-military means must be carefully developed and coordinated. Military kinetic actions must produce effects which ultimately contribute positively to this coordinated strategy. The supporting nation's intent and level of commitment will provide an indicator of how resilient it will be to short-term military set backs and loss of men and materiel. Realistic expectations must be promoted so that politicians and the public alike can better understand the commitment that will be involved. Most importantly, a thorough analysis and understanding of the government's capabilities will enable an acceptable level of risk to be determined and balance the

need to achieve military objectives against the risks of long-term destabilisation.

The Importance of Winning the Hearts and Minds

Winning the hearts and minds of the population is critically important for all participating groups and is, therefore, the focal point of strategy development. Winning the hearts and minds component is a complex task with many factors that need to be considered. One of the most important factors in ensuring success is the legitimacy and effectiveness of the incumbent government, which also has implications for external governments supporting the campaign. The external government support can isolate the incumbent government, which is likely to do long-term harm by inadvertently indicating to the local populace that their government is ineffective. Therefore, any strategy that is employed must as far as possible try to reinforce the competence of the incumbent government.

The strategy for winning hearts and minds will more often be non-military in focus, operating within a common strategy. Military support will generally be focused on providing the secure conditions required for non-military operations to be conducted in safety. The military also needs to be cognizant of the potential to undermine the broader strategy through the misapplication of force. To be most effective, force application needs to be carefully coordinated with an effective IO strategy that will also counter any insurgent IO campaign. The local population is likely to be more supportive of both their own government and supporting forces if they understand why force is being used and if it is being used with discrimination and proportionality. Aggressively pursuing military objectives without considering the possible impact on local support may be fatal to the campaign.

The analysis of insurgency fundamentals leads to three main principles which need to be considered by militaries when employing force during a counterinsurgency campaign. Firstly, the incumbent government must be involved to the greatest extent possible in order to highlight its competence and legitimacy to its own people. Secondly, any use of force needs to be understood in terms of its potential detrimental strategic effects on the campaign. Finally, and most importantly for offensive air power, when force application becomes necessary, it should be done with proportionality and discrimination.

AIR POWER ROLES IN COUNTERINSURGENCY WARFARE

Air power's role in modern counterinsurgency warfare is different to its role in conventional warfare. During the Kosovo air campaign of 1999 and in the conduct of the conventional phases of both recent Iraq wars, much was made of air power's ability to contribute to a swift and decisive victory. The traditional functions of air power—hitting critical targets deep behind the enemy's lines, destroying command and control functionality, and impeding the enemy's ability to deploy and sustain his forces—were all evident in these campaigns. These functions, which give air power much of its potency, are not as relevant in counterinsurgency campaigns,¹⁹ where many of air power's greatest strengths cannot be employed. Thus there is a need to examine air power's capabilities and limitations when applied in counterinsurgency warfare in order to maximise its effectiveness.

Support to Incumbent Government Forces

Providing low-profile long-term assistance to the incumbent government's air force will complement their own counterinsurgency warfare capability. The supplementation and

development of the incumbent government's air power aligns well with counterinsurgency warfare theory of reinforcing to the people that the government is capable of handling the situation and providing security for the population, thus working in support of its Centre of Gravity. The government that is providing the external support also benefits from using this approach. By providing support for the campaign, the pressure on the external government to do something is relieved and since the commitment is relatively low-risk, the external government is more likely to be able to maintain its public's support over the long term. This approach ultimately allows the fine line involving public support to be negotiated with more confidence.

The US intervention in El Salvador in the 1980s demonstrates the effective provision of counterinsurgency support using offensive air power. The US provided equipment in the form of aircraft, such as the A-37 Dragonfly, and personnel to provide training and military advice.²⁰ Even though it was a major commitment from the US in terms of funding, resources and foreign policy effort, only a small number of US personnel were deployed.²¹ The insurgency was powerful and the campaign was fought over many years, but by not being directly involved the US was able to maintain the long-term support it needed. The El Salvador Air Force (FAS – *Fuerza Aerea El Salvador*) became credible and effective with a genuine counterinsurgency capability and contributed considerably to the success²² of the campaign that concluded with the signing of a peace accord in 1992. The support provided to the FAS by the US contributed significantly to this success.²³

Recognition of the value of such a supporting strategy is now reflected in the US counterinsurgency doctrine manual, *Military Operations in Low Intensity Conflicts*, which states that, 'US policy recognizes that indirect, rather than direct, applications of US military power are the most appropriate and cost effective ways to

achieve national goals'.²⁴ Although indirect support of air power capability has many benefits in counterinsurgency warfare, it is not always viable. The incumbent government and its military forces must have a minimum level of competence and infrastructure for such external assistance to be absorbed, which may not always be the case.

Acting through the incumbent government reinforces its competency to its people and also develops its self-sufficiency that in turn will gradually reduce the external supporting government's role. Additionally, the relatively low-cost and low-risk nature of the support will permit the external government to provide the long-term commitment, essential for success in counterinsurgency warfare.

Strategic Bombing

Strategic bombing has been one of the fundamental aspects of air power theory almost since the invention of the aeroplane.²⁵ Air power theorists and practitioners have long argued that air power's greatest strength is its ability to attack directly an enemy's strategic Centre of Gravity.²⁶ This is problematic in counterinsurgency warfare where the critical Centre of Gravity revolves around the popular support and legitimacy of the insurgency. The sociopolitical nature of this strategic Centre of Gravity does not provide a neat set of kinetic targets which air power can attack effectively. Strategic attack theory as described by Warden's Rings model promotes the use of air power to strike directly at the enemy leadership's command and control network as well as their will to fight.²⁷ This is difficult in counterinsurgency warfare for two reasons. Firstly, the enemy leadership are unlikely to operate with a high-fidelity, high-technology centralised command and control system. They are more likely to use a decentralised command structure incorporating a low-technology and redundant control system making it difficult

for air power to attack physically. Even if the command and control system is successfully attacked, the insurgents' ability to operate is unlikely to be undermined.²⁸ The second reason the model does not apply is that the insurgents are motivated to fight by different reasons than combatants in conventional warfare. Their desired end-state is normally a political solution; therefore, their will to resist is unlikely to be affected through military action alone.

Despite its obvious limitations in counterinsurgency warfare, the use of strategic bombing against insurgents has historically been championed by air power theorists and practitioners. The aim of these bombing campaigns has been to undermine support for the insurgents through punitive or coercive bombing of their supporters. The British and French frequently employed this technique during the inter-war period in an attempt to maintain control of their colonial empires.²⁹ In theatres such as Somaliland, Aden, Mesopotamia, Kurdistan and Palestine, the British strategic bombing failed to achieve decisive effects. The enemy would quickly adapt to the situation and would continue to fight on.³⁰ During the Rif War, the French and Spanish found that heavy bombardment of towns and cities supporting the rebels did not affect their will to resist. In fact, against a determined enemy fighting for a national cause, coercive bombing actually was found to strengthen an enemy's will to resist.³¹ In the modern era, the Soviets tried to bomb the Mujahideen in Afghanistan into submission. They targeted sympathetic villages and other areas in order to 'depopulate' them. Although there were tens of thousands of casualties and many Afghans were driven into Pakistan, the Mujahideen's morale and level of support was not severely affected.³²

For a government providing external support to a counterinsurgency campaign, strategic bombing would seem an attractive option because it provides a quick and high-visibility response and is a relatively low-risk commitment. These factors make strategic

bombing a popular choice with politicians. Similarly, the strategic nature of such air power application is likely to resonate with airmen and air planners, where it has dominated both air force thinking and doctrine.³³ However, historical evidence does not support strategic bombing as an effective tool against insurgents.³⁴ While such a response may achieve the short-term political aim of a high-visibility low-risk response, without a concerted long-term full spectrum approach, it is unlikely to have any enduring success. As part of a broader strategy, the use of strategic bombing has many risks. Strategic targeting of infrastructure can make the perpetrators appear to be heavy-handed bullies, which could generate sympathy for the insurgent cause, and simultaneously undermine the support both at home and within the theatre of operations. For all counterinsurgency campaigns, these effects will at best be detrimental and at worst, disastrous.

Interdiction

The aim of interdiction is to disrupt the enemy before he engages you by hitting his concentrations of force and materiel, and disrupting his lines of communication.³⁵ Insurgents faced with superior firepower will try to avoid overt concentrations of force and tend to melt away into the local populace when threatened, creating challenges in prosecuting them.³⁶ Depending on its application, interdiction can have both positive and negative effects on the broader counterinsurgency campaign. The advantages and risks are analysed below.

Advantages

In a counterinsurgency campaign, interdiction provides significant advantages, both direct and indirect. Air power's reach and rapid response capabilities can negate any attempt by the insurgents to use massed combat forces.³⁷ This was evident during the early stages of the current conflict in Afghanistan. When the Taliban attempted

to operate as massed conventional-style fielded forces, Western air power was able to target them with devastating effects.³⁸

In addition to the first order effects of interdiction, where the enemy is directly destroyed on the ground, it also produces second and third order effects. The ability of air power to hit the enemy whenever and wherever he concentrates manpower, equipment or resources ensures that insurgents must avoid large concentrations which can be easily interdicted. Consequently, their freedom of movement and ability to concentrate firepower become limited. By limiting insurgent movements the incumbent government's control can be spread to areas which may have previously been under insurgent control. Once this control is established the non-military functions critical to the ultimate success of the campaign, such as rebuilding the infrastructure and economy can be carried out in larger areas.

A government which is supporting the counterinsurgency externally can also benefit from the effects of interdiction. The insurgents' inability to concentrate their forces or resort to the use of heavy weapons typical of a more conventional war alters the force structure that is necessary to combat them. Equipment which would be essential to combat a heavy force will no longer be required, significantly reducing the amount of supporting equipment and personnel required in theatre. Over the course of a long campaign this significantly reduces the cost, strain and vulnerability to domestic criticism associated with deploying and sustaining a much larger force.

Lastly, and perhaps most importantly, a smaller footprint of external military forces on the ground works towards aiding the key perception that the incumbent government forces are in control. Interdiction of insurgent concentration of forces will permit incumbent forces to be more effective with less external support and is likely to create an impression of control and competence.

Such a perception protects the Centre of Gravity of the incumbent government and is therefore fundamental to the ultimate success of the counterinsurgency campaign.

Risks

The logistical framework of an insurgent group is usually fundamentally different to that of conventional force. Conventional forces rely on lines of communication for their effectiveness making them lucrative target sets for airborne interdiction. Faced with effective air power, insurgents will try to reduce the amount of lucrative targets they present by blending themselves into the local population³⁹ making interdiction very difficult. Embedded insurgencies do not have discernible logistical lines of communication that allows for interdiction from the air.⁴⁰ Any attempt to target dual use lines of communication, such as bridges, roads and communication nodes, may actually be counterproductive. Although a short-term disruption to equipment and supply may be achieved, it is likely that the negative second order effects, where the local populations are disrupted or inadvertently targeted will be detrimental to the overall counterinsurgency campaign.

Insurgent groups have adapted to the air threat by the increasingly sophisticated use of camouflage, concealment and deception.⁴¹ Further, man portable surface-to-air weapons and adapted tactics are making the operating environment more dangerous and limiting to counterinsurgency air power.⁴² Insurgents may also actively encourage air power to cause unintentional damage which can be exploited through the insurgents' IO campaign.⁴³ These insurgent strategies are effective in a number of ways. The increasing difficulty of locating valid targets and limiting collateral damage along with the risk of platform loss makes offensive air power less effective. Collateral damage will result in reduced support for the

campaign from both the local and international population, while platform loss will put pressure on the external government's ability to provide long-term support.

When skilfully employed, air interdiction is viable within counterinsurgency operations as it acts as a force multiplier, allowing a smaller ground force to operate in a less concentrated manner over a larger area. It will be able to deny the insurgents the ability to move freely and use force *en masse*. Interdiction must be conducted according to the fundamental principles of counterinsurgency warfare. Suitable targets must be carefully identified and engaged with a proportionate force to achieve the desired effect. Poorly applied force that creates collateral damage may achieve a tactical objective but could seriously undermine the progress towards strategic success.

Close Air Support (CAS)

Within a conventional warfare construct of definitive forward lines, massed troop concentrations and an identifiable enemy, CAS is one of the cornerstones of combined arms warfare. Counterinsurgency warfare, however, does not fit neatly within this paradigm. The enemy is likely to be dispersed and difficult to identify, and friendly forces are likely to operate in small groups. In this situation CAS can provide a highly effective means of providing fire support to ground forces conducting counterinsurgency warfare.

Technology has facilitated air power in providing precision strikes throughout the battlespace in a responsive manner, thus making it well suited to counterinsurgency warfare. Although CAS is generally thought of as a single role, there is a difference in how it is applied offensively and defensively. Therefore, both offensive and defensive CAS must be considered within the context of counterinsurgency warfare.

Offensive CAS is used to support ground forces conducting offensive operations against known enemy locations or strongholds. The advantage of offensive CAS is that it can be thoroughly planned and fully integrated into the battle plan, thus providing maximum efficiency and flexibility. This enables offensive operations to be conducted with maximum effectiveness and efficiency, while reducing the likelihood of an adverse outcome. Offensive CAS's greatest strength within counterinsurgency warfare is that it allows time for thorough planning and consideration of targeting and its multiple effects prior to employing force. This ability to plan in advance enables the positive effects of air power to be maximised—in this case coordinated precision firepower—while reducing the potential for negative effects such as collateral damage and fratricide.

Defensive CAS differs from offensive CAS because it is not pre-planned and occurs unexpectedly. The small sizes of ground troop patrols deployed in counterinsurgency warfare make them vulnerable to attack from moderately sized enemy forces. These troops often lack their own heavy firepower support and cannot usually be reinforced quickly. In these situations defensive CAS can rapidly provide the required fire support. Air power's ability to respond rapidly with precision strikes reduces the likelihood of friendly losses and enables the friendly ground forces to neutralise the enemy attack. However, compared to offensive CAS, defensive CAS is significantly more risky, in that the job may not get done, known as operational risk, and the broader counterinsurgency campaign may be affected if collateral damage occurs during its execution.

Overall, CAS is a fundamentally important air power role in counterinsurgency warfare. The ability to provide rapid precision strikes throughout the battlespace allows ground forces more freedom to operate in a dispersed manner which is more desirable

in counterinsurgency warfare. The risks can be mitigated to a certain extent through robust training, procedures and Rules of Engagement (ROE). Perhaps more than in other air power roles, effective CAS requires good judgement and sound decision-making at the tactical level. Good judgement and decision-making can only be achieved if the fundamental concepts of counterinsurgency warfare are understood at all levels in the force.

Targeted Killing

Due to air power's ability to project lethal force over long distances rapidly, it has been used to target individual leaders of insurgent or terrorist groups in what has commonly become known as 'targeted killing'. Against groups that rely extensively on one or a small number of key individuals to operate, conducting targeted killing is an attractive option. There are, however, a number of factors which need to be considered before conducting such an operation. These include understanding the nature of the insurgency, deducing the short-term and long-term effects resulting from a successful killing, and deciding whether such a response is the most appropriate.

The nature of the insurgency will determine to a large extent how effective the targeted killing is likely to be. Generally, ethnic or territorial-based insurgencies are more resilient to the death of key leaders than are ideological insurgencies. Ideological insurgencies normally revolve around a small number of leaders which means they are more likely to be affected by a leader's loss.⁴⁴ Consideration must also be given to whether killing or capturing the insurgent leader is the best option. The capture of a key leader may be more useful to the long-term conduct of the campaign, especially in the case of more secretive organisations such as global terrorist networks. For these secretive and difficult to penetrate organisations the information gained from an individual is likely to be more valuable than his/her death. The effects of killing the

leadership are difficult to predict, and it may also be that the killing will in fact embolden the insurgency.

If a complete analysis has been done, intelligence is reliable and the collateral damage potential is eliminated or greatly minimised, then targeted killing may be a suitable option. Air power's precision and rapid response capability makes targeted killing a viable role for offensive air power within a counterinsurgency campaign.

Air Power Roles – Benefits and Risks

Air power offers many advantages when conducting counterinsurgency warfare due to its inherent reach, responsiveness and the ability to project overwhelming force. It does have limitations, however, and some of the traditional roles considered to be the cornerstone of air power application are of limited effectiveness and questionable utility in counterinsurgency warfare. Strategic bombing may be effective in isolated cases, but the small number of targets and the nature of insurgency will not allow it to be decisive. Punitive or coercive bombing has been shown potentially to be detrimental to the long-term aims of counterinsurgency warfare and should not be considered on both practical and ethical grounds. Targeted killing may be useful in certain situations, but the most effective roles for offensive air power in counterinsurgency warfare are interdiction and CAS. Interdiction degrades the insurgent group's ability to command and control its forces and also makes its resupply more difficult. Even when there are few opportunities to interdict, the mere presence of an interdiction capability in theatre has a deterrent effect. Enemy forces can no longer mass in large numbers for extended periods of time because they are vulnerable to attack from the air and their freedom of movement is restricted. The availability of CAS enables friendly forces to be deployed in more areas throughout the theatre, thus working in support of the fundamental counterinsurgency

principles. A larger number of secure areas allow the incumbent government to aid more of its own people through infrastructure development and other projects. This ultimately increases the support for the incumbent government and undermines the insurgents' aims.

The discussion of the benefits and risks associated with using offensive air power in counterinsurgency warfare can be used to provide a framework for evaluating the tools required to apply offensive air power practically and successfully throughout the battlespace. The benefits that air power provides need to be maximised, while the risks that it carries need to be reduced or eliminated. The preceding analysis has shown that there are a number of broad areas which must be considered before employing offensive air power in counterinsurgency warfare. When evaluating the suitability of offensive air power tools in counterinsurgency warfare, the following factors should be considered:

- Ubiquity – offensive air power must be able to operate throughout the battlespace.
- Speed – offensive air power must be able to respond rapidly to situations on the ground.
- Firepower – offensive air power must possess the capability to destroy or neutralise potential target sets.
- Collateral damage (unintended damage to buildings or people resulting from attacking a legitimate target) – must be minimised or eliminated.
- Incorrect targeting (something or somebody being incorrectly identified as a legitimate target) – must be minimised or eliminated.
- Survivability – vulnerability of air assets to attack must be minimised or eliminated.

In this paper, these factors have been used to evaluate the suitability of various platforms, sensors and weapons for use in counterinsurgency warfare. To allow for an appropriate depth of analysis and evaluation, other factors contributing to the overall effectiveness of the air campaign, such as tactics, training, doctrine and force enablers, have not been considered. By understanding how platforms, sensors and weapons can be applied to the counterinsurgency campaign, a more coherent and effective strategy for the employment of offensive air power can be developed.

AIRBORNE PLATFORMS, SENSORS AND WEAPONS IN COUNTER-INSURGENCY WARFARE

Platforms

The factors selected for evaluating the effectiveness of offensive air power tools in counterinsurgency operations indicates that some platforms are better suited to the counterinsurgency role than others. Since each specific theatre will have its own unique terrain, weather and threats, some platforms will realise certain advantages or disadvantages from these variables. This should be a consideration for air power planners, but a detailed breakdown of each potential theatre is beyond the scope of this paper. The following evaluation only considers the generic strengths and weaknesses of various platform types, which could then be tailored for specific theatres of operations.

In general the platforms which are most suitable for counterinsurgency operations are those which are the most survivable, can be deployed as required within the theatre of operations, have good range and endurance to provide long-term coverage over a broad area, and have the capability to carry suitable weaponry, sensors and communications suites to accomplish the

mission. They should be platforms which can deliver weapons accurately such that the risk of fratricide and collateral damage is minimised.

Helicopters

The main advantage of helicopters is their ability to operate at low speed and in close proximity to both friendly troops and potential targets. This enables helicopters to monitor a target area with minimal manoeuvre or loss of contact. The lower speed of operations maximises sensor capability and minimises the chances of visual misidentification of targets. Helicopters normally carry direct fire low-yield weapons, which makes them well suited for operations in areas where collateral damage is a concern. By operating primarily at low level and slow speeds, helicopters can also overcome restrictions of weather and visibility better than fixed-wing platforms.

The low-level and low-speed capabilities of helicopters are their source of strength and also their source of weakness. Operations at low level and low speed make helicopters extremely vulnerable to ground-based air defences. Insurgents are unlikely to have highly capable surface-to-air missiles (SAMs), but will likely have access to some form of low-technology tactical anti-air capability. Many of the world's insurgent groups possess man-portable infra-red (IR) SAMs, such as the US Stinger and the Soviet SA-7 series that are very effective. Helicopters are also vulnerable to attack with low-technology weapons, such as heavy calibre machine guns and rocket-propelled grenades. For insurgent groups lacking any early warning technology, helicopters make attractive targets as they are easily detected visually and aurally, and in counterinsurgency operations helicopters have proved to be particularly vulnerable. These losses can have a detrimental strategic effect on the support for the mission. In summary, helicopters offer a viable offensive

support platform, but are also vulnerable to ground fire. Their advantages need to be weighed against the risk of platform loss and in situations where such losses are politically or strategically untenable, the same offensive capability should be achieved through more-survivable platforms.

High-speed Multi-role Fighters

This section considers high-speed, multi-role fighters that are not specifically designed for CAS or interdiction. These types of aircraft, such as the F-15, F-16 and F-18 series, are primarily designed for conventional warfare and, therefore, have certain disadvantages when used in counterinsurgency warfare.

One of the major disadvantages of high-speed multi-role aircraft is that they are expensive to acquire, maintain and operate. They also need to operate from bases that have substantial infrastructure, increasing their logistic footprint. These aircraft also generally have limited endurance, needing air-to-air refuelling assets to be positioned in theatre to supplement them. These requirements increase the level of commitment needed from externally supporting governments, placing further pressure on their ability to support the campaign in the long term.

The risk of losing expensive high-speed multi-role platforms is normally so untenable that these aircraft tend to operate above the effective altitude of shoulder-launched SAMS, generally around 15 000 feet. This reduces the ability to accurately identify targets visually from the air and also reduces the capability of sensors. Although these restraints and impositions are understandable from a strategic and political standpoint, they highlight the limitations of high-speed fighters in counterinsurgency campaigns and their reduced effectiveness in interdiction missions. CAS missions using high-speed multi-role fighters will be highly reliant on ground forces to nominate and identify targets correctly. The inability to

corroborate target information independently increases the risk of the wrong target being attacked. Some of this risk may be mitigated through the use of highly capable sensors, and by applying more restrictive ROE. Although this may be required from a strategic imperative, it will ultimately compromise tactical effectiveness.

A significant advantage of high-speed multi-role platforms is that they are available in most Western countries and in large numbers. Survivability is generally excellent as insurgents do not readily have the ability to target small, high-speed, high-altitude targets. Unless these aircraft are operating at extreme low altitude, the only genuine threat is the shoulder-launched SAM. Modern high-speed multi-role aircraft have countermeasures that are effective against most SAMs and even the latest generation SAMs have limited capability against these platforms. A further advantage these aircraft offer is that they normally operate a broad range of sensor and weapon suites, providing flexibility that can be optimised for operations in a counterinsurgency environment.

Conventional military fast jets are perhaps not the optimum solution for projecting offensive air power in counterinsurgency warfare. However, to provide the ubiquity required in counterinsurgency warfare, these aircraft may be all that is available. The true capability of these platforms will be dependent on their sensor suites, communications equipment, weapons and night and all-weather operating ability.

Dedicated Slow-Speed Ground Attack Aircraft

Dedicated ground attack aircraft able to operate at lower speeds close to the ground have proved highly effective in counterinsurgency operations in many theatres. Their advantages are that they are cheap to operate, can be deployed with a small support infrastructure and can operate from less substantial facilities as compared to high-technology multi-role fighter aircraft. Tactically they can operate at

low altitudes and slow speeds which are better for target acquisition and identification.

At the premium end of the interdiction and CAS platform spectrum is the A-10 'Warthog'. Its relatively slow speed and good manoeuvrability allows it to get in close to targets for identification and verification, thus greatly reducing the risk of attacking the wrong target. It has a broad range of weaponry available to match a variety of potential targets. It can deliver heavy precision ordnance to larger targets and also use weapons which minimise the risk of collateral damage in urban areas. Lastly, it is designed to be survivable with an armoured cockpit, redundant systems and a state-of-the-art missile decoy suite. The fact that this aircraft is being upgraded years after it was planned to be retired is testimony to how useful it is in counterinsurgency warfare roles.

The lower end of the spectrum offers many cheap alternatives to modern fighter aircraft. Many of the Third World countries which fight counter-insurgencies cannot afford modern equipment. For these countries, the use of older, cheaper aircraft is the only alternative; one which over many years has proved to be effective. Even when threatened by SA-7 SAMs and lacking IR countermeasures, aircraft such as the A-37 have been successfully employed in the counterinsurgency role.⁴⁵ Having a cheap and easy to operate, independent offensive air capability satisfies many of the fundamental counterinsurgency factors. The incumbent government's indigenous capability gives it more credibility and also reduces the support burden placed on the external government.

Slow-speed air-to-ground aircraft also have limitations in counterinsurgency warfare. While their slower speed and ability to operate closer to potential targets offers many advantages, it also increases the risk of them being shot down. Additionally, their slower speed means that they are not able to respond as quickly throughout the battlespace as high-speed fighters. Despite these

disadvantages, slow-speed air-to-ground aircraft can be highly effective in counterinsurgency warfare. Their advantages need to be optimised and will vary with specific theatres of operation. Outside of the A-10 'Warthog', Western air forces have tended to ignore this type of capability in favour of platforms designed for high-technology conventional warfare. Consideration needs to be given to developing simple, cheap and survivable aircraft which can be used in counterinsurgency warfare. While they do not represent a complete solution, they are clearly able to support the fundamentals of counterinsurgency warfare in a practical and cost effective manner.

Gunships

In many ways, gunships such as the AC-130 Spectre seem ideally suited to counterinsurgency warfare. They have good range, long endurance and can carry large payloads. This payload ability allows them to be fitted with the most advanced sensors and communications equipment. They are also able to carry accurate direct fire weapons which minimise the risk of collateral damage, incorrect targeting and fratricide. Their ability to orbit the target area, observe and fire without interruption has made them a valuable counterinsurgency platform in a number of campaigns from Vietnam to Iraq.⁴⁶

There are two major issues which limit the effectiveness of the airborne gunship in the modern era. Firstly, it is prohibitively expensive. Compared to a regular C-130 transport costing approximately US\$50 million per aircraft, the AC-130 Spectre gunship costs US\$190 million.⁴⁷ This means that few countries besides the US are likely to be able to field such a capability. The high cost also leads to the second weakness of the platform. It is such a valuable and scarce asset that it cannot be placed at significant risk. The AC-130 operates at low to medium altitudes, is large and comparatively slow.

This makes it an ideal target for modern shoulder-launched SAMs. This risk means that the AC-130 is usually only operated at night. The gunship is an extremely powerful weapon for counterinsurgency warfare and in the right environment will often be the weapon of choice. Its cost and operating restrictions, however, limit its broader application.

Uninhabited Combat Aerial Vehicles

Uninhabited Combat Aerial Vehicles (UCAVs) are an emerging capability that appears to have a great future in counterinsurgency warfare. UCAVs satisfy many of the factors pertinent to counterinsurgency warfare. Without the requirement to accommodate people on board, UCAVs can remain on station for extended periods of time, carry advanced sensors, advanced communications suites and precision weaponry. The altitude at which they operate make them highly survivable platforms. Even if they are shot down, the fact that no lives are lost reduces the likelihood that support for the campaign will be affected.

There are currently some limitations which affect the employment of UCAVs in a counterinsurgency environment. The technology is only emerging and weapons integration has been minimal. This means that the unmanned platforms which have been used to date are largely Uninhabited Aerial Vehicles (UAVs). These UAVs have successfully been used in support roles providing ISR inputs and directing targeting.⁴⁸ Currently, UCAVs lack the required autonomy to realise their full potential. The central control they currently require limits the ability of fielded units to operate autonomously and with maximum flexibility.⁴⁹ Additionally, having nobody in the cockpit with eyes directly on the target area effectively removes an important sensor from the battlespace. The platform becomes reliant on its onboard sensors, the limitations of which will be analysed in the following section of this paper.

Even though UCAVs have only been employed in limited numbers, their success in Afghanistan and Iraq has invigorated plans to develop the technology further. UAVs, such as Predator and Hunter, have been weaponised and the US Army has selected the Warrior as their future UCAV vehicle.⁵⁰ The Israelis have considerable experience operating UCAVs over the West Bank and Gaza Strip and are continuing to increase their UCAV capability.⁵¹ As technology advances and doctrine matures, it is likely that UCAVs will become an invaluable platform for supporting counterinsurgency warfare. The potential strategic and tactical advantages offered are immense.

Sensors

Good sensor suites are a key requirement for the effective employment of offensive air power in counterinsurgency warfare. Correctly identifying and accurately engaging targets have always been fundamental to military operations, but their importance is even greater in counterinsurgency warfare. The negative effects of collateral damage are magnified and, as has been discussed, may quickly undermine the whole operation. One thousand valid targets may be prosecuted successfully, but it is the one mistake that will be presented in the media.

A good sensor suite also helps mitigate the risk of platform loss, since good sensors can surpass the capability of the naked eyeball, allowing the platform to achieve a safe level of stand-off from the threat. This stand-off may be horizontal, as is usually the case for rotary wing assets, or vertical in the case of most fixed-wing assets.

The true capability of a sensor suite is a function of the sensor's inherent range, the atmospheric conditions and the terrain. Simply put, sensor ability will degrade with increasing range from the target, increased moisture in the atmosphere (for non-radar sensors) and the prevalent ground environment. For all of their

high technology capability, electro-optical (EO) and IR sensors still require minimum visual conditions in the target area. Poor weather can reduce their performance and even render them entirely ineffective. Sensors which can operate in all weather conditions, such as synthetic aperture radars (SARs), mitigate this problem to some degree, but their utility is somewhat limited because they cannot achieve the same level of resolution as EO or IR sensors.

Sensors can be categorised into three levels of capability. At the most basic level, a sensor is only able to identify the target area and may not be able to directly see the desired mean point of impact (DMPI). The platform using such a sensor is totally reliant on an external source, whether that be ground-based or airborne, to identify the target correctly and assess the risk of collateral damage or misidentification. This does not provide any means to confirm independently the validity of the target. Examples of such a level of capability are basic SARs, and older generation IR pods being operated in other than ideal conditions.

Editor's Note: The term DMPI has now been replaced in the ADF by joint desired point of impact (JDPI)

The next level in capability involves sensors which are able to locate the JDPI correctly, but not identify it. For example, the sensor may be able to locate a particular vehicle, but not actually identify the type of vehicle, or it may be able to see a group of people, but not identify whether they are carrying external weapons. The suitability of this type of sensor will differ with each scenario and the ROE in vogue.

At the top end of the scale are sensors which have a high confidence onboard identification capability. These sensors are able to identify things such as the specific type of vehicle being targeted, or the

number of people at a specific location and whether or not they are overtly carrying weapons.

The suitability of a sensor for use in counterinsurgency warfare will vary with its level of capability. Generally, as the sensor capability increases so does its operational effectiveness and ability to mitigate both operational and strategic risk. Lower grade sensors hamper the ability to employ offensive air power effectively and require much higher levels of coordination and integration. Conversely, the capabilities of higher grade sensors enable aircraft to operate with less risk and a higher degree of effectiveness. The ability to identify a potential target correctly means that more targets can be independently engaged with a reduced likelihood of adverse errors.

Sensor capability has a huge impact on the effectiveness of offensive air power in counterinsurgency warfare. Weather and terrain are likely to impact a sensor's operating capability and a combination of IR/EO and radar sensors in theatre will provide the most flexibility. The strengths and weaknesses of sensors must be understood in the context of how operationally effective they are likely to be, and how much risk is associated with their use.

Weapons

Poorly delivered, inaccurate, indiscriminate or overly damaging weapons are ill suited for counterinsurgency warfare where their negative effects are amplified and the corresponding consequences magnified. Historically there have been a number of occasions where it was apparent that conventional weapons and delivery systems were not well suited to counterinsurgency warfare.⁵² This section will review different types of weapons focusing on their strengths and weaknesses in counterinsurgency warfare.

Precision Weapons

The concept of precision has been progressively incorporated into weapon design technology in the modern era, with each successive campaign showing an increasing use of such weapons. During the 1991 Gulf War the number of precision guided munitions (PGM) used was less than 10 per cent, increasing to 35 per cent in the Kosovo air campaign and to 68 per cent during *Iraqi Freedom* in 2003.⁵³ Counterinsurgency warfare in the modern era demands the use of precision weapons. Generically, precision weapons can be categorised as laser-guided, command guided, IR guided or Global Positioning System (GPS) guided.

Laser and Command Guided weapons: The common feature of laser and command guided weapons is that target identification is generally required prior to release. The laser spot needs to be placed physically on the desired target, either by the aircraft's onboard system or an external airborne or ground-based source. The advantage of laser designating targets is that human error can be mitigated. Even if there is confusion about target coordinates or there are system entry errors, as long as the target has been correctly identified and designated, the weapon will physically impact the designated spot. Ground-based lasing further reduces the chances of a misunderstanding between the surface forces and the airborne asset.

An additional advantage of laser and command guided systems is that they are able to hit moving targets. The moving target can be tracked and the weapon will continue to be guided to the target. Importantly for counterinsurgency warfare, these man-in-the-loop systems allow the weapon to be steered off the target in extreme cases when changed conditions require it to avoid the risk of collateral damage.

A major limitation of these weapons is that they require visual or IR acquisition of the target, making them inoperative in bad weather, such as complete undercast or low visibility due to heavy precipitation. They also have limitations when the weather is relatively fine, but not perfect. For example, if an aircraft is releasing a laser-guided weapon above scattered cloud, the target may become obscured during the weapon's time of flight. If the target is not reacquired in sufficient time before impact to allow for accurate guidance, it is likely that the weapon will impact somewhere other than the intended target. In urban or high collateral damage risk areas this is not an optimum situation.

Another limitation of laser-guided weapons is that the target has to be lased continually until weapon impact. This may expose either the air asset doing the designation or the ground-based lasing team to enemy fire. Overall, however, the advantages of laser-guided weapons are significant. The increased assurance of identifying the correct target and the ability to control the weapon in flight make these weapons well suited to counterinsurgency warfare.

IR Guided Weapons: Unlike laser and command guided weapons, IR guided weapons fall into the 'fire-and-forget' category. Once they have been released from the weapons platform there is no ability to control them. As is the case with laser and command guided weapons, IR guided weapons require suitable weather conditions for use. Despite this weather limitation, the requirement to lock onto a target prior to launch provides advantages for IR weapons. Firstly, the requirement to gain an IR lock means that the target is more likely to be identified correctly prior to release. This provides an additional level of assurance that the correct target is being prosecuted and reduces the risk of incorrect targeting or fratricide. The other advantage of an IR lock is improved accuracy, because IR weapons tend to be more direct fire in style as opposed to the high-altitude ballistic release profiles of laser-guided bombs. This means

that the weapon is normally fired from a closer range and with direct line of sight to the target, reducing the problems associated with interference from adverse weather conditions. As long as the intended target provides strong enough IR tracking characteristics, this class of weapon is highly suitable for counterinsurgency warfare.

GPS Guided Weapons: GPS guided weapons fall into the same 'fire-and-forget' category as IR guided weapons. The greatest advantage that is immediately apparent with GPS guided weapons is that they can provide precision effects in all weather conditions. Also there is no requirement to laser designate the target while the weapon is in flight, thus avoiding the need potentially to expose the designating asset or troops to enemy fire. During the initial stages of Operation *Enduring Freedom*, and in particular during Operation *Anaconda*, GPS weapons proved to be highly effective. In Afghanistan, the ability to support ground troops in all weather conditions allowed the US to support the local Northern Alliance while maintaining a small military footprint. This ability works positively towards the goals of counterinsurgency warfare.

Despite their obvious advantages, there are risks and drawbacks associated with the use of GPS guided weapons. While they can be used in all weather conditions, they require precise target coordinates to be effective. These highly precise or mensurated coordinates can be obtained through either onboard or offboard means. If obtained on board, then the same weather limitations which affect sensors used in laser-guided weapons will still be a factor. Similarly, the ability to obtain mensurated offboard coordinates suitable for GPS weapons in theatre is limited, since specialised equipment is needed to achieve the required precision. Obtaining coordinates from offboard sources also has associated risks. Firstly, without suitable weather conditions and a latest generation sensor, there is no ability to identify the

target independently or assess potential collateral damage. While this may not be a factor in an open battlefield, it is more of a concern in a counterinsurgency environment where insurgents are likely to operate near urban areas and in close proximity to local populations. The process of obtaining GPS coordinates is subject to human error, and there have been a number of documented cases where the passing of incorrect coordinates has resulted in fratricide incidents.⁵⁴ To be effective in counterinsurgency warfare, GPS guided weapons must still be employed with robust and redundant procedures designed to avoid the risk of error to the greatest extent possible. Over-reliance on simplistic target designation techniques alone is likely to result in failure. A further disadvantage of GPS weapons is that, unlike laser-guided weapons, they cannot hit moving targets. Additionally, there is no man-in-the-loop ability to change the weapon impact point post-release if the targeting situation becomes unfavourable.

From the analysis of PGM it is clear that each type offers distinct advantages and disadvantages in counterinsurgency warfare. There is no single weapon solution available; what is required is careful matching of desired capabilities to the individual characteristics of the battlefield environment. Ultimately, air operations will be most effectively conducted with a range of PGM in theatre and the ability to use the most appropriate means for a given situation. Regardless of which weapon is being used, robust safeguards and procedures will still need to be employed to minimise the possibility of tactical failures which can have significant strategic effects.

Low Yield Weapons

The increased sensitivity to poor targeting and the collateral damage-rich environment of counterinsurgency warfare make the use of low yield weapons especially attractive. Currently many of

the weapons being used for counterinsurgency warfare have been designed for use in conventional warfare. This legacy means that they often contain far more destructive power than is necessary to achieve the required effect, thus unnecessarily increasing the likelihood and magnitude of collateral damage.⁵⁵ The USAF Scientific Advisory Board released a report in late 2006 noting that the types of weapons currently available were not well suited to urban warfare in particular.⁵⁶ Unlike the open terrain of conventional warfare, which is essentially two-dimensional, urban warfare must consider the three-dimensional effects of weapons. Urban warfare targets are typically small and fleeting, so there is a clear need for accurate weapons with lower yields than are currently available.⁵⁷ This is particularly pertinent given that a large proportion of counterinsurgency targeting is done in urban areas. This capability gap of suitable weapons for use in counterinsurgency and urban warfare has led to the development of the Small Diameter Bomb (SDB). This 250-pound weapon is half the size and weight of the current 500 pound class bomb, making it much better suited for operations in the counterinsurgency environment.⁵⁸

Other weapons which have previously been considered outdated for modern conventional warfare are finding new life in the counterinsurgency environment. While not guided, weapons such as the gun and rockets are extremely accurate and have a small collateral damage footprint. This makes them well suited for use in crowded environments or where unacceptable damage may occur through bombing. While the risk of the increased exposure of aircraft to ground threats needs to be accounted for when using rockets or cannon, the advantages of smaller yield weapons are clear.

Nonlethal Effects

Nonlethal effects offer many additional advantages over low yield weapons. A low yield weapon still has the potential to cause collateral damage. This means that there will be restrictions on their use in the form of ROE. Additionally, any collateral damage caused, regardless of the weapon type, is likely to affect the counterinsurgency campaign negatively. By using nonlethal means, the desired effect may still be achieved without much of the associated risks. Offensive air power can also be used to create effects passively through its presence alone. 'Air Presence', as it is becoming known, was used successfully during the Afghan elections to provide a sense of security and support to local nationals.⁵⁹ This approach was again used successfully during the Iraqi elections in January 2005. Although there is little data currently available to measure definitively the success of 'Air Presence', the subjective feedback has been positive. When planning for the Iraqi elections and debating the merits of using Air Presence, the Commander of the Multinational Corps – Iraq, Lieutenant General Thomas Metz, was insistent, '... I want them low—I want them loud—I want them everywhere! I don't completely understand it, but this population responds to air power.'⁶⁰

Nonlethal means of achieving battlefield effects provide increased flexibility and mitigate the risks of using deadly force. Advancing technology provides opportunities to improve low yield, low collateral damage and nonlethal weaponry. Continued development and use of such weapons will allow offensive air power to contribute more positively to counterinsurgency campaigns by providing solutions which achieve the tactical aims of the battlefield without compromising the strategic fundamentals of the campaign.

CONCLUSION

The counterinsurgency warfare environment poses many challenges for offensive air power, which should only be employed with a thorough understanding of the fundamentals of counterinsurgency warfare. A counterinsurgency war is likely to be long and the military will only be one component of the solution. A broad strategy is required to succeed and any military involvement must be compatible with it. This grand strategy can only be determined by analysing each of the main protagonists in the conflict: the insurgents, the incumbent government, and any externally supporting governments. This will lead to an understanding of the insurgents' source of motivation and power, the incumbent government's strengths and weaknesses, and the supporting government's strengths and vulnerabilities. The campaign is likely to be centred on the hearts and minds of the local population and, in particular, their perception of the competence and legitimacy of the incumbent government. For externally supporting governments the main challenge will be to maintain long-term popular support for the operation from their own population. Any application of offensive air power needs to be assessed with these fundamentals in mind. To apply offensive air power practically in a counterinsurgency war, its strengths and weaknesses must be understood within this context.

The traditional strengths of air power in conventional warfare are not optimally suited to the conduct of counterinsurgency warfare. Air power's ability to strike at strategic targets is less effective in counterinsurgency warfare because insurgent groups are normally structured and operate differently to conventional forces. Their structure and methods of operation mean that attempts to target them strategically may actually work against the fundamentals of counterinsurgency warfare. Incorrect targeting, fratricide and

collateral damage can all have an enormous impact on the hearts and minds campaign. Additionally, they put pressure on the ability of external governments to provide long-term support for counterinsurgency campaigns. This reinforces the assertion that it is necessary for those involved in the application of offensive air power to understand how its employment and effectiveness can influence the strategic outcome of the campaign.

Offensive air power does provide many advantages to the military campaign with its ability to deliver precision firepower quickly throughout the battlefield. The presence of offensive air power compels the insurgents to adapt their methods and avoid massing forces and firepower. This provides opportunities for friendly ground forces to be more effective as they can operate with smaller forces across a larger area. The nonlinear nature of the battlefield also means that ground forces are more reliant on offensive air power for their fire support.

Air power ultimately delivers its effects using platforms, sensors and weapons. These offer a broad range of capabilities, some of which are better suited to counterinsurgency air power roles than others. Each platform, weapon and sensor has its own distinct advantages and disadvantages which need to be understood within the context of counterinsurgency fundamentals. The suitability of equipment in supporting counterinsurgency air power roles will be related to how well it can enhance air power's positive attributes while minimising its negative effects. Understanding these relationships enables the risk of applying force to be understood, accepted and managed.

Currently, air power doctrine and air power capability are not focused on counterinsurgency warfare and its principles. There has been little emphasis placed on understanding how offensive air power roles conform to counterinsurgency fundamentals. This means that the employment of offensive air power is either

being conducted with unnecessary risk to the campaign, or its effectiveness is being compromised due to the necessary application of risk management restrictions. Offensive air power can play an important role in counterinsurgency warfare, but its advantages will not be maximised until these issues are addressed.

Offensive Air Power – Considerations for the Future

It is likely that insurgent methods of warfare will continue to be favoured by many potential adversaries well into the foreseeable future. These methods provide the insurgents with distinct advantages. Firstly, they negate much of the overwhelming combat power of conventional forces, particularly from an air power perspective. Secondly, insurgent methods are well suited to attacking the opposition's will to fight such campaigns. Democratic governments will always find it challenging to sustain support for long campaigns which have no definitive victory criteria, where it is difficult to quantify progress and where national interests may not be obvious.

The nature of counterinsurgency warfare needs to be incorporated specifically into air power doctrine so that air planners and operators at all levels understand the risks, dangers and benefits of employing offensive air power in the counterinsurgency environment. The suitability of various equipment used in the employment of air power must be ascertained to better fulfil the roles required to support a counterinsurgency campaign. Low numbers of high-technology, high-performance and high-cost air superiority fighters are not the most appropriate solution. A larger number of cheaper more-survivable weapons platforms, both manned and unmanned, are required. The capability of sensors to identify targets correctly from sufficient stand-off distances will also help reduce the chance of collateral damage. The concept of non-kinetic weapons needs to be developed further to increase air

power effectiveness in urban areas and to allow the prosecution of targets which would otherwise be disallowed because of collateral damage concerns.

The application of offensive air power in counterinsurgency warfare must be studied as diligently as the use of offensive air power in conventional warfare. The roles of offensive air power in counterinsurgency warfare must be developed jointly from the outset, reducing the need for procedures to be developed hurriedly at the tactical level during the campaign. These procedures must be carefully exercised at the highest levels in a joint manner before being applied in combat. A focused, coordinated and dedicated effort is required to ensure that offensive air power can be applied to counterinsurgency warfare in a way that achieves the greatest possible effect with the lowest possible risk to the campaign.

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CHAPTER 4

AIR POWER AND SPECIAL FORCES: A SYMBIOTIC RELATIONSHIP

BY WING COMMANDER DAVID JEFFCOAT

Editor's Note: This chapter is an edited version of Air Power Development Centre Paper No. 14, published in February 2004. The author acknowledges the assistance of the Development Branch of the Special Operations Headquarters in the preparation of this paper. The author was a Squadron Leader and CAF Fellow at the Air Power Development Centre at the time the paper was published.

INTRODUCTION

*It is firepower, and firepower that arrives at the right time
and place, that counts in modern war—not man power.*

Captain Sir Basil Liddell Hart¹

Operations in Afghanistan in late 2001 and early 2002 clearly demonstrated the effectiveness of combining precision firepower delivered by aircraft against ground-based targets, with Special Forces operating on the ground. Some commentators have dubbed this combination the Afghan Model and claim it should

now 'become the template for US defence planning'.² Other commentators argue this campaign was a 'surprisingly orthodox air-ground theatre campaign'.³ New terms for air power roles not envisaged 10 years ago are being coined as a result of these experiences, such as bomber Close Air Support (CAS) and Ground-Aided Precision Strike (GAPS) to describe heavy bombers (B-1, B-2, B-52) working with Special Forces on the ground.⁴ The widely acknowledged success of firepower delivered by the combination of aircraft and Special Forces in Operation *Enduring Freedom* (OEF) demands the essential elements of this combination be studied and analysed to better understand the lessons derived from this campaign.

This paper will describe the essence of the Air Power–Special Forces combination in the application of precision firepower. It will demonstrate the symbiotic nature of this relationship that should be recognised and exploited. This will be done by describing the fundamental characteristics of air power and Special Forces, then relating them to factors affecting the application of precision firepower. Examples from OEF will be used to demonstrate most of the characteristics of air power and Special Forces in the application of precision firepower.

Limitations

General Charles Horner, stated during Operation *Desert Storm*, 'The most important place where things are happening is over the target'.⁵ This paper takes heed of these words and examines only those roles directly related to the application of precision firepower. Other air power roles relevant to Special Forces such as reconnaissance, airlift and combat support will not be considered in this paper.

Terms and Definitions

The following terms used in this paper are defined to ensure clarity:

- *Application of Precision Firepower*. For the purpose of this paper the application of precision firepower is defined as the action of activating the required weapon at a specified time and place in order to achieve an effect desired by the relevant commander. Application of precision firepower includes all air power roles that feature the delivery of weapons by aircraft to land or sea based targets such as strike, offensive air support, Suppression of Enemy Air Defences (SEAD), bomber CAS and GAPS.
- *Special Operations (SO)*. Special Operations are ‘measures and activities outside the scope of conventional forces conducted by specially trained, organised and equipped forces to achieve military, political, economic, or psychological objectives. These operations may be conducted during peacetime, conflict and war, independently or in conjunction with conventional force.’⁶
- *Special Forces (SF)*. Special Forces are ‘specially selected military personnel, trained in a broad range of basic and specialised skills who are organised, equipped and trained to conduct special operations’.⁷

CHARACTERISTICS OF AIR POWER AND SPECIAL FORCES

Understanding the essence of the Air Power–Special Forces combination requires the distinguishing features, or characteristics, of each part of this combination to be discerned. A better understanding of exactly what it is about the Air Power–Special Forces combination that makes it so successful in the application of precision firepower will enable its full potential to be realised and exploited in joint operations.

The characteristics of air power presented in this paper are taken directly from AAP1000 *Fundamentals of Australian Aerospace Power*.⁸

Editor's Note: The characteristics taken from the 4th Edition of RAAF's strategic doctrine has been retained since the 5th edition was only published three years after this paper was written. Although there are no significant changes to the explanations of the characteristics mentioned in the paper, the 5th Edition includes perspective, penetration, flexibility, concurrent operations, platform and system vulnerabilities and technology in addition to the ones mentioned in the previous edition. This does not however, detract from the contents of the paper in any way.

There appears to be no readily available list of characteristics of SF amongst the available literature. The preponderance of literature and studies on SF is limited to operational narratives and descriptions of SF weapons or tactics.⁹ McRaven's¹⁰ and Gray's¹¹ writings on the theories of SF are the few exceptions to this observation. Australian Defence Force (ADF) doctrine on Special Operations (SO) also offers a list of distinguishing characteristics but not of the SF.¹² This paper will use the ADF doctrine on SO along with McRaven's and Grey's theories of SF and SO to develop a set of relevant characteristics of SF that will be reinforced with examples taken from historical accounts of operations and exercises conducted by SF.

CHARACTERISTICS OF AUSTRALIAN AIR POWER

The characteristics of Australian air power most relevant to the application of precision firepower are concentration of force, impermanence, payload, precision, reach, responsiveness, speed, tempo and versatility.¹³

Concentration of Force

Aircraft originating from disparate locations, whether from forward operating bases or homes bases, can rapidly congregate at single or multiple designated points in time and space, either in series or in parallel.¹⁴ Air component commanders are therefore able to concentrate their air power capabilities based largely on the joint commander's requirements, with a lesser concern on the limits of time and space compared with exclusively land and sea-based forces. An air-to-air refuelling capability is the key enabler that allows greater flexibility for this inherent characteristic of air power.

Impermanence

Air power 'is an impermanent form of military power'. No aircraft can stay aloft indefinitely, nor can any crew. This is often seen as a limitation of air power. Persistence of air power is, however, becoming possible with long-endurance Unmanned Aerial Vehicles (UAVs) and military satellites in geostationary orbits.

Payload

Aircraft can carry large quantities of high explosive and projectiles faster than land or sea-based vehicles. High aircraft sortie rates can also deliver multiple quantities of high explosives or projectiles.¹⁵

Precision

Modern air-launched precision guided munitions (PGM) are able to achieve levels of accuracy and modes of impact that greatly reduces the probability of collateral damage. For example, current generation Global Positioning System (GPS) guided bombs, called Joint Direct Attack Munitions (JDAMs), utilise 1000 and 2000 pound 'dumb' bombs to achieve consistent Circular Errors of Probability (CEPs) of 9.6 metres.¹⁶

Reach

The presence of geographic features, like oceans, mountains and deserts, and artificial barriers, like national borders, does not impede air power.¹⁷

Responsiveness and Speed

Air power is able to deploy into an area of operations (AO) and conduct offensive operations quicker than any other form of combat power that has not been prepositioned. The inherent relative speed of aircraft enables their rapid deployment and reduces exposure to adversary forces.¹⁸

Tempo

Air power is able to operate at different tempos and can, therefore, be used to respond rapidly to short notice opportunities and maintain a high rate of sorties, or kept at a range of alert levels ready to conduct operations.¹⁹

Versatility

Modern combat aircraft are versatile multi-role platforms with most being able to carry a number of different weapons simultaneously.²⁰

CHARACTERISTICS OF SPECIAL FORCES

The characteristics of SF developed in this paper will be those relevant to the types of SO most applicable to the employment of precision firepower. These are special reconnaissance operations (SRO) and offensive operations. Mission types within SRO include ‘target acquisition and surveillance of hostile command and control systems, troop concentrations, strike weapons ... and other military targets of significance to the theatre and joint force commanders’.²¹ While offensive operations ‘can also include stand-off attacks by

weapons systems either delivered, directed or designated by Special Forces'.²²

Theories of Special Forces and Special Operations

The characteristics of SO as stated in ADF doctrine, along with the writings of McRaven and Gray on the theories of SF and SO, offer useful foundations in developing a list of characteristics of SF. Validation of these characteristics will be gained by reference to significant exercises and operations where SF forces have played critical roles. As far as possible, this analysis will illustrate the points with examples drawn from the experiences of Australia's Special Air Service Regiment (SASR) as described in its unofficial history by David Horner, *SAS: Phantoms of War: A History of the Australian Special Air Service*.²³

ADF doctrine on SO states that the distinguishing characteristics of SO are its joint nature, time criticality, strategic effect, unorthodox means, special training and equipment, and the need for specialised intelligence.²⁴

McRaven has identified six principles of SO from an analysis of eight historical SO conducted by German, Italian, American and Israeli SF. McRaven's six principles of SO are simplicity, security, repetition, surprise, speed and purpose. McRaven contends these six principles 'allow special operations forces to achieve relative superiority'.²⁵ Gray, writing about the theory of SF, has put forward a range of 'conditions for success' required for SF to achieve results disproportionate to their size. These conditions range from 'permissive domestic conditions, a tolerant political and strategic structure' to 'only SOF skilled in their trade should conduct special operations'.²⁶

Characteristics of Special Forces

McRaven contends that SF's ability to rapidly achieve relative superiority over larger enemy forces is the dominant reason for the success of SO.²⁷ However, all military forces strive for relative superiority over their enemy, whether the forces they face are comparatively larger or smaller. Any list of characteristics of SF will therefore not be unique to SF alone. The conventional approach to achieving relative superiority is greater numbers, as espoused by Clausewitz who stated, 'In tactics, as in strategy, superiority of numbers is the most common element of victory'.²⁸ What is unique to SF is the expectation of commanders borne out of historical examples of SO that SF will invariably achieve relative superiority over a larger enemy and therefore win.

To achieve McRaven's principles of SO and most of Gray's conditions for success, SF must possess a set of distinguishing features. For example, only forces that are light and have the ability to work with a range of heavier forces are able to achieve a combination of McRaven's principles of simplicity and speed in SO. McRaven contends that innovation, limited number of objectives, and good intelligence are the three elements of simplicity which are crucial to the success of SO. SO require high relative speed to reach the objective swiftly despite the actions of the adversary. This invariably translates to a dependency on airlift. Large land-based combat forces are inherently heavy and complex to operate and manoeuvre in the face of enemy action. Forces with a heightened sense of purposefulness are required to ensure the mission is achieved no matter the barriers that may appear, a key principle of SO.²⁹ The type of forces most likely to achieve McRaven's principles of SO are, therefore, light forces able to overcome some of their limitations by working closely with other forces, able to innovate by using new, perhaps unorthodox, means or equipment and with a strong sense of purpose. Gray states that to achieve his

conditions for success SF need to have flexible thinking, provide unique strategic services and be highly competent tactically.³⁰

The characteristics of SF are assessed to be assimilation, jointness, lightness, persistence, purposefulness and unorthodox means.

Assimilation

Assimilation refers to the ability of SF to operate in close proximity to the selected targets. This includes the ability not only to operate behind enemy lines and remain indistinguishable but also to interact positively with sympathetic elements of the local population. Necessary traits associated with this characteristic include the ability to blend in with the immediate natural and human environment. Camouflage and high degrees of cultural awareness are key factors in the development of this characteristic. Without a high degree of cultural awareness it is unlikely SF will be able to gain the required level of trust and cooperation from sympathetic local elements necessary.

Achieving surprise, which McRaven has identified as a key principle of SO, requires an intimate knowledge of the target and its associated defences and terrain. McRaven contends that history teaches us that most targets of SF would have been well prepared to counter any type of offensive action. Achieving surprise therefore 'means catching the enemy off guard'.³¹ To find out exactly when and how the enemy will be off guard often requires close observation of the planned target for an extended period of time, either by the SF themselves or sympathetic elements of the local population. Even with advanced artificial sensors, a human being in close proximity to the target is still the best way to gain this type of information.

Gray refers to the need for 'permissive domestic conditions', which not only refers to the SF's home nation but also the immediate environment in which they are operating, as condition for success.

Gray refers to the need for SF to tailor their activities 'with regard to popular beliefs and cultural symbols'.³² To achieve these conditions for success, SF need to be able to assimilate and successfully adapt to the local environment.

Some SF type units are raised specifically to conduct reconnaissance operations behind enemy lines. Information on these units is tightly restricted due to their extreme vulnerability, and to separate them from other more widely known SF units. Political sensitivity regarding their operations is also a contributory factor. The British SF unit, 14 Intelligence Company, also referred to as the Army Surveillance Unit Northern Ireland, is reputed to be a reconnaissance SF unit. Beginning as an Army unit that covertly tracked Soviet military mission members in Germany, it was reconstituted in 1974 as a SF unit with the task of covertly tracking Irish Republican Army (IRA) and Loyalist forces in Northern Ireland.³³ In 1997, the unit was reportedly involved in covertly tracking suspected Serb war criminals in Bosnia leading to their apprehension by SAS teams. Two examples of operations where regular SF units have taken measures to adapt to their environment are given below.³⁴

- The US Rangers formed a forward scout unit, called the Alamo Scouts, to support the operation to rescue allied prisoners of war (POW) near Cabanatuan City in Japanese-occupied Philippines in January 1945. In this unit every five-man team included at least one Filipino. The support provided by the Filipino guerillas and detailed intelligence gained by the Alamo Scouts enabled the 375 Rangers and guerillas to rescue successfully 512 POWs from a Japanese POW camp, guarded by nearly 250 Japanese soldiers, and with a further 8000 Japanese soldiers located within five miles of the camp.³⁵
- In Panama in December 1989, US Delta forces conducted a successful rescue of Mr Kurt Muse, a US citizen and leader

of an anti-Noriega opposition group, from Carcel Modelo Prison that had over 1000 inmates. The day prior to the actual rescue, US Delta personnel dressed in plain clothes, moved unobtrusively through the streets surrounding the prison and in the hills overlooking the prison observing and reporting the location and nature of recently constructed Panama Defence Force (PDF) positions. Just before the actual rescue, these Delta personnel provided a last-minute update to the inbound main rescue group before changing their role to snipers and killing some of the prison guards as well as destroying the prison's generator. The rescue was a success, though some of the rescuers and Muse were slightly injured during the rescue.³⁶

Jointness

SF depends on a range of specialised military capabilities and assets to achieve their mission.³⁷ These may include submarines, aircraft or ships for insertion and/or extraction; specialised ISR capabilities; strike aircraft; and specialised logistic support capabilities. In the ADF, most of these capabilities lie outside the Special Operations Command (SOCOMD) and may also be resident in another Service. SF must therefore be able to operate closely with all three Services.

Most of the operations McRaven cites in support of his six principles encompass air, sea and land-based elements of the SF. Innovative uses of air, sea and land-based elements that were critical to the success of those SO are quoted in support of his principle of simplicity. In his principle of repetition McRaven cites examples of land, air and sea-based elements in these SO requiring extensive rehearsals before the operation. The importance of deception operations conducted by air and sea-based elements in some of these SO is quoted in support of his principle of surprise. The comparative speed advantages of aircraft and ships over land-based forces are also highlighted in the SO he uses to support his

principle of speed.³⁸ Gray refers to the need for SF to have close cooperation with other military units.³⁹

An example of SO where the characteristic of jointness has been a key factor is given below.

- In March 1968, an Australian SAS patrol in Vietnam destroyed a North Vietnamese tractor in a mission David Horner has described in great detail. This tractor was an important military target because of its key role in resupplying important Vietcong (VC) bases with stores and ammunition. About 60 VC routinely escorted the tractor when carrying stores and ammunition. The mission was one of nearly 1200 patrols carried out by the SAS in Vietnam. In his analysis of this mission, Horner draws attention to the significant support capabilities the six-man SAS patrol relied upon to achieve their objective. On this mission the patrol relied on pre- and post-action reconnaissance conducted by aircraft from 161 (Independent) Reconnaissance Flight, Army engineers designing pressure switches and explosive charges, and 9 Squadron RAAF providing insertion, extraction and medical evacuation. Effective cooperation amongst all these elements was essential for the success of this mission. Without these non-SF and some non-Army units, this SAS force could not have completed its mission. In 1971, the commander of the last SAS squadron in Vietnam concluded his tour, noting in very favourable terms the consistent support they enjoyed from 9 Squadron RAAF and 161 (Independent) Reconnaissance Flight over the five years of operations in North and South Vietnam.⁴⁰ Effective cooperation between these elements was critical to the success of Australian SAS forces in Vietnam.

Lightness

SF sacrifice weight for speed and agility when conducting operations. SF need to be light forces to achieve the relative speed of engagement that McRaven stresses is so critical for them to gain relative superiority. They are, therefore, mostly small and lightly armed.⁴¹

During operations in Borneo and Vietnam from 1965 to 1971, Australian SF conducted 1391 missions of which 197 were four-man patrols, 732 five-man, 263 six-man, and only nine with greater than 20 men.⁴²

One example of SF displaying this characteristic of lightness is:

- In September 1999, the INTERFET Response Force, comprising Australian and Allied SF, led the way for larger forces that were unable to deploy as rapidly because of logistic constraints. After 3 Brigade gained control of Dili, six-man Response Force patrols deployed, often at just 12 hours notice, by helicopter for periods of seven to 21 days into the countryside to act as pathfinders for larger units like 2 RAR.⁴³ Heavy land-based units could not have deployed as quickly and expect to remain self-sufficient for a similar period of time.

Persistence

Special reconnaissance operations require SF to collect and report information over a number of days to observe adversary movements and discern patterns of behaviour.⁴⁴ Persistence is essential for SF in the context of the application of precision firepower, given that SRO were identified as a key role for them in the Air Power–Special Forces combination.

Two examples of SF displaying persistence on exercises and operations are given below.

- Reconnaissance missions conducted by Australian SAS patrols in Vietnam often involved hours and days standing, lying or sitting whilst observing the enemy. Horner reports, 'One patrol stood for four days up to their waists in water in a swamp close to a VC base camp watching the VC move back and forth.'⁴⁵
- During an Australian Army field force exercise in July-August 1977, 22 SAS patrols were deployed across 66 000 square kilometres of north-western Australia to detect exercise enemy invasions by other Army units supported by the RAN and RAAF. The exercise was a success for the SAS, with one patrol positioned to observe an airfield near the South Alligator River suddenly finding themselves right in the middle of the enemy build-up. The patrol leader reported they sat it out for three days 'living like dogs on biscuits and onions', expecting at any minute to get caught, and only moving when an aircraft landed with more troops. They eventually departed the area undetected after passing on valuable information to their headquarters.⁴⁶

Purposefulness

Purposefulness refers to the strong and unrelenting desire to achieve the objective. McRaven describes his SO principle of purpose as understanding and executing the prime mission objective 'regardless of emerging obstacles or opportunities'.⁴⁷ Like most of the characteristics of SF, this quality of purposefulness is a desirable trait in all combat forces. However, for SF to win and achieve relative superiority over larger forces, they must embody this quality of purposefulness more consistently and successfully than conventional forces. McRaven provides the following quote from a German corporal involved in the successful raid on a Belgium fortress near Eben Emael and the border with Holland in May 1940, to demonstrate the strong sense of purpose required for a successful SO: 'We had been cooped up for months and had

been transformed into killers. Everything we had done was in preparation for this hour ... There was unyielding determination in each man's eyes ... With this feeling we could search out the devil in hell!⁴⁸

Unorthodox Means

The traditional principles of war apply to SF as much as all other combat elements,⁴⁹ but SF are required to adapt their approach to each operation and come up 'with a distinctive theory of victory'.⁵⁰ ADFP 45 states that the ability to use unorthodox means within the bounds of proven principles of war is an essential quality of SF. This may translate into SF depending more on surprise than other principles, like concentration of force, depending on the nature of the operations.⁵¹

McRaven states that to achieve the principle of simplicity required for SO, innovation is often required.⁵² Innovation by definition refers to introducing something new—new equipment, or tactics.

Instances of SF using unorthodox means feature in the following examples:

- In October 1977, a Lufthansa Boeing 737 was hijacked and eventually landed in Somalia. The German SF unit, GSG9, conducted a successful rescue, killing three of the four hijackers, with four hostages and one GSG9 member slightly injured. Newly developed British stun grenades were supplied to GSG9 by the British SAS shortly before this operation and were a central feature of the subsequent rescue.⁵³
- In the early planning for the raid on Entebbe, the idea of landing an Israeli C-130 directly on the Ugandan airport, which was protected by the Ugandan armed forces acting in cooperation with the hijackers, was deemed by the Israeli commander of the C-130 squadron to be so crazy that it

would be a total surprise to the hijackers. The landing of Israeli C-130s directly on Entebbe airport was subsequently a key feature of this successful SO.⁵⁴

FACTORS AFFECTING THE APPLICATION OF PRECISION FIREPOWER

An understanding of the factors that affect the successful application of precision firepower is required to appreciate the relationship between air forces and SF and how their characteristics compliment and support each other in this role.

Factors Affecting

The application of precision firepower is the action of activating an appropriate weapon at a specified time and place in order to achieve an effect required by the relevant commander. From this definition, a number of conditions fall out that point to a list of factors that affect the application of precision firepower. The first condition is the appropriateness of the weapon. This can be expressed as a quantity of high explosive or type of projectile to create the effect required, such as to disable a radar head from turning without major repair, or sufficient to destroy completely a vehicle and all its contents. The second condition refers to the time and place. This can be determined by geographic coordinates and clock time or by reference to an object and event, such as the operations planning room when the joint planning group meets, or enemy weapons systems that are a direct threat to own forces. Inclusion of the word precision places the requirement 'of doing something exactly, or as close as possible, to the way it should be done'.⁵⁵ Reference to the effect required by the relevant commander imposes the responsibility on those carrying out this action to ensure that they are acting strictly in accordance within

their commander's intent. In the Australian context, this imposes additional requirements in respect to the Law of Armed Conflict (LOAC) and Rules of Engagement (ROE). Adherence to the LOAC requires the action taken to be against a military objective and all 'reasonable precautions are taken to avoid loss of civilian life and damage to civilian objects'. ROE will invariably impose additional constraints that are mostly context-dependent.⁵⁶

The following list of factors affecting the application of precision firepower can thus be discerned from the preceding analysis of the conditions to be met:

- *Achieving Precision.* Precision is achieved when the intended action conforms as close as possible with that desired in as many respects as possible.
- *Position Specified.* The position the firepower is required, either by reference to geographical coordinates or an object like a building or vehicle.
- *Time Specified.* When the firepower is required, either by a reference to an event or the clock.
- *Type of Weapon.* The type of weapon required expressed as either a quantity of high explosive or level of destruction.
- *Complying with LOAC and ROE.* Complying with LOAC requires the target to be a valid military objective, and force used should only be the minimum required. Compliance with ROE will be context dependent, though at a minimum will include the right for self-defence.⁵⁷

Factors Affecting and Characteristics

Each of these factors affecting the application of precision firepower will be related to one or more of the characteristics of air power and SF to analyse their impact on the factors listed above.

Achieving Precision

Achieving precision requires the designated target to be destroyed exactly as ordered despite enemy action, the usual fog of war and myriad other factors beyond the control of military forces. Achieving precision requires the forces to focus clearly on their target, no matter the distractions or opportunities presented during the operation. The characteristics of air power and SF most applicable to achieving the requirement of precision are as follows:

- *Air Power – Precision.* Once a target is appropriately designated, air power has the ability to deliver a variety of weapons on the target with a high degree of accuracy.
- *Special Forces – Jointness.* SF's ability to operate effectively with elements from different Services enables them to cater rapidly for unplanned events, yet still achieve the objective. For example, the original plan may call for artillery directed by SF to deliver the weapons to the target, but during the operation aircraft could be tasked to deliver the weapons. SF's characteristic of jointness enables them to operate seamlessly with land or air-based forces.
- *Special Forces – Purposefulness.* The character of purposefulness equips SF to overcome many unplanned events and achieve the objective. Without a high level of purposefulness, forces assigned to target designation may become distracted by other events with potential detriment to their primary task of refining target position.

Specifying Position and Time

Identifying the place and time to apply the required firepower, or target acquisition, is a critical factor affecting the application of precision firepower. The target may be static such as a building or dynamic such as a mobile weapon system. Position and time may be related to known references such as latitude, longitude and

Greenwich Mean Time. They may also be related to other events; for example, the largest truck in the supply convoy travelling from A to B, or when the weapon system moves out of its hardened shelter. For dynamic targets, close observation over a period of time is invariably required to identify patterns of movement to enable their future location to be estimated. The optimal time to strike at such targets is frequently restricted to brief windows of opportunity that may only appear at short notice. The characteristics of air power and SF most applicable to this factor of target acquisition are as follows:

- *Air Power – Reach.* Air power can overcome the natural barriers of terrain and political barriers of national borders to reach any location within the combat aircraft's radius of action. Target location, therefore, is only limited to the large area bounded by this radius of action. This radius of action can be extended by air-to-air refuelling and forward basing.
- *Air Power – Responsiveness and Speed.* Air power is able to deploy rapidly and conduct operations very quickly thus enabling brief windows of opportunity to be exploited. Air power is also able to adjust rapidly to changes in position and time of the target.
- *Special Forces – Assimilation.* SF's ability to operate in close physical proximity to the target enables them to conduct target acquisition far more effectively than almost any other acquisition system.
- *Special Forces – Persistence.* The ability of SF to observe the target for long periods of time enables them to better define and subsequently refine the best position and time to detonate the weapon. SF are ideally placed to refine target acquisition based on their own observations instead of old intelligence because of their ability to persist and remain within close proximity to the target.

Type of Weapon

The weapon to be used must be specified to ensure the required effect is achieved, whether it is complete destruction of a target system or only partial degradation of an enemy capability. The desired weapon may have been previously determined through a weapons effect planning process, where weapon types and target characteristics are matched to achieve specified levels of destruction or incapacitation. The most suitable weapon type may have been previously determined or selected based on an estimate by forces with more knowledge about the target's nature. The characteristics of air power and SF most applicable to determining weapon type are as follows:

- *Air Power – Tempo.* Air power is able to deliver a variety of weapon types rapidly and repeatedly, as fast or as gradually as required.
- *Air Power – Versatility.* Aircraft and weapons can be readily switched between roles. One aircraft is able to carry a variety of weapon types if required, thus presenting a range of weapon types to cater for last-minute changes in the type of weapon required.
- *Special Forces – Assimilation.* SF are better able to assess the nature of targets, and thus determine the most suitable weapon type, than conventional forces because of their characteristic of assimilation. This ability to get close to the target, or be in close contact with those able to get closer to the target, allows SF to discern the nature of the target more accurately than most stand-off artificial sensors. More data on the target for better weapons effect planning is becoming increasingly important on the modern battlefield. For example, General Horner states 'in the past you wanted to know where the tanks are stored. Now you want to know where the load-bearing wall is on the building where the tanks are stored. You want to know—is the overburden on the bunker 26 feet of concrete or 26 feet of

earth? The data demands on modern warfare are just going out of sight, but it's important.'⁵⁸

Complying with LOAC and ROE

Australia is a signatory to a number of international conventions that require any application of precision firepower to be done commensurate with the effect to be achieved and in accordance with LOAC and relevant ROE. Other factors such as precision and specifying position and time will also ensure this factor of compliance with LOAC and ROE is fulfilled. The characteristics of air power and SF most applicable to the factor of compliance with LOAC and ROE are:

- *Air Power – Precision.* The increasing accuracy of air delivered weapons increases the probability of the weapons being detonated at the right place and time, thus reducing the chances of collateral damage.
- *Special Forces – Assimilation.* SF's ability to get close to the target, or have access to those who can get closer to the target, enables them to discern more clearly the nature and characteristics of the target. The use of a building as a military headquarters may not be readily discernable from stand-off or one-time glimpses from artificial sensors. To discern whether the building does indeed contain a military headquarters, and is thus a valid military target, may require the building to be observed over a period of time.
- *Special Forces – Persistence.* SF's characteristic of remaining in place to observe a potential target means they are able to discern better the exact nature of a particular facility and whether or not it complies with current ROE as a valid target. For example, they will be able to distinguish whether a village is just a community of farm workers or a base for guerilla operations. SF's quality of persistence may also be required

to determine which particular room in an identified building is a more valid target than other locations within the same building.

Overcoming Limitations of Air Power and Special Forces

The list of characteristics of air power and SF impacting on the aforementioned factors affecting the application of precision firepower has been limited to those able to reinforce these factors. Separately, both air power and SF also have characteristics that may be detrimental to the application of these factors. These are impermanence for air power and lightness for SF. Impermanence for air power can potentially weaken the factor of specifying position and time. Most airborne assets have limited capability to persist whilst airborne in an AO ready to strike in a time-sensitive manner. Similarly, the lightness of SF severely restricts their ability to transport weapons, thus limiting their flexibility in weapon selection when operating in isolation.

The Air Power–Special Forces combination effectively nullifies the impermanence of air power and the lightness of SF. SF are able to discern the optimum time to engage the target because of their characteristics of persistence and assimilation. These characteristics enable SF to maintain long periods of observation on the target, identify its nature, and thus determine the optimum time when the target should be engaged. This will greatly reduce the requirement for air power assets to persist in the vicinity of the target waiting for the optimum time to engage the target. SF's characteristic of lightness is obviated in the Air Power–Special Forces combination by air power's characteristics of payload and concentration of force. Air power's ability to deliver significant quantities of a variety of weapons from a variety of locations reduces the requirement for SF to transport heavy weapons.

Most of the individual characteristics of air power and SF effectively support all the factors affecting the application of precision firepower. Those characteristics that do not enhance these factors are largely obviated when air power and SF operate in combination.

AIR POWER AND SPECIAL FORCES IN OPERATION *ENDURING FREEDOM*

...getting US special forces on the ground early dramatically increased the effectiveness of the air campaign. In Afghanistan, precision-guided bombs from the sky did not achieve their effectiveness until we had boots, and eyes, on the ground to tell the bombers exactly where to aim.

Donald Rumsfeld⁵⁹

Operation *Enduring Freedom* (OEF) featured the use of US and allied SF operating closely with allied air forces and local Afghan forces sympathetic to the US, now called the Afghan Military Forces (AMF). Their aim was the elimination of the Taliban regime and destruction of the Al-Qaeda terrorist network.⁶⁰ Their enemy comprised indigenous Afghan Taliban, predominately foreign Al-Qaeda, and other foreign allies of the Taliban. The terrain to the north of Afghanistan where many of the battles were fought featured elevations up to 2000 metres with one-metre wide winding mountain paths and sheer rock faces.⁶¹

Biddle contends the success of US forces in OEF was not because of some unique Afghan Model, but rather a vindication of traditional

joint warfare where close integration of fire and manoeuvre was the key to success. Biddle suggests OEF turned into a traditional campaign where some 60–80 000 troops fought for control of territory, and the Air Power–Special Forces combination in the application of precision firepower ‘ultimately made the difference between stalemate and victory’. Biddle goes on to refute suggestions that the success achieved by the US, their allies and sympathetic indigenous forces was largely the result of local idiosyncrasies. He contends the enemy, especially the foreign forces who made up 25 per cent of the total strength, were highly motivated, resolute, well trained and quickly adapted to the new conditions they faced by employing communications security, dispersal, camouflage discipline and use of cover and concealment.⁶²

This section will provide examples of the characteristics of air power and SF on operations involving the application of precision firepower in Afghanistan during OEF. After each example, analysis is provided on the relevance of this example to the factors affecting the application of precision firepower in the Australian context.⁶³

Air Power – Concentration of Force, Reach and Payload

The remoteness of Afghanistan, paucity of nearby US bases, and desirability of long loiter times over the AO forced US planners to rely on B-1, B-2 and B-52 heavy bombers, and tactical strike aircraft supported by a significant air-to-air refuelling capability, to deliver the quantity of weapons required. Significant US diplomatic effort was expended to secure overflight clearances and establish the eventual 13 bases required to support OEF.⁶⁴ By March 2002, USAF heavy bombers had flown more than 48 per cent of the combat sorties, dropped nearly 7000 tonnes of munitions, and damaged 75 per cent of all planned targets.⁶⁵ B-1 and B-52 bombers flew from Diego Garcia in the Indian Ocean on sorties lasting 12 to 15 hours.⁶⁶ The B-2s flew from the Continental US (CONUS)

striking targets in Afghanistan, then returning back to CONUS via engine-running crew changes in Diego Garcia.⁶⁷ Carrier-based aircraft flew an average of 100 attack sorties per day and were dependent on an extensive air-to-air refuelling capability.⁶⁸

Analysis

The US ability to transport and deliver by air significant tonnages of weapons over considerable distances was effectively demonstrated during OEF. Their ability to do this enabled targets to be struck across the length and breadth of the AO within very wide time windows. This flexibility would have greatly assisted SF, working in cooperation with air power, to designate the most suitable targets with few constraints regarding positions and time in the application of precision firepower. In the Australian context, similar levels of concentration of force, payload and reach of air power central to this flexibility are unlikely to be achieved. The preponderance of US unique capabilities featured in this example, such as large numbers of heavy bombers, carrier-based aircraft and extensive air-to-air refuelling capability, demonstrate the ability to deliver levels of concentration of force, payload and reach to such an isolated area that is beyond the capabilities of any other air force. However, the RAAF is able to carry and deliver significant quantities of weapons over a reasonable time period, but across a significantly reduced distance. In the factor of specifying position and time, this will allow some flexibility of target acquisition within the Air Power–Special Forces combination in less isolated areas that are closer to nations willing to provide/host forward operating bases.

Air Power – Precision

Approximately 60–70 per cent of the munitions dropped in OEF were PGM, with most being JDAM. JDAM kits convert 1000 and 2000 pound free-falling bombs to near precision weapons with the addition of a strap-on pack comprising a movable tail fin unit,

fixed strakes and an inertial navigation system capable of receiving GPS updates.⁶⁹ JDAM achieved consistent CEP of 9.6 metres and featured selectable impact azimuth and direction as well as smart-fuzes that allowed selectable levels of target penetration before detonation.⁷⁰ JDAM are also reprogrammable during the aircraft's flight, before being released.

PGM were extremely effective during OEF when used in cooperation with SF on the ground. This was especially the case where the enemy presented themselves as exposed or massed targets, such as the destruction of a Taliban convoy approaching the AMF-held village of Tarin Kowt on 18 November 2001. However, the use of PGM was not always successful, such as during Operation *Anaconda* in March 2002. During Operation *Anaconda* 'one dug-in Al Qaeda command post was found surrounded by no fewer than five JDAM craters, yet its garrison survived and resisted until they were overrun by US infantry'.⁷¹

Analysis

The extensive use of PGM by air power in OEF, in cooperation with SF, enabled weapons to be delivered with a great deal of accuracy. PGM were less effective, however, against well-prepared fighting positions that fully exploited natural features to reduce the impact, even though they were as accurate as anywhere else. This reduced the probability of creating the necessary effect although precision in the application of firepower was achieved. In the Australian context, the RAAF is able to deliver laser guided bombs (LGBs) and is expected to be equipped with JDAMs within the next two years.

Editor's Note: Subsequent to the paper being published the RAAF has acquired JDAMs which are now operational.

Air Power – Responsiveness, Speed and Tempo

After four weeks of targeting the Taliban's air defences, communications and military installations, air power shifted its focus to the direct support of friendly forces on the ground. Once the shift in focus took place the SF reported they only had to wait 20 minutes from the moment a target was spotted to its destruction by air-dropped munitions.

Analysis

A response time of just 20 minutes from target identification to its destruction for unplanned targets is extraordinarily quick, especially considering the significant distances most of the combat aircraft had to travel to just arrive overhead Afghanistan. The US air forces' significant capabilities in the area of concurrent operations, payload and reach were the key determinants in achieving this high level of responsiveness and tempo. Australia's previously highlighted limited ability in these areas will restrict Australian air power achieving similar levels of responsiveness in isolated areas far from forward operating bases. In areas closer to Australian forward operating bases, however, Australian air power could achieve high levels of responsiveness, speed and tempo.

The criticality of gaining effective control of the air before air power can cooperate with SF in the application of precision firepower was demonstrated in OEF. Before US air forces could cooperate with SF on the ground, some days were spent eliminating the enemy's very limited air defence capability. This is significant given the extreme capability mismatch between US air power and Afghan air defence capabilities before OEF. This demonstrates that control of the air remains an essential precursor before the inherent responsiveness of air power in the Air Power–Special Forces combination can be exploited in the application of precision firepower.

Air Power – Versatility and Special Forces – Jointness

On 4 March 2002 on top of a 10 000 foot mountain peak in eastern Afghanistan, a US Army Ranger platoon fought for their lives while attempting to rescue a Navy SEAL team. The Army SF aircraft they used for their insertion was ambushed and crashed on landing. During the day they fought off elements of Al Qaeda helped by USAF SOF combat controllers directing USAF F-15Es. Overseeing this fight was an Australian SASR patrol that was accurately coordinating multiple air strikes to prevent Al Qaeda forces overrunning the survivors. Approximately five miles above a USN P-3 circled and surveyed the engagement below. On board this P-3 was another Army Ranger and a Navy SEAL who assisted in providing force protection information to the embattled Ranger platoon leader below. There was also a Marine officer assigned to the SOF Joint Operations Centre calmly and effectively controlling the crowded radio nets that were coordinating the close air support throughout the mission. Another Australian SASR patrol of four soldiers took part in the planning and execution of the successful recovery operation. This Ranger mission was directed by a USAF Brigadier General who commanded the unit overseeing the operations. Seven US servicemen died during this mission. Brown, the author of the original article, contends this number would have been substantially greater if it were not for the close cooperation from all elements of the four US Services involved in this mission. US commanders have also acknowledged the critical role Australian SASR soldiers played in this operation.

Analysis

This mission is an outstanding example of SF and non-SF type forces working in close cooperation. It also provides an example of air power versatility, where an USN P-3 designed for maritime surveillance and interdiction performed a key role in supporting embattled SF operating on a mountain range in a landlocked

nation. In the Australian context, SOCOM does not have the specialised SF helicopter capability and Air Force combat controllers featured in this example. However, Australian SF are required to have the ability to operate in close cooperation with all three Australian Services.

Editor’s Note: The RAAF now has JTACs and has recently raised 4 Squadron for this specialised role.

Special Forces – Assimilation and Unconventional Means

During the heavy fighting in November 2001, Chief Warrant Officer Diaz, an Arabic-speaking US SF soldier radioed excited Taliban leaders being hit by US air strikes, ‘How far were the bombs from you?’ Assuming they were speaking to one of their own, the Taliban answered him. The next round of bombs fell on their doorstep. Diaz later explained ‘They would assume that since we were speaking Arabic, we were part of their forces. They would tell us, “The command headquarters is fine: the bombs hit 500 metres to our left.” We continued to call on the radio until the command was eliminated.’

Analysis

The actions by Chief Warrant Officer Diaz in fooling the Taliban leaders in order to refine his target designation is an outstanding example of the SF characteristics of assimilation and unconventional means. Diaz was able to use his Arabic language skills to blend in with the cultural environment of the Taliban and gain the required information. Australian SF are assessed to have similar characteristics of assimilation and unconventional means.

Special Forces – Persistence

In March 2002 during Operation *Anaconda*, every available stand-off reconnaissance system focused on a ten by ten kilometre battlefield to identify and locate Al Qaeda positions. Despite these efforts, it was later revealed that less than 50 per cent of the Al Qaeda positions had been identified in this pre-battlefield reconnaissance. Most fire received by US forces during this operation was received from the undetected positions. The only way of target acquisition for most of the unidentified positions was by ground forces in direct contact with the defending forces located in these positions.

Analysis

This is a graphic example of how the characteristic of persistence is so vital to the process of target acquisition required for the application of precision firepower. Even with the US significant capability in stand-off sensors focused on a comparatively small area, SF's characteristic of persistence was the key in determining the location of almost half the potential strike targets.

CONCLUSION

The Air Power–Special Forces combination has a powerful range of distinguishing features that mostly support those factors affecting the application of precision firepower. The individual characteristics that do not support the application of precision firepower are effectively obviated when air power and SF operate in close cooperation. Air power's distinguishing characteristics for the application of precision firepower are concentration of force, payload, penetration, precision, reach, responsiveness, speed, tempo and versatility. SF's characteristics for the application of precision

firepower are assimilation, jointness, persistence, purposefulness and unorthodox means.

In this paper each of these characteristics has been analysed in relation to those factors that affect the application of precision firepower. These factors are achieving precision, specifying time and position, required firepower and complying with LOAC and ROE. Most of the characteristics of air power and SF were found to reinforce these factors affecting the application of precision firepower. The exceptions were air power's characteristics of impermanence and SF's characteristics of lightness. The detrimental effect of these characteristics was found to be nullified in the Air Power–Special Forces combination.

Examples of most of these air power and SF characteristics during OEF in the application of precision firepower have been provided, followed by an analytical discussion of their applicability to Australian air power and SF. In general, it was assessed that Australian air power and SF could offer similar characteristics as those demonstrated by US SF and air forces in OEF but to a reduced level. Of most significance when analysing the Air Power–Special Forces combination in OEF was the concentrated efforts made by US air forces to gain effective control of the air over Afghanistan before any combat aircraft were made available to support ground based forces; and the severe degradation in the effectiveness of precision munitions when enemy forces stopped placing their heavy weapons and armoured vehicles in the open.

This paper has identified the essential characteristics of air power and SF that are inherent within the Air Power–Special Forces combination for the application of precision firepower, as well as identifying how these characteristics influence those factors that affect the application of precision firepower. Real world examples taken from OEF have also been provided to highlight some limitations in the practical application of this Air Power–Special

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Forces combination. The revealing of these characteristics and their relationship to the application of precision firepower enables the essence of this combination to be more fully understood and recognised in the development of future joint doctrine and training.

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CHAPTER 5

TAKING IT TO THE STREETS: EXPLODING URBAN MYTHS ABOUT AUSTRALIAN AIR POWER

BY WING COMMANDER GARETH B.S. NEILSEN (RETIRED)

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INTRODUCTION

*The twentieth century was the last in history when humankind was mostly rural. The battlefields of the future will be highly complex urban terrains. If our soldiers cannot fight and kill at close range, our status as a superpower is in question.*¹

Robert D. Kaplan, 2002

Recent studies have predicted that by 2030 60 per cent of the world's population will reside in urban areas.² This represents an almost 50 per cent increase in current urbanisation levels over a 25-year period. Many of the world's future centres of population will occur in Third World nations where control of the city may mean control of the entire country as well.³ This is relevant to Australia's strategic security outlook given the projected demographic changes in South-East Asia.⁴ The increasing importance of cities and urban areas as political, cultural and economic 'centres of gravity' will only increase the likelihood of conflict occurring in these areas. Therefore, as global urbanisation continues, the likelihood of the Australian Defence Force (ADF) participating in urban combat operations increases commensurately.

Future ADF involvement in urban areas could cover the entire spectrum of conflicts, ranging from humanitarian relief and peacekeeping operations, through counter-terrorist responses involving precision strikes on a handful of specific targets, to large-scale unconventional wars. It should be borne in mind that the ADF may only be required to achieve limited objectives as part of a coordinated government response involving other elements of national power. The use of force, particularly in unconventional conflict, may constitute a small part of a much bigger picture,

just as an urban battle constitutes only part of a much broader operational plan. The political relevance of military action cannot be overstated in this context.

Historically, conventional war doctrine has recommended against committing forces to urban areas unless operationally necessary. Potential adversaries to Australia may well have studied the history of urban conflict and determined that its propensity for casualties, collateral damage and resource intensity can prove a significant political weakness to a militarily superior nation. A key strategic ADF weakness is the criticality of its numerically restricted manpower. Consequently, urban operations represent one of the highest risk activities to which Australia can commit, and arguably the arena of choice for an unconventional adversary.

The ADF is consequently faced with two main challenges in dealing with the complexities of the urban environment. First, how can a conventional fighting force prevail over an unconventional foe to secure a military victory that leads to an acceptable political settlement? Second, how should the ADF leverage its current and future capabilities to achieve this aim without turning its back on conventional regional threats? The answer, in part, lies in breaking an old perception that the urban battle is predominantly a land battle. Modern air power can also contribute significantly to the fight. By exploiting the third dimension, and by virtue of modern high technology systems, air power can help create total battlespace awareness, influence the tempo of combat, and achieve synergies in combined operations. This paper will focus on offensive air operations in urban areas as part of an integrated scheme of manoeuvre involving real-time targeting, and the delivery of precision guided munitions (PGM) to produce controlled (and limited) firepower effects to win battles and display national intent. By developing a balanced, flexible and networked force, the ADF can most reliably achieve tactical victories, as well secure desired

strategic outcomes against conventional and unconventional adversaries in future urban operations.

FUTURE CONFLICT IN THE URBAN ENVIRONMENT

*We are entering an age of warfare, in which precision strike weapons and low-technology fertiliser bombs compete uneasily for dominance.*⁵

Australian Strategic Policy Institute, 2004

The Effects of Globalisation

According to a recent report by the US National Intelligence Council, the likelihood of great power conflict escalating into total war in the next 15 years is lower than at any time in the past century. The proliferation of international terrorism, however, shows no signs of abating.⁶ Whilst globalisation is encouraging the urbanisation of the planet, unprecedented economic growth will not be evenly distributed. Instead, globalisation will favour the technically proficient and progressive in their search for personal freedoms and liberal trade. Resultant challenges to traditional ideals make radical movements appealing to disaffected youth as in the case of Muslim youth. These young men and women are attracted to Western concepts of prosperity, but are frustrated by declining literacy and rising unemployment, and may feel estranged by an alien culture. Consequently broad Islamist movements akin to, or inspired by, al-Qaeda are merging with local separatist movements to develop an increasing hold over a bulging, disaffected and alienated population who are unresponsive to what they perceive as unrepresentative government.

A New Generation of Warfare

These politically savvy movements are engaging in a new form of warfare against states through a combination of all available instruments—political, cultural, economic, social and military—to target indirectly the power base of political decision-makers, largely by influencing the population through the mass media and internet. Characterised as Fourth Generation Warfare (4GW) by US Marine Corps Colonel Thomas X. Hammes, it aims to convince political leadership that their strategic goals are either unachievable or else too costly for the limited gains they may provide. 4GW is based on the premise that political will can defeat superior military power, and is the only form of war that has permitted inferior forces to claim victory against world ‘super’ powers.⁷ After decades of armed resistance, Ho Chi Minh’s Communist forces eventually prevailed over the United States, compelling their withdrawal from Vietnam in 1973. After a similarly long struggle, the Soviets ceded Afghanistan to the Mujahidin in 1988–89. In both cases, massive amounts of ‘blood and treasure’ were expended by the militarily superior nation against a determined and resourceful adversary. But faced with poor prospects of securing an acceptable political end-state, despite military victories, political leadership became convinced of the futility of continued hostilities.

The intensity of 4GW is often dictated by the weaker side’s ability to absorb attrition, and so is often low but protracted. Guerilla tactics are commonly favoured, pitting strengths against the government force’s weaknesses, and then disengaging to claim subsequently a moral or political victory through closely coordinated diplomatic activities. Protracted warfare also accords with the 4GW strategy to wear down a nation’s resolve to continue, by highlighting the high costs and limited gains.

Terrorist activity and insurgency are also manifestations of 4GW, given their political focus, their reliance on public support, and

their asymmetric approach to operations. 4GW practitioners are characterised by their fierce determination to prevail, and their willingness to die for their cause if necessary. The Western world is currently facing its greatest 4GW challenge—the Global War on Terrorism (GWOT), otherwise referred to as the Global Struggle Against Violent Extremism (GSAVE). Despite the quick military victory of Coalition forces in Operation *Iraqi Freedom* in 2003, the insurgency in the cities and towns of Iraq has been much more costly and time-consuming to deal with, and offers no assured outcomes, at least for the present.⁸

Networked Adversaries

Globalisation's instant connectivity has enabled the 4GW threat to become increasingly decentralised, evolving into a disconnected array of groups, cells and individuals that do not need a stationary headquarters to train, plan or carry out operations. Training materials, targeting guidance, weapons know-how, and fundraising are increasingly being conducted online. What emerges is a picture of a far more diffused threat, involving autonomous groups with different aspirations, yet linked through shared ideologies. With no clear command structure or defined centres of gravity, this presents a much harder enemy to defeat.⁹

The Likely Urban Setting

Urban areas present the most likely settings for 4GW activities such as terrorism, insurgency, and civil war. The disempowered and disaffected, currently organised under the auspices of religious fundamentalism, choose to fight centres of concentrated national power.¹⁰ Areas where population and/or infrastructure are concentrated are vulnerable, lucrative targets. Using easily procured means, such as small arms, fertiliser bombs, or even computer viruses, adversaries can effectively engage in asymmetric warfare that maximises fear and disruption amongst the population.

Sustained subversive operations can challenge lawenforcement and military forces, and thereby embarrass political leadership.

The ADF Mission

Protection of urban centres of gravity from physical attack will remain a prime ADF mission. A weaker adversary may show a logical preference for such 'soft' targets. Contrary to hardened military sites, soft targets include facilities that employ fewer (or no) defences, but which may provoke maximum public outcry and political response if attacked. Defending Australia and its interests from 4GW attack requires sound intelligence, effective border control, a good deal of public support, and timely intervention. Unfortunately, this requires eternal vigilance from government agencies, whereas the adversary only needs one lucky break in order to score a political victory. Moreover, a purely defensive posture does not provide a proactive strategy that promises the eventual elimination of the 4GW threat. Australian forces must, therefore, be prepared to seize the initiative and go 'on the offensive' when directed by political leadership.

The 4GW battlespace is both non-linear and non-contiguous. Political boundaries are an advantage for the non-state adversary, but a source of tactical vulnerability for democracies. The ideological nature of 4GW compels us to focus less on the adversary's physical centres of gravity, and instead concentrate on their mechanisms of operation and adaptation; in particular the reactions of leadership, population, and logistics assets.¹¹ Three likely centres of gravity thus emerge: the ability of the adversary to plan, prepare for, and conduct hostile acts; the ability to influence the populace; and the ability to move resources unhindered. But because fourth generation warfare also involves a contest for the sympathy of a population (upon whom the adversary relies for

intelligence, shelter, finances and resources) winning the ‘hearts and minds’ of the people is crucial to winning the war.

Modern Constraints on Conventional Urban Warfare

Case studies of many urban battles¹² commonly reveal three recurring characteristics. First, many involved limited conflict for limited objectives. Second, the defender often violated the law of armed conflict (LOAC) in an attempt to deny the attacker the use of air power. Third, instantaneous feedback was provided to the public through the mass-media.¹³

With nothing to lose, the militarily weaker adversary cares little for public opinion, international law, political agreements or prospects of free trade—mechanisms typically used to check state behaviour. The adversary may choose to fight as a non-uniformed militia, hide amongst non-combatants, or fight from prohibited structures.¹⁴ World opinion, influenced by an ever-present media, offers modern military forces no such latitude.

During the Israeli invasion of Lebanon in 1982, the Palestine Liberation Organisation (PLO) placed artillery and anti-aircraft weaponry on or around civilian structures such as hospitals, schools, churches and mosques. Tenants of multistorey buildings were forced to remain on upper floors, and as such act as human shields in an attempt to deny Israel the firepower advantage offered by their Air Force. The PLO’s abuse of LOAC was overlooked by the international media, who condemned the Israeli Air Force’s urban air attacks for the casualties they produced.¹⁵

The heightened risks of collateral damage in urban environments can partially offset a conventional military’s technological superiority¹⁶ as well as threaten to rob even a technically well-fought campaign of a political victory. Military forces must therefore conduct counter-force operations and apply force with

close regard to two important principles—proportionality and discrimination—in order to maintain public support.

The concept of military proportionality requires that the application of combat power, and resultant destruction of life and property, should not be disproportionate to the military or political advantage gained.¹⁷ In many past asymmetric conflicts, the weaker side has still gained a political victory in the face of military defeat by portraying that defeat as a rout. During Operation *Allied Force*, Serbian propaganda claimed thousands of civilian casualties, thus undermining NATO's moral status. The media arguably created strategic effects that rivalled NATO's kinetic operations.

To satisfy requirements of discrimination, forces must make every effort to distinguish between military and civilian objects, and to afford protection to non-combatants. During the 1991 Gulf War, Iraqi officials quickly capitalised on the mistaken bombing by Coalition air forces of the al Firdos bunker in Baghdad. The Iraqi leadership broadcast graphic pictures of maimed or killed women and children. In so doing they attempted to challenge the morality of Western military tactics, and to constrain the campaign through political pressure. To that end they were successful. Future air strikes on Baghdad required Commander-in-Chief (CINC) approval, a measure that considerably slowed the targeting process.¹⁸ Although according to the law of war, the Iraqi government was culpable for the deaths of these non-combatants, it still generated negative publicity for the Coalition.

Because of legal concerns, military lawyers frequently play as large a role in targeting decisions as do the 'weaponers', resulting in strict rules of engagement (ROE) for military operations in sensitive areas. Restrictive ROE may deny friendly forces certain advantages and expose them to additional risks or make hostilities more protracted (which may actually accord with the adversary's intended strategy). Consequently, great pressure exists for a quick

military victory in order to consolidate gains prior to outside interference (either physical or political), minimise aggregate damage, and maintain the support of a public who has come to expect surgical precision and minimal casualties.

EMERGENT COUNTER-FORCE STRATEGY

The political object is the goal, war is the means of reaching it, and the means can never be considered in isolation from their purposes.

Carl von Clausewitz

Functional Versus Physical Space

The military's immediate role in kinetic 4GW operations involves targeting the adversary's functional (rather than physical) space.¹⁹ This includes his ability to recruit, train, communicate, and move resources. Possible tactical targets include training camps, supply depots, transport vehicles, leadership, and the warfighters themselves. But it should also be noted that our own physical centres of gravity and the enemy's functional centres of gravity may occupy coincident spaces (the adversary uses the same communications nodes, avenues of approach and shelters as the 'host' population). Because countering a fourth generation adversary involves a contest for the support of the population, and may be conducted in their midst, our military response must remain mindful of that population's culture, religion, sense of morality and need for security.

Non-Kinetic Imperatives

Success in fourth generation war requires not just winning battles, but selecting a successful overarching strategy that coordinates diplomatic actions with military operations. In September 1993, the assessment of the plan to capture Somali warlord, Mohammed Farah Aideed, by Major General Garrison, Commander of the US Army's Task Force Ranger (TFR) was ominously precise: 'If we go in the vicinity of the Bakara Market [in Mogadishu], there's no question we will win the gunfight. But we might lose the war.'²⁰ The hostility of the population towards US forces resulting from the high level of destruction to the city, the disproportionate attrition suffered by TFR in securing a limited objective, and the lack of a coordinated diplomatic response, combined to compel the US to withdraw forces from Somalia altogether. This equated to a US political defeat by the much weaker Somalia National Alliance (SNA).

Determinants of Political Success in Modern Warfare

In Clausewitzian terms, war is a contest either to annihilate the opponent or else break his will to resist. For a democracy to prevail over an adversary, public support for government policy (which underpins a government's political legitimacy) must outlast the enemy's will to continue. Public support is subject to many influences and is often based on perceptions. The factors which can influence public attitudes and determine the political success of a campaign are depicted at Figure 1.

The public acceptance of the tactics involved can be just as decisive as the physical outcomes of battle, and serve to tip the scale. The orientation of the balance illustrates the level of public support for the contestants. Political failure by the 4GW antagonist is denoted by rejection of his underlying ideology by the population, or the physical annihilation or dissolution of the group. Political

failure of government is denoted by withdrawal of stated policies, ceding contested territory or granting political legitimacy to the opponent.

Tactical considerations are considered above the ‘seesaw.’ Tactical outcomes are determined by factors such as comparative strengths, fighting style, logistics, attrition, and the morale of combatants. Each opponent will attempt to apply positive pressure on his side by virtue of his tactics to tip the scale to produce a favourable outcome of battle.

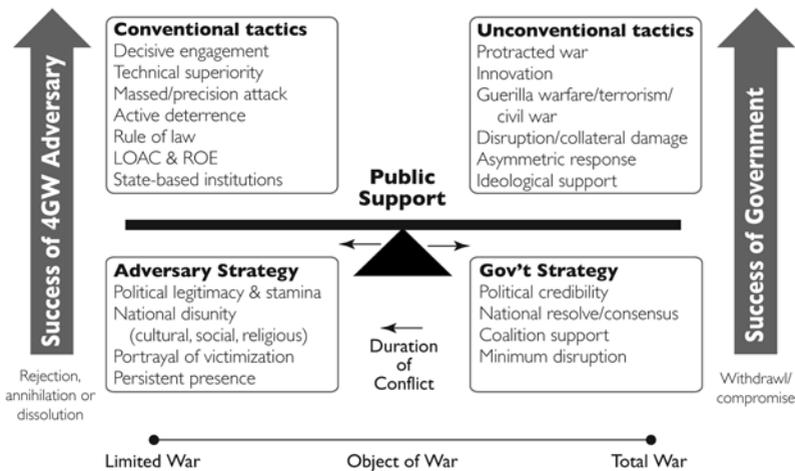


Figure 1. Determinants of Political Success in Modern Warfare

It should be noted that the value of the object at stake (the stated war aims) can also influence the relative merits of these tactical outcomes. For instance, a nation is likely to be more accepting of disruption and collateral damage in a war for survival than it would be in a struggle for a limited object. In this case, the fulcrum would be translated to the right, causing the balance to slant up to the

right, suggesting public support for government would be retained even in the advent of extreme military action.

The position of the fulcrum is also subject to purposeful manipulation. The 4GW adversary may attempt to draw the fulcrum to the left by de-emphasising the object at stake or by undermining the government. This can be achieved through diplomatic, military or symbolic gestures which emphasise the futility of extant policy, by exaggerating claims of disruption, attrition and collateral damage, or by provoking a hostile government overreaction and then assuming the role of the victim. By moving the fulcrum to the left, an asymmetric condition exists where 4GW opponents can achieve political success disproportionate to their physical efforts. The dynamics which occur beneath the seesaw are strategic in nature, and potentially far more influential on the overall outcome than the tactical factors alone.

One further powerful determinant influences the fulcrum—the duration of the conflict. The longer a campaign continues, the further the fulcrum will move to the left, making it increasingly difficult for a government to sustain public support for a military campaign for limited objectives in the absence of tangible signs of progress. Therefore simply by ‘not losing’ a 4GW adversary increases its strategic advantage.

By a combination of tactical measures (applying weight to the balance) and strategic measures (to create asymmetry and thereby influence the leverage these tactics have) each side attempts to tip the balance in their favour and secure outright political victory. Figure 1 illustrates the need to view military operations in the context of a continuum of operations (involving all instruments of national power), and consider the second and third order strategic outcomes arising from tactical events. It shows how it is possible to win the battle, yet lose the war through a narrow focus at the

tactical level. It therefore emphasises the importance of coordinated political/diplomatic responses that complement military activities.

Air power can deliver leverage to conventional forces that face a fourth generation adversary. Control of the air, active intelligence and surveillance, battlefield air interdiction and offensive air support all play key tactical roles in defeating 4GW combatants. But the key to success lies in being able to penetrate the enemy's decision cycle (the observe-orient-decide-act (OODA) loop)²¹ in order to anticipate, understand and pre-empt his intentions. To the extent that victory can be influenced by the outcome of battle, air power can assist in the defeat of the enemy by rendering physical effects that accord with diplomatic or cultural imperatives and satisfy political intent.

Air power's contributions to the creation of battlespace knowledge, and the delivery of precision guided munitions (PGM) lie at the heart of this capability. Just as importantly, by demonstrating resolve whilst minimizing disruption and the need for extensive reconstruction, air power can help to preserve civil-military ties and to create a secure environment that hinders both the resurgence of subversive activity and the spread of hostile ideologies. The complex characteristics of the urban environment in which this mission is conducted will require that force be applied with great tact, skill and diplomacy—qualities not traditionally associated with brute-force firepower, nor easily tolerated by a potentially disaffected or alienated population.

THE CHARACTER OF URBAN BATTLE

It seemed to me that it was precisely here, in the fighting for the city, that it was possible to force the enemy into close fighting and deprive him of his trump card—his air force.

General Chuikov, Soviet Commander in Stalingrad,
on the Battle of Stalingrad 1942-1943²²

Urban warfare can render immediate and non-contiguous strategic effects,²³ yet military practitioners commonly focus at the tactical level. To understand why, we must first examine the physical characteristics of the urban environment and analyse contemporary approaches to military problems.

The Urban Environment

‘An urban area consists of a topographical complex where man-made construction or high population density are dominant features.’²⁴ Complexes of buildings can easily become defensive positions and battles can rapidly disintegrate into a series of isolated conflicts resulting in a loss of centralised command and control. Consequently, there is a high reliance on autonomous action at the tactical level.²⁵ Urban terrain tends to diminish the conventional military’s advantages of speed, manoeuvre and firepower, and allows opportunities to the adversary for ambush and disengagement. This provides the irregular force with a ‘force multiplier’ by which he may adapt his style of fighting.

Close, Fleeting Engagements

The density of the urban environment often results in engagements at close range which degrades the advantage of superior firepower as friendly forces are drawn into the adversary's weapons envelope.²⁶ During the Battle for Stalingrad in September 1942, commanding Russian General Chuikov noted the Luftwaffe had firm mastery of the air, but with limited accuracy could only bomb positions where the targets were clearly separated. Consequently he opted for a close-in fighting strategy – to the distance of the throw of a grenade.²⁷

Modern urban combat studies conclude that only 5 per cent of surface targets appear at a range of more than 100 metres, and 90 per cent are confronted at ranges of 50 metres or less. Human targets are generally acquired at 35 metres or less.²⁸ Targets rarely present themselves for more than a few seconds, and frequently only a part of an individual or vehicle is exposed. Efforts to mark targets for air-delivered weapons with coloured smoke or white phosphorus may alert the adversary to a pending attack and allow combatants to disperse. The physical qualities of the urban environment cede many advantages to the unconventional opponent.

Challenges to Command, Control and Communication

The challenges of visibility, feature recognition and navigation in a fragmented or unfamiliar environment greatly contribute to small units becoming isolated from supporting elements and losing situational awareness. Ground units are dependent upon their own resources, and fight individual battles without reference to, or support from, other friendly forces.

ADF command and control systems are largely reliant on voice communications to maintain situational awareness, negotiate urban obstacles, and prevent isolation of ground combat elements.

But resultant radio traffic may overload traditional line-of-sight (LOS) voice communications networks, which themselves are often degraded in built-up areas.²⁹ Commanders could therefore experience great difficulty keeping the battle oriented at the operational or strategic level, owing to the practical difficulties of following tactical evolutions.

Limited BattleSpace Awareness

The scheme of manoeuvre historically employed by ground commanders attempted to mitigate lack of battlespace awareness by using artillery, armour or close air support to clear the area well ahead of advancing troops.³⁰ Modern constraints on collateral damage no longer allow this approach. This both slows the tempo of battle, and exposes friendly forces to greater risk of fratricide, which has emerged as one of the most highly publicised failings of modern conventional warfare. Of the 615 American service men and women killed in the 1991 Gulf War, friendly fire accounted for 18 per cent of all battle injuries and 24 per cent of all deaths ('blue-on-blue' incidents between land forces were over twice as numerous as those involving air power elements).³¹ Notwithstanding the operational effects of unnecessary battle casualties, fratricide creates great strain between joint and coalition forces, and produces significant political pressure that can work in the adversary's favour.

Consequently, conventional forces have taken two approaches to the problem. Firstly, tighter procedural controls have been enforced through more stringent ROE regarding target identification and prosecution. And secondly, better active deconfliction has been achieved through the development of Anti-Fratricide Identification Devices (AFIDs)³² and networked situational awareness tools, such as the US Army's Blue Force Tracking system, or BFT.³³

Control of Tempo

Cities allow an adversary with inferior equipment, training or manpower to engage on more even terms. The adversary can control the tempo of the battle through concealment, ambush and rapid manoeuvre, choosing to fight only when at an advantage, or else disengaging. Control of tempo presents a moral and operational dilemma for the conventional military force in terms of attrition, delay, discrimination between combatants and non-combatants, proportionality of weapons effects, and negative media coverage.³⁴ As General Chuikov remarked concerning the Battle for Stalingrad in 1942-43, 'time is blood.'

Narrow streets and restricted avenues of access inhibit traditional concepts of manoeuvre making it difficult for military forces to maintain the initiative. During Operation *Iraqi Freedom* in March 2003, 3rd Infantry Division (3ID) armoured forces entering Najaf were challenged to protect themselves as narrow streets forced them into a single-file unsupported column that exposed their flanks at every intersection.³⁵

Urban terrain often involves complex operations that significantly slow entire campaigns. In January 1995 the primary focus of Russian forces in Chechnya was the capture of Grozny. Although Russian forces gained control of the city at a heavy cost, Chechen Rebel forces maintained the initiative throughout the 18-month Russian occupation. They then subsequently recaptured the city in less than two weeks.³⁶

Limited Firepower Support

Restricted observation and limited fields of fire often deny military forces the advantages of massed firepower. Use of traditional firepower support systems, such as artillery and armour, involve significant risk of collateral damage. Resultant rubble further

inhibits manoeuvre (especially for tanks and wheeled vehicles), and provides hostile forces with additional cover.³⁷

Anti-Air Threats

Urban terrain also allows ease of concealment of anti-air weapons. Even simple weapons such as small arms or rocket-propelled grenades (RPGs) can pose a credible threat to slower moving airborne platforms such as rotarywing aircraft, which are traditionally assigned troop-support roles.³⁸ In Mogadishu, SNA warlord Mohammed Farah Aidid considered US TFR attack helicopters an American ‘center of gravity.’³⁹ Arguably this contention was valid at each of the tactical, operational and strategic levels of analysis. Vulnerability of helicopters represented a critical failure on behalf of TFR planners that resulted in the loss of five helicopters to RPG attacks.⁴⁰

Extensive Resource Requirements

Urban terrain presents a physically structured but fragmented series of compartmentalized battlefields that can absorb large quantities of personnel. Once committed, they are hard to extricate, regroup, reinforce or re-supply. Without the advantage of superior firepower the brunt of the assault is borne by ground combatants who must carefully and methodically concentrate on small areas in ‘clear and hold’ operations. Surrounding and isolating these areas is necessary to clear non-combatants, deny the adversary the opportunity to escape or introduce hostages, and to cut off enemy lines of communication and resupply. Offensive urban operations are estimated to require ‘eight or nine times more manpower for operational equality’.⁴¹ In Mogadishu, 90 soldiers were dedicated to securing a single helicopter crash site, multiple rescue/recovery attempts were launched, and the final rescue convoy comprised 70 vehicles.⁴² The ADF’s limited land force manpower reveals urban combat as one of the highest risk operations.

Increased Battle Fatigue

The continuous level of alertness demanded by close-quarters combat, and the stresses associated with isolated small unit operations conducted with insecure flanks or an unprotected rear, contribute to the rapid onset of battle fatigue within hours rather than days.⁴³ Several days of sustained pressure can challenge soldiers' endurance, with levels of fatigue prejudicing safety and operational effectiveness.⁴⁴ Military forces must therefore hold larger reserves and/or be prepared to rotate forces more frequently.

Civilian Relationships

The presence of civilians on the battlefield imposes significant constraints on how conventional forces conduct battle, and can contribute to a tendency for military forces to regard all civilians with suspicion.⁴⁵ In 2003, Fedayeen forces in Najaf sheltered with families and forced civilians to walk into firefights (upon threat of certain execution). They also used ambulances to ferry troops and conduct RPG attacks, and used mosques and schools for cover, concealment and weapons storage. Differentiating combatants from civilians became difficult under such subterfuge, and contributed to hesitancy by the Third Infantry Division (3ID) forces to engage the enemy.⁴⁶

Lessons Learned for Air Power

Observation of urban battle characteristics yields some important considerations for airmen. First, control of the air remains an essential precursor to military power achieving full effect. Second, airborne platforms will most probably be restricted to one pass to locate, identify, fix and engage the target. Third, to defeat even basic enemy air defences, aircraft must achieve a stealthy ingress and/or employ a stand-off weapon. Fourth, air delivery platforms may require significant target resolution in order to discriminate friend from foe. Finally, weapons employed need to be extremely

accurate, and may need to produce limited explosive effect. This will both limit collateral damage, and allow ground forces to receive the benefit of close air support without having to retreat to avoid blast effects. Collectively these lessons explain the increased reliance on precision guided munitions in modern combat.

Furthermore, in order to better control war, commanders in general require a robust and comprehensive communications suite that can link fighting forces with supporting elements, aid in identification, share targeting information, and convey mission and firing orders. Creating battlespace awareness for all friendly forces requires the compilation of a common relevant operating picture (CROP). For operations over long distances or in urban areas, this often necessitates establishing airborne communications links.

THE MERITS OF AIR POWER IN URBAN BATTLE

I see battlefields that are under 24-hour real or near-real time surveillance of all types. I see battlefields on which we can destroy anything we can locate through instant communications and almost instantaneous application of highly lethal firepower.

– General William Westmoreland

Air power's ability to exploit the third dimension allows it to overcome the very characteristics of the urban environment that drive surface combatants to piecemeal operations—limited visibility and manoeuvrability. Importantly, such freedom allows air forces to dominate the fourth (and arguably most crucial) dimension—time.⁴⁷ The tempo with which force is applied is more

important than the level of destruction wrought on the enemy.⁴⁸ Murray and Scales eloquently captured this concept in Newtonian terms: ‘one can achieve overwhelming force by substituting velocity for mass’.⁴⁹ Using a combined arms approach, air power allows friendly forces to better work inside the enemy’s decision cycle, and to shape the battlespace by limiting his response options and denying him the capacity to organise effective resistance. Air power then presents a favourable form of asymmetry which can help achieve optimum synergies at each level of conflict—strategic, operational and tactical.

Strategic Synergy

The inherent speed, reach and responsiveness of air power platforms make them well suited to non-contiguous battle. Air elements can deploy and conduct offensive operations faster than any other form of combat power. Airborne intelligence, surveillance and reconnaissance (ISR) platforms can provide accurate intelligence in sufficient time to allow commanders to anticipate and/or counter enemy intentions. The stealth and stand-off capability of modern air power can be used to create surprise, thereby generating an asymmetric response that can compromise the adversary’s situational awareness, dislocate his will to fight, or otherwise shape his future behavior.⁵⁰

These qualities were amply demonstrated in the battle for Fallujah during Operation *Iraqi Freedom* in November 2004. Space platforms, joint surveillance and target attack radar systems (JSTARS), and unmanned aerial vehicles (UAVs) provided Coalition forces with superior intelligence on enemy strong points that were either being fortified or occupied prior to attack. Intelligence-driven targeting was then disseminated to Coalition ground and air elements which simultaneously attacked from many directions. They employed a broad spectrum of capabilities

(including infantry manoeuvre teams supported by mortar fires and air-delivered PGM) to induce shock, and overload enemy command and control.⁵¹

As a result of many such closely coordinated actions during Operation *Iraqi Freedom*, the Iraqi leadership's decisions were quickly overtaken by the tempo of operations. Having lost the initiative, enemy forces were presented with a dilemma—whether to disperse and remain hidden from the Coalition air forces (but still vulnerable to Coalition ground forces and strike missions) or else concentrate and close with Coalition ground forces (facing their superior firepower, and even swifter destruction in the allied air interdiction campaign).⁵² While the urban terrain increased mission complexity for Coalition forces, it failed to provide the enemy refuge from attack because of the optimised employment of air power.

Air power's focus on sensors, information systems, and precision weapons requires fewer resources to achieve decisive results. This yields several strategic and political advantages. Smaller, more agile forces can better operate inside the adversary's OODA loop to produce precise effects. This gives the impression of omnipotence. During Operation *Iraqi Freedom* this contributed to the psychological dislocation of the enemy.⁵³ The ability to produce massed effects without the need to mass forces minimises the 'military footprint' in country, which itself may serve to preserve the legitimacy of the host government. And the accuracy of modern precision air-delivered munitions can increase the probability and predictability of political success by decreasing the prospects of civilian casualties, collateral damage and attrition.⁵⁴

Video accounts of 'surgical' strikes on targets in Baghdad during *Desert Storm* contributed to a dramatic transformation of popular attitudes toward the efficacy of a military solution.⁵⁵ Moreover, these air strikes did little to adversely affect the 'hearts and minds'

of Iraq's civilian population.⁵⁶ Twelve years later, Operation *Iraqi Freedom* air strikes achieved similar results.⁵⁷ Attrition of friendly air power forces has reached a historical low. During Operation *Iraqi Freedom* the Coalition lost only two fixed-wing aircraft to enemy action.⁵⁸ In several ways therefore air power has helped resolve the conflicting requirements of applying tactical force while containing adverse strategic effects – that is to produce politically feasible outcomes from military operations.

Operational Synergy

Unconstrained by many physical urban barriers that reduce ground combat to a series of sequential objectives, air power allows the conduct of concurrent operations and campaigns, thus maximising the effectiveness of finite military forces. This is a crucial consideration for the ADF. Air power's agility (the ability of multi-role platforms to change from one type of activity to another, often within the same sortie), and networked information systems, are force multipliers. Finite forces are better able to capitalise on emergent, time-sensitive or time-critical targets that are typical of the urban battlespace. The success of the *Desert Storm* air campaign generated greater appreciation for simultaneity, and blurred the distinction between strategic and tactical air warfare.⁵⁹ Concurrent operations can create multiple dilemmas that prevent the adversary from reacting in time to be effective.⁶⁰ In urban warfare, simultaneity can help break stalemates, regain the initiative, and dictate the tempo of battle.

Tactical Synergy

Air power is an inherently offensive military instrument—a potent psychological advantage over the adversary, as well as a practical means of breaking the defensive mindset that has traditionally accompanied urban combat. By networking UAVs and other sensors with the command and control system, the versatility

and flexibility of modern air weapons systems can be harnessed to cater to the dynamic targeting environment. Carrying an array of weapons, combat aircraft can quickly respond to late-notice targeting requests or else be redirected to where they are most needed in support of ground forces (the push-CAS concept).⁶¹ Over the course of Operation *Iraqi Freedom* the number of pre-planned targets dropped by nearly 50 per cent, with the remainder devoted to 'on-call' requests to support troops in contact with the enemy or to prevent Iraqi units positioning for attack.⁶² Such real-time targeting accords with the doctrinal aim of centralised control and decentralised execution, which maximises tactical synergy.

LIMITATIONS OF AIR POWER IN THE URBAN ENVIRONMENT

The clever combatant looks to the effect of combined energy, and does not require too much from individuals.

– Sun Tzu

Impermanence

Air power by itself is unable to hold ground. While the use of UAVs and air-to-air refuelling may greatly extend an airborne presence, airpower platforms are generally limited by either platform or crew endurance, or exhaustible stocks of on board weaponry. This implies an ongoing need for joint operations in battles for urban terrain.

Interdependence with Ground Forces

The rapid battlefield victories and minimal losses ascribed to Coalition forces during Operation *Iraqi Freedom* illustrate the benefits of a combined arms approach in accelerating the tempo

of battle and confounding the enemy leadership with multiple dilemmas. Such tactics served to challenge the traditional concept of airpower as a solely supporting element in joint operations. Space-based ISR, UAVs, JSTARS, and offensive air assets certainly helped to amplify and extend the impact of ground manoeuvre in a campaign that integrated air, conventional ground and Special Forces (SF) to prosecute counter-force targets. The resultant speed of ground movement served to force enemy units into the open. Offensive air assets then destroyed them while they were massed and exposed.⁶³ The air and the ground campaign were essentially the same.

Considering the ideological basis of many 'small wars', government forces must also address counter-value targets, such as centres of population, nodes of communication, infrastructure, manufacturing sites, or even important buildings. Not all of these targets need be the subject of kinetic attacks. In fact, as a conflict draws to a conclusion, air power is more likely to be relegated to a supporting role. During stability and security operations the presence of offensive airpower platforms may help to create a secure environment by emphasising the presence of a stable ruling party which possesses the means to exert its influence. Whilst air power may serve to express national resolve, ultimately the peace will be won through more personal interactions on the ground. As per Figure 1, military forces will be more concerned with supporting government strategy than with waging hostile actions.

Lack of Persistence

Optimising weapons effects requires an intimate knowledge of the target, including its physical nature, its function, and its habits.⁶⁴ This process of target 'assimilation' may require persistent and prolonged surveillance, and draw upon several intelligence sources. Whilst UAVs would no doubt assist commanders achieve real-time battlespace awareness, air power alone will not necessarily provide

sufficient detail or certainty. During Operation *Enduring Freedom* (OEF), target acquisition of most unidentified enemy positions was often only achieved by Special Forces in direct contact with elements of the Taliban. Even with a significant US capability of stand-off sensors focused on a comparatively small area, SF's persistent presence was crucial in determining the precise locations of almost half of the potential strike targets.⁶⁵ This graphically illustrates the value a 'human in the loop' offers the targeting process.

Incomplete Intelligence

Air platforms provide an unrivalled vantage point for military observation, but a subtle distinction should be made between electronic reconnaissance products (which are subject to analysis) and knowledge. Discrepancies between CIA and CENTCOM bomb damage assessments during *Desert Storm* stemmed as much from incomplete information as they did from variations in analytical technique. Hardened Iraqi aircraft shelters that had been successfully struck with penetrating laser-guided bombs (LGBs) often showed little external damage on subsequent reconnaissance overflights, save a small hole in the roof. Consequently many targets, listed as 'possibly damaged' were needlessly struck several times on the basis of space/aerial imagery alone.⁶⁶

Photographs and footage that portray current enemy disposition cannot necessarily predict future enemy intentions nor assess how much fighting spirit the enemy has left (this is particularly relevant when fighting insurgents). Human intelligence (HUMINT), derived from sources such as local inhabitants, enemy defectors, prisoners of war, and combatant eyewitness accounts, can offer the advantages of local knowledge (technical, doctrinal and/or cultural), prolonged observation (enemy habits), and adjustable aspect (such as the ability to see under bridges or into underground access ways that are common in urban areas). Given that most

HUMINT is collected by ground forces, air ISR cannot necessarily be treated as a 'stand-alone' intelligence capability.

Target Designation and Terminal Guidance Considerations

Despite the advantages of precision guided munitions, air platforms are not totally immune to the physical limitations of the urban battlespace. In areas of significant vertical development, ordnance may have to be delivered along an oblique axis of an 'urban canyon' in order to hit a specific face, window or balcony. Laser-guided munitions require a constant line-of-sight (LOS) be maintained between the laser designator and target for the duration of the weapon's time of flight. But this may be prevented by shielding structures or reflective surfaces. Evasive aircraft manoeuvres may similarly result in breaking lock during the weapon's terminal phase. Buddy lasing provided by either a manned or unmanned aerial platform may therefore be necessary. Alternatively, a suitably trained, equipped and positioned groundparty may be called upon to provide terminal weapon guidance. Notwithstanding, laser-guided munitions still suffer from uncontrollable interferences such as smoke, dust, fog and rain.

A relatively new development—the Joint Direct Attack Munition (JDAM)—employs a global positioning system (GPS) guidance unit on a 'dumb' bomb to achieve prescribed impact angle, azimuth and elevation.⁶⁷ JDAMs thus provide a truly all-weather weapons guidance capability. During Operation *Iraqi Freedom*, Coalition aircraft were able to destroy approximately 30 vehicles and halt an Iraqi formation near An Najaf during an intense sandstorm, or shamal, using only four JDAMs.⁶⁸ During *Desert Storm*, such weather would have granted Iraqi forces immunity from LGB attack and effectively stopped the air war. JDAMs, therefore, offer the ultimate weapon guidance capability in terms of reliability, flexibility and independent action.

Symbiosis with Special Forces

Effective targeting (including infiltration, observation and analysis) of potential strike targets requires specialist knowledge, and often involves a great deal of target assimilation not consistent with regular forces. Similarly, ground-based lasing requires specific skill sets and equipment that currently only Special Forces possess. This constitutes the basis of a symbiotic relationship between air power and Special Forces. What air power lacks in persistence and permanence, it makes up for in versatility and payload. Conversely, Special Forces' requirement to transport significant varieties and quantities of heavy weapons is greatly reduced with consequent improvements in agility and flexibility. Despite anticipated advances in technology, this symbiotic relationship is expected to endure.

FUTURE ADF DIRECTIONS

Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.

– Giulio Douhet

The Case for Highend Technology

Network centric warfare (NCW) is high technology warfare based on a common relevant operating picture (CROP) created through shared situational awareness. In essence it involves the integration of commercial off-the-shelf (COTS) information technology into widespread networked military applications. Operation *Enduring Freedom* demonstrated the merits of NCW in providing enhanced knowledge, speed, precision and lethality. The rapid movement of

coalition forces into and within theatre, and the responsiveness, accuracy and reliability of networked systems gave the opponent little time to react or prepare defences. The 'knowledge edge' produced through a CROP improves shared situational awareness and facilitates more rapid decision-making to enable greater synergy between supporting units. Additionally, advances in air systems technology have contributed to better weapon-to-target matching, greater accuracy and more controlled effects to allow tactical objectives to be achieved with fewer sorties, and with minimum collateral damage.⁶⁹

Constrained by a limited budget,⁷⁰ and with several 'legacy systems' in the acquisition pipeline, transforming for NCW will require the ADF to remain adaptive and flexible. It will continue to rely on multi-role and multi-mission platforms and well-trained crews. Achieving a successful NCW capability will require the ADF to carefully foster resources to develop a system that links sensors, decision-makers and shooters to detect and prosecute even mobile threats in near real-time, as part of a joint or coalition force. Given the complexities of creating a cohesive network, the ADF's comparatively small size emerges as a potential advantage. Notwithstanding the positive effect of scale, the ADF must be careful to develop systems and doctrine that are compatible and interoperable with likely coalition partners.

Intelligence, Surveillance and Reconnaissance (ISR)

Winning battles depends on our ability to know the enemy.⁷¹ This dictum is a strong argument for robust intelligence, which is necessary to satisfy the 'observe' and 'orient' elements of the OODA loop. The RAAF currently possesses a real-time ISR capability, in the form of the AP-3C Orion surveillance aircraft. Since January 2003, this platform, which has a historical role in maritime surveillance, has demonstrated its versatility in providing situational

awareness to Coalition ground, air and naval forces in the Middle East Area of Operations (MEAO). The AP-3C's comprehensive communications and sensor suites (including digital multi-mode radar and electro-optical systems) have proven their utility in the urban environment. Crews have been able to communicate directly with land forces and pass real-time imagery.⁷² This has led to the capture of a number of enemy operatives through the aircraft guiding troops to enemy hiding locations. Future systems enhancement programs will also permit RAAF F/A-18s to provide similar support to combined arms forces. While the requirements of target assimilation may never displace HUMINT in the early targeting process, the ADF is increasingly turning to real-time imagery to support target detection, classification, tracking, and prosecution.

The decentralised nature of urban warfare requires that commanders have ready access to imagery and information to make rapid tactical decisions. But during high-intensity operations, such demands may overwhelm the ADF's limited number of manned, multi-mission assets, or else detract from their intended offensive roles. Consequently, the RAAF may not be able to provide simultaneously both a comprehensive strike and ISR capability in support of ground force manoeuvre. The solution lies in supplementing current capabilities with unmanned platforms (including space-based and air-breathing assets) to provide a layered system of ISR.

Space-based ISR

Space-based ISR platforms offer the ultimate in permanence, although they do suffer from their own limitations, such as reliance on weather, lower resolution, and dynamic lag in tasking. The ADF is constrained from acquiring and developing its own satellite capability largely by budget limitations, and is therefore forced

to rely on commercial satellite sources, and intelligence products supplied by allies. Without assured access to satellite imagery and communications networks, this represents a major weakness in Australian intelligence gathering capability and connectivity. During times of conflict, satellite services struggle to cater to demand. Extensive use by other commercial competitors and allies may result in Australian forces' requests for satellite services and products being given priority. Consequently, access to imagery used for operational planning or battle damage assessment (BDA) may be slow, limited or denied.⁷³ Furthermore, an adversary in possession of a computer, modem and credit card could have access to the same commercial satellite products, thus denying Australia any real intelligence advantage. The availability and reliability of satellite communications is similarly subject to influences beyond the ADF's control.

A cost-effective ISR option worthy of investigation involves the use of near-space platforms (sensors held aloft by inflatable balloons). Near-space platforms occur in two basic types—free floating systems (essentially a weather balloon with an attached sensor package) and manoeuvring vehicles (a high-performance, autonomously recoverable glider is suspended from the balloon). The latter option offers great flexibility. The glider is able to detach from the balloon, soar for hours above the battlespace, and recover an expensive payload from hundreds of kilometres away to a relatively small, unprepared landing surface. The United States Air Force has produced a working example of this concept, named Talon Topper, under the Tactical Exploitation of National Capabilities (TENCAP) program.⁷⁴

By floating payloads into a region of the stratosphere where winds are light and weather virtually nonexistent, fielded forces can enjoy a persistent, over-the-horizon capability to augment space and air-breathing communications and ISR platforms. Near-space

occurs well below orbital altitudes, and is roughly defined as the region between 65 000 and 325 000 feet. This offers benefits to image resolution and low-power receptivity which are relevant to the challenges of urban operations. Such performance may not be possible from low-earth orbit or geostationary satellites, which typically operate at altitudes of 300 and 37 000 kilometers respectively.⁷⁵

Balloon-based systems are comparatively cheap, easy to launch, and offer increased payload flexibility compared to satellites. Only the relatively cheap balloon canopy is lost on each mission, and the payload can be quickly redeployed. Payloads may range from only tens of pounds up to thousands of pounds, depending on the size of the balloon. Lightweight sensor packages can therefore be deployed responsively in the field.⁷⁶ Apart from the initial charge of helium, they require no further replenishment, and so are free of the usual crew or platform endurance limitations associated with air-breathing assets. Near-space platforms thus offer a cost-effective and practical alternative to satellites to provide persistent, broad-footprint tactical and operational communications and ISR.

Unmanned Aerial Vehicles (UAVs)

The ADF cannot afford stealth technology for a majority of its assets. Therefore, it will rely on UAVs to provide a stand-off capability that will permit forces to operate even when an adversary's air defences are effective. Australia plans to acquire up to a dozen UAVs, including Global Hawk⁷⁷ at a cost of more than 750 million [Australian] dollars under Project AIR 7000.⁷⁸ Global Hawk's flexible and persistent multi-sensor surveillance configuration, including electro-optical (EO), infra-red (IR), synthetic aperture radar (SAR) and ground moving target indicator (GMTI), proved its worth during Operation *Iraqi Freedom*.

Editor's Note: The Defence White Paper 2009 has stated that 'up to seven large high-altitude, long range UAVs' will be acquired to supplement manned aircraft'. No mention is made of the type of UAV or the timeframe for their acquisition.

Global Hawk holds great potential in the urban environment in applications such as ISR, targeting, precision strike support, and BDA. SAR and GMTI sensors in particular are well suited owing to their ability to resolve small targets amongst cultural clutter.⁷⁹ Buildings, roads and even individuals are discernable from dozens of miles away.⁸⁰ Global Hawk may also play an important role in providing communications links and distributing a common battlefield picture to leadership and fielded forces.

The Australian Army is also investing in UAVs that will enhance layered airborne sensor coverage. The short-range miniature Skylark is a lightweight, man-packed UAV that can provide colour crystal display (CCD) video or infra-red telemetry. A field-portable receiver can then overlay images on a map situational display. The Skylark is launched by hand and recovered by performing a deep stall onto a pre-positioned inflatable cushion designed to protect the payload. Skylark's minimal need for launch and recovery space makes it ideal for urban operations.

The Australian Army will also acquire the larger I-View UAV.⁸¹ With greater endurance and payload, it can deliver synthetic aperture radar images and target tracking functions for up to eight hours at altitudes up to 15 000 feet. It is capable of operating at distances of up to 150 kilometres from the ground station, and can also relay information for fellow I-View units (as well as other compatible UAVs) operating at lower altitudes. Its catapult launcher and parafoil recovery system allow it to be deployed and recovered from an area smaller than a football field.⁸²

Editor's Note: The Army also uses the Scan Eagle, tactical UAV. The I-View UAV project has since been cancelled and the JP129 re-initiated to acquire greater capabilities.

Unmanned Combat Aerial Vehicles (UCAVs)

Intelligence on fleeting targets is of little value, however, if not followed by similarly time-sensitive engagement. This fact has prompted the development of the unmanned combat aerial vehicle (UCAV).⁸³ With only a limited number of future offensive ADF air platforms potentially available (all limited by impermanence), UCAVs could play an important role in future ADF operations. A multi-sensor UCAV platform such as Predator would ideally suit urban battlefield requirements, with a proven capability to locate, identify and prosecute mobile threats in near real-time. Ideally, a balanced force would employ a mixture of manned and unmanned combat vehicles and observation platforms to provide persistent ISR, and a flexible and responsive offensive air capability. As networked battlespace awareness develops throughout the ADF, unmanned vehicles will find themselves in increasing demand.

Risks of UAV/UCAV Attrition

The freedom to prosecute targets without putting aircrew or the more expensive platforms in danger translates to UAVs and UCAVs consistently performing higher risk operations. This could easily correspond to a higher UAV attrition rate. During Operation *Allied Force*, NATO forces lost a total of 21 UAVs and UCAVs (mainly to Serbian small arms fire).⁸⁴ Attrition needs to be factored realistically into ADF acquisition, and managed through combat risk assessment and flight safety management programs.

Airspace management

The adoption of tactical UAVs presents new challenges to safe and efficient airspace management. Short-range UAV systems (which have very limited payloads) do not utilise transponders (which communicate their presence to other airspace users) nor do they possess significant visual or radar signatures to allow other aircraft to 'see and avoid'. Tactical UAVs, therefore, present an unregulated risk to other high-value aerial platforms (both manned and unmanned) conducting coincident operations. During the Operation *Allied Force* air campaign, NATO forces required manned aircraft to stay above 15 000 feet in order to maintain separation with UAV traffic.⁸⁵

Separating UAVs through procedural controls such as deconfliction or airspace apportionment will restrict the integration of land and air forces, yet positive control of all UAV activity in the joint area of operations is necessary even though it may prove complex and cumbersome. This significant challenge to C4ISR has prompted the US armed forces to consider integrating its separate Service networks via a Family of Interoperable Operational Pictures (FIOP).⁸⁶ The ADF must consider interoperability issues carefully throughout the development of its ISR network to ensure the safety, efficiency and combat effectiveness of future airspace activities.

Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR)

To ensure that urban battle follows a cohesive operational plan, surface and air command and warfighting elements must be integrated in a seamless C4ISR network. Air power's ability to view and direct the battlespace as a continuum, free of many typical line-of-sight limitations, helps condense the decision cycle and produce a 'knowledge edge' over the adversary. Knowledge of roadblocks, enemy movements and concentrations, and proximity

of non-combatants, can assist the surface forces, while real-time targeting from air- and space-borne ISR assets will allow timely and accurate employment of tactical-level firepower.

Under Project AIR 5333 the ADF is interfacing command centres with civil and military surveillance and control facilities (including the 'Jindalee' Over-the-Horizon Radar⁸⁷), air and ground weapons systems, and both fixed and deployed radio sites, to form a networked system called 'Vigilare'. The volume and accuracy of targeting and mission information will favour data links (such as Link-11 and/or Link-16) as the primary form of communication. This will facilitate fuller and more instant connectivity between sensors and shooters, with reduced risks of targeting error—important features when engaging fleeting or time-sensitive targets and when operating in the politically sensitive urban battlespace.⁸⁸

Networking even a relatively small defence force is a potentially complex task. Introducing new data feeds and supporting future advanced reporting systems emerges as a technical issue, rather than a matter of acquiring new platforms. Clearly, Vigilare represents a long-term project for the ADF. Careful forethought will be necessary to ensure its basic architecture grants each Service the functionality and compatibility it requires, and considers bandwidth limitations to supporting fast operations.

Airborne Early Warning and Control

The RAAF is currently acquiring an airborne early warning and control (AEW&C) capability under Project AIR 5077, known as 'Wedgetail'.⁸⁹ This will not only integrate offensive air assets with other air users, but will also contribute to the compilation and dissemination of a CROP. AEW&C will play an important role in urban warfare, considering the many airborne assets that could require close integration within a relatively concentrated airspace and within limited time periods. Active control will not only assist

in maximising the operational effectiveness of finite air forces, but also help avoid incidents of fratricide.

Armed Reconnaissance Helicopters

The Australian Army's recent acquisition of the 'Tiger' Armed Reconnaissance Helicopter (ARH) represents a dramatic improvement for ADF urban combat capability. Precision-directed 30 mm cannon fire is ideal against 'soft' targets. Effective out to 1500 metres, but with a dispersion rarely greater than 5 milliradians,⁹⁰ such fires are well suited to aerial support missions which require exacting discrimination.⁹¹ With a roof-mounted sight incorporating TV and thermal imaging sensors, and laser designation, the Tiger ARH need only expose its main rotor and canopy roof in order to fix a target, before employing an AGM-114 (M) laser-guided Hellfire missile. This weapon follows an up-and-over trajectory that is well suited to urban profiles. The Hellfire was designed as an anti-armour weapon, with the M model employing a shaped charge warhead, making it an excellent weapon against light vehicles.

Although the Tiger possesses sophisticated self-defence systems, it nonetheless remains vulnerable to simple air defence weapons (ranging from improvised explosive devices, or IEDs, placed on rooftops, to RPGs), meaning fixed-wing platforms with a greater stand-off capability will still be needed.

Fixed-Wing Gunships

The demands of urban warfare on air power for persistence, flexibility, responsiveness and precision explain the emergence of the AC-130 Gunship as a favoured offensive air support weapon. Along with Predator UAVs armed with Hellfire missiles, AC-130s have been the most requested form of aerial fire support to ground forces during Operation *Iraqi Freedom*.⁹²

The AC-130's suitability for urban employment stems from its ability to prosecute small targets whilst containing collateral damage. The accuracy of the gunship's fire control systems, use of low-yield munitions, and its ability to detect and identify targets in complex urban terrain helps in this regard. USAF AC-130s employ all-weather sensors, such as the APQ-180 synthetic aperture strike radar, all-light television (ALLTV), thermal imaging, and laser target illumination, to fix stationary or mobile targets.

The AC-130's roles include armed reconnaissance, convoy escort, air interdiction, and close air support. It is capable of providing suppressive fires to within 200 metres of friendly troops in the case of the 105 mm gun and within 125 metres for all other guns.⁹³ It can create precision firepower effects at a fraction of the cost of PGM or air-to-surface guided missiles, but offers superior on-station endurance compared to other offensive airpower assets. The AC-130 employs sufficient stand-off for low or medium threat scenarios, and can readily switch roles by virtue of the flexibility of its targeting systems and the variety of weapons it carries.

Whilst the cost of acquiring AC-130s may be beyond the immediate resources of the ADF,⁹⁴ their inclusion in campaign planning (albeit in a coalition context) should nevertheless still be considered. However, given that the RAAF already operates the airframe and will continue to retain requisite maintenance and training infrastructure, the long-term acquisition of four to six AC-130s may constitute a suitable offset against a draw-down of overall strike assets when the F-111 and F/A-18 fleets are retired from ADF service. The AC-130's combat profile, which suits it to both conventional and unconventional roles, is well matched to the types of conflicts the ADF is likely to encounter in its areas of responsibility. Moreover, the relative paucity of fixed-wing gunship platforms amongst Australia's allies (the USAF operates but 21

of them) would make an Australian AC-130 fleet a much-valued coalition asset.⁹⁵

Strike/Fighter Aircraft

Delivery platforms will ideally be networked, possess a range of sensors, and be able either to self-designate targets or else link with another party to perform target lasing for the delivery of precision guided munitions. The installation of Block II AN/AAQ-28(V) 'Litening-AT/ISR' targeting systems to RAAF F/A-18s under Project AIR 5376 will integrate these functions into a single pod (whereas previously three were required), freeing weapons stations for other mission requirements.⁹⁶

Project AIR 6000 seeks to replace the RAAF's current F/A-18 fleet with a fifth-generation multi-role fighter, nominally the F-35 Joint Strike Fighter (JSF). JSF will be optimised for the air-to-ground role, and will offer improved survivability through stealth and stand-off. As either a stand-alone weapons system, or in concert with ground forces, JSF will be well suited to urban operations. Ground forces will be able to up-link digitised target coordinates, and then view corresponding down-linked electro-optical or infra-red imagery provided by JSF to confirm targeting data. JSF can then employ an array of 'smart' stand-off weapons, including JDAMs or small diameter bombs (SDBs), and self-designate targets for LGB delivery. Importantly, JSF's ability to store multiple target data, and helmet-mounted cueing system, will allow the pilot to acquire visually targets in complex urban terrain at an increased distance, and well before rolling in on attack heading.

Precision Guided Munitions

Operation *Iraqi Freedom* clearly demonstrated the cost-effectiveness of smart weapons. Combat aircraft were consistently capable of achieving 'one missile, one kill' exchanges.⁹⁷ Since Operation

Desert Storm, PGM have emerged as the political weapon of choice for military operations in urban terrain owing to their precision, reliability and dramatic effect.

The political constraints applied to military operations on urban terrain often allow for only minimal collateral damage, suggesting a need for comparatively limited-yield weaponry. Likewise the close range of ground engagements also calls for a smaller blast pattern for close air support (CAS) applications. The USMC commonly applies ROE that limit CAS weapons to 500 lb explosive yield or less.⁹⁸ In some cases, the use of an inert (concrete) bomb may also produce the required effect. Precision-guided concrete bombs were used during Operation *Iraqi Freedom* to prosecute enemy military targets that were situated in proximity to prohibited civilian structures such as mosques, hospitals and schools. The bomb's kinetic energy was sufficient to destroy the intended target, but the absence of shrapnel resulted in only localised damage.

The AGM-65 (Maverick) series of weapons (available with TV, IR or laser guidance) offers precision targeting with flexible warhead and fuzing options. The laser-guided AGM-65E is well-suited to the urban environment, capable of a 4-foot CEP, and an explosive yield of only 300 lb. Additionally, it is the only weapon incorporating a fail-safe measure—if laser line-of-sight is broken, the weapon will de-arm and send a fly-up signal. This improves the chances of re-acquiring laser designation in built up areas whilst preserving available energy.

The new Small Diameter Bomb (SDB) similarly holds promise as a 'light' urban stand-off weapon, with a range of up to 40 miles. The SDB is designed to destroy a variety of targets, and can penetrate over 1.2 metres of steel-reinforced concrete, yet inflict minimum collateral damage due to its limited (250 pound) explosive yield. This compact weapon allows increased weapons loads on current strike aircraft, and will be compatible with UCAVs and the F-35

JSF.⁹⁹ Fitted to internal weapons bays, JSF will carry up to eight SDBs.¹⁰⁰

The recent development of the 500-pound JDAM, capable of achieving consistent CEPs of 9.6 metres,¹⁰¹ with its seeker-less GPS guidance unit provides a truly all-weather precision strike capability that allows the platform to launch at an 'unseen' target. But the hazards of misidentifying an urban target on the basis of electronic sensors alone may lead to restrictive ROE that prevent release under such circumstances. The ADF should therefore aim to develop a flexible inventory of both laser- and GPS-guided munitions.

Whilst the cost per PGM may appear extreme in comparison to 'dumb bombs', several considerations argue the merits of the high-tech option. Firstly, the cost of PGMs continues to decline. In 1992 the JDAM project aimed to produce precision guidance kits at a unit price of US\$40 000. In 2002 the cost had approximately halved¹⁰² and equated to about two percent of the cost of a Tomahawk Land Attack Missile (TLAM).¹⁰³ Secondly, PGM deliver more reliable effects, reduce the number of sorties required, and can greatly accelerate the tempo of battle (which itself creates cost offsets). Most importantly, the cost benefits of PGM can best be considered in the savings associated with human life, valuable national infrastructure, and political legitimacy.

Nonlethal Weapons

The emergence of new technology weaponry that can incapacitate personnel without causing physical destruction is now finding application in US military operations.¹⁰⁴ Nonlethal weapons can aid in discrimination, minimise casualties, make post-conflict reconstruction easier, and possibly result in less restrictive ROE. Additionally, they could prove a boon to intelligence collection efforts by minimising enemy casualties.

High-powered microwave (HPM) devices are currently used on US Army Stryker fighting vehicles in Iraq to remotely explode improvised explosive devices (IEDs). HPMs and other directed energy weapons may have future personnel control applications. Training a concentrated microwave beam on the target causes an irresistible burning sensation, causing the victim to flee, yet produces no permanent injury.¹⁰⁵ Other nonlethal weapons under current investigation include sonic devices, laser weapons, and substances that can be dispensed from napalm canisters, such as sticky or slick foams, marker dyes, irritants and sedative drugs. Such developments are still subject to considerable legal and technical development, and by and large, remain the subject of secretive research.

Psychological Operations

Because of the ideological context of expected future wars, psychological operations (psyops) justify serious consideration. Even the mere presence of an offensive air capability can be sufficient to deter militant or subversive behaviour. For this reason 3ID psyops teams broadcast recordings of helicopters in the streets of Najaf during Operation *Iraqi Freedom*.¹⁰⁶ In combination with leaflet drops, firepower demonstrations produced excellent coercive effects during *Desert Storm*. The defection of virtually an entire Iraqi battalion was attributed to an MC-130 dropping a massive 15 000-pound BLU-82 bomb on adjacent desert.¹⁰⁷ As a prelude to kinetic operations, leaflet drops or airborne loudspeaker broadcasts could be used to warn an easily intimidated populace of pending hostilities, or to direct an evacuation. Psyops operations are relatively simple, effective and easily adapted to ADF air platforms. They therefore represent a cost-effective extension of capabilities.

URBAN WARFARE TRAINING REQUIREMENTS

Wars may be fought with weapons, but they are won by men. It is the spirit of the men who follow and of the man who leads that gains the victory.

General George S. Patton

While the focus of this paper has been on the technological aspects of military ‘transformation’, there is a need to focus on creating leaders and decision-makers who can operate effectively in the chaotic urban warfare environment. The urban battlespace places particularly stringent requirements on warfighters, in terms of rapid analysis, free thinking, and risk-taking, in addition to the usual demands of the mastery of arms. Developing these abilities requires realistic training and testing under simulated conditions as close to actual combat conditions as possible.

Australia does not currently possess a facility for integrated training in urban operations. Given the political sensitivities of the urban battlespace, there is little latitude for error or experimentation in actual combat. This suggests serious consideration should be given to the development of single Service and combined arms urban warfare training and associated facilities. The use of simulation, part-task training, air weapons range details, and even free-play exercises will provide the ADF with a basis for the development and evaluation of urban warfare doctrine, tactics and procedures.

Editor’s Note: The ADF now has a dedicated urban warfare training centre that is being extensively used.

Simulation and Part-Task Training

Aircraft simulators and part-task trainers offer the cheapest and safest form of air-delivered weapons training. Cockpit systems drills, range procedures, and attack profiles appropriate to the urban environment can all be introduced to the trainee in graduated exercises that offer the benefits of interactive learning, instant debriefing, and selective replay. The complexity of target environments can also be adjusted through selection of simulated urban terrain options, and other complicating factors such as wind, haze and cloud can be added at will. Mission profile fidelity becomes a challenge when one considers the urban mission in its entirety. For instance, simulating a typical urban CAS mission could require inputs from a ground party, a simulated forward air controller, an AWACS/JSTARS platform, and other aerial platforms that require active separation. Simulation complexity would be further increased by the presence of active threats or interference from non-combatants. It would prove difficult for a console operator to effectively control all of these inputs and thereby provide realism whilst retaining mission flexibility. The demands of 'real-time' imagery, such as that provided by a UAV, or used during weapon guidance, further adds to simulation complexity. The technical challenges and costs involved in providing such fidelity may prove prohibitive for the time being, meaning simulation will only provide a limited (albeit important) part of urban air warfare training.

Urban Targeting Drills

The ADF's limited experience in urban warfare forces it to draw heavily on historical analysis or the methods of other military forces when developing doctrine. Urban targeting drills constitute the primary means of developing crew competencies, and refining tactics and procedures.¹⁰⁸ Ground forces similarly need practical experience in urban targeting drills, particularly for CAS. Skills

involved include prioritising requests for fire support, describing required effects, passing target details and defining attack cones, clearing non-combatants from the area, authorising the delivery of ordnance, and bomb damage assessment.

However, sole reliance on urban targeting drills may lead to commanders or crews developing unrealistic expectations or acquiring bad habits that could contribute to tactical or strategic defeat.¹⁰⁹ Training that overlooks the pressures associated with actual weapons releases in urban areas may contribute to a reluctance or refusal to drop ordnance in actual combat conditions. This could stem from lack of confidence, inexperience in applying rules of engagement, or fear of repercussions arising from an inappropriate weapons release. No form of training prepares crews for urban combat like dropping real weapons in proximity to real people. Live-firing details therefore play a necessary part in preparatory training of any combat force.

Air Weapons Range Training

The complexities of the urban arena pose some particular challenges for air weapons range (AWR) training. First, an effective urban training complex should offer a structured physical environment that features vertical development and repetitive patterns to simulate an urban environment. Second, it must also incorporate multiple observation posts to provide accurate bomb plots along urban canyons, and to facilitate joint training.

The United States Marine Corps (USMC) first addressed this challenge in 1999 by establishing an urban training complex at Yuma, Arizona. Known colloquially as ‘Yodaville,’ this urban complex covers an area of approximately 1000 feet x 800 feet and is composed of thousands of stacked, surplus cluster bomb crates and discarded shipping containers. The result is a mock city comprising 167 buildings up to four storeys high, replete with streets, street

lights, vehicles and 'stick-figures' (man-sized figures made from metal reinforcing bars which can be dressed in military uniforms or civilian garb).¹¹⁰

Yodaville is cleared for employment of both light and heavy inert ordnance. Joint training exercises conducted include low- and medium-threat urban CAS drills, air interdiction, time-critical targeting, and convoy escort drills.¹¹¹ Terminal control may be provided by either ground or airborne forward air control (FAC). Troops may also provide laser target designation from as close as 1200 yards from the target. Safety measures preclude personnel from entering the urban complex during live firing, owing to the inability to ensure reliably that all canyons are clear. Whilst this obviously produces some limits to realism in joint training, ground and air crews alike can still gain valuable experience in tactics, control and communications, targeting, and weapon guidance procedures.

Considering the potential benefits to joint training and preparedness, construction of a similar facility in Australia (or the adaptation of an existing AWR) holds merit for the ADF, and may provide an attractive venue for joint training with coalition partners.

Free-Play Exercising

Studies of successful military leaders show that the most effective tactical decision makers rely on recognitional decision-making. That is, they have the experience to interpret uncertain or volatile situations accurately and make rapid, correct decisions. Just as importantly, they can also recognise when not to take rapid, decisive action.¹¹² Urban AWR sorties can provide valuable training for recognitional decision-making. Unfortunately the value of training will be somewhat limited, owing to both the constrained

size of the complex, and the degree of ‘scripting’ required in the absence of a fully integrated land campaign.

As a complimentary activity, the ADF could also consider running limited free-play exercises in, and over, an actual urban area. While difficult to initiate and coordinate, such exercises would prove invaluable in creating sound joint and inter-agency relationships (which would inevitably be required in a real conflict). Similarly, the Australian population would also stand to gain a better appreciation for the capabilities of its armed Services. Exercising could become interactive with community groups and other government agencies participating. To keep the exercise truly free-play, participating forces would have to deal with inevitable surprises presented by aggressive, innovative, thinking enemies (provided by ‘red forces’) rather than merely deal with ‘scripted’ operations.

CONCLUSION

The 21st century has heralded a new age in conflict—that of the ‘small war’—often ideological in nature, and fuelled by religious fundamentalism. Globalisation has set the scene for a convergence of interests and a clash of cultures in the increasingly populated urban areas of secular power. Adversaries will often be small, non-state actors, fighting with limited means, but vying for ultimate stakes. Innovative and resourceful, they will likely attempt to coerce government through acts of terrorism and insurgency in the cities, targeting leadership, infrastructure and the population itself, all the while seeking sanctuary amongst these same targets.

This paper has asserted that air power represents a politically attuned instrument capable of displaying national intent. As such it should play a pre-eminent role in the ADF’s contribution

to the Global War on Terror (GWOT), as well as in other more conventional urban conflicts. Whereas urban combat inhibits surface movement and invites a 'defensive-bias' mindset, air power's ability to exploit the third dimension can transform urban warfare from tactical-level, infantry-oriented, attrition-based warfare favouring the defender into strategically focused, offensive combat. Its ability to bypass physical barriers and anticipate the enemy's decision and action cycles assists friendly forces to regain the initiative and dictate the tempo of operations. The requirements of controlled effect and minimal collateral damage, and the need to preserve political legitimacy in waging urban warfare, advocate the merits of these high technology options.

The ADF must be careful to invest in flexible and adaptive systems and structures in order to achieve these goals. The combination of a robust C4ISR system, which produces the knowledge edge, and the ability to strike with precise and measured effects, will allow conventional military forces to wage their own brand of asymmetric warfare that targets the adversary's functional and adaptive centres of gravity. Australia's 'NCW Roadmap' thus spells out a highly enabled system comprising capable offensive platforms (such as the F/A-18, Tiger armed reconnaissance helicopter and, later, JSF), integrated with a comprehensive ISR system (comprising UAVs in the near future, the Wedgetail AEW&C aircraft, and various ground radar feeds) which are networked through the Vigilare command and control system. This will link sensors, commanders, and shooters in an efficient and effective manner to provide dominant battlespace knowledge and real-time targeting. Australia's limited access to satellite-based systems may be addressed through the use of near-space platforms. The use of field-deployable balloons and sensor payloads offers a responsive and cost-effective way of completing a layered system of C4ISR for theatre operations.

In order to best satisfy requirements of discrimination and proportionality, ADF air platforms will need to employ modern weaponry that offers precise delivery, selectable fuzing options and, importantly, limited yield. In the interests of optimal flexibility, air-delivered PGM should be capable of laser and/or GPS terminal guidance, so that challenges from environmental interferences or changing ROE can be reliably dealt with.

Two weapons systems not included in the ADF inventory, but whose capabilities would greatly enhance ADF effectiveness in urban warfare, are the UCAV and the fixed-wing gunship. The former offers a responsive and precise attack capability that few manned platforms can match in terms of persistence. The latter's similar performance, but vastly superior versatility and payload, arguably justify its higher price tag, given its application in the types of conflict the ADF is likely to encounter in future.

Given that people, not machines, win wars, the value of training in preparing for urban conflict cannot be overemphasised. Technical proficiency must be underpinned by confident recognitional decision-making that only comes with practical experience. This will require the development of comprehensive joint doctrine, tactics and procedures, and the conduct of combined arms training that progresses from simulated exercises, through urban air weapons range training to free-play exercises.

Air power alone cannot win urban battles. Hampered by lack of permanence, it cannot effectively hold ground, nor can it necessarily achieve requisite target assimilation. This suggests an ongoing reliance on support from ground elements, especially SF, who share a symbiotic relationship in the conduct of urban precision strikes. Combined arms approaches to urban operations have produced impressive results in terms of controlled tempo of battle and reduced attrition. Networking has allowed ground and air elements to develop a supported/supporting role in a truly joint

campaign to achieve synergy at each of the tactical, operational and strategic levels of warfare. The effects rendered in such campaigns can, therefore exceed the separate contributions of each armed Service to effectively 'tip the balance' in favour of conventional forces and their governments.

The growing threat from non-state actors by virtue of globalisation has seen the emergence of the GWOT as a prime security concern, giving greater emphasis to counter-force and counter-value operations. While air power can be used to resolve battles, it cannot be used in isolation to effectively resolve conflict. Stability and security operations will no doubt continue to draw heavily on air power to help shape the battlespace for peace enforcement operations, by providing ISR, and by contributing both lethal and nonlethal effects.

As a branch of psychological warfare, 'terrorism succeeds wherever it can generate a sense of vulnerability, helplessness and powerlessness, sufficient to coerce a population or its government'.¹¹³ Modern ADF air power can contribute to the GWOT by responding with its own brand of psychological warfare. By possessing the means to detect and forcibly remove the protagonists and their infrastructure, air power can reassure the public of a government's commitment to national security, and the efficacy of a military solution in securing a conclusive outcome in what has often involved protracted and destructive hostilities. Through the precise and controlled application of air firepower, military forces can support the government's imperative to maintain political legitimacy through preserving valuable infrastructure and avoiding indiscriminate casualties. Finally, by taking the initiative in physically defeating those who resort to terrorism or acts of coercion, air power can demonstrate the futility of pursuing such tactics against a determined democratic people, and thereby strike at the adversary's

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most vulnerable spot—the motivation of its members and the readiness of others to join its ranks.

NOTES

- ¹ Robert D. Kaplan, *Warrior Politics. Why Leadership Demands a Pagan Ethos*, Vintage Books, New York NY, 2002, p. 9.
- ² Population Reference Bureau, *Human Population: Fundamentals of Growth Patterns of World Urbanization*, 2006, http://www.prb.org/Content/NavigationMenu/PRB/Educators/Human_Population/Urbanization2/Patterns_of_World_Urbanization1.htm, accessed 17 January 2006
- ³ Major Willard M. Burleson III, US Army, *Mission Analysis During Future Military Operations on Urbanized Terrain*, master's thesis, US Army Command and General Staff College, West Point NY, 1988, pp. 1–2.
- ⁴ Indonesia, for instance, will prove no exception to globalised urban development trends. Jakarta is expected to emerge as the world's ninth largest metropolis by 2015 with a projected population of 17.3 million. By comparison, Australia's total population is expected to reach only 21 million at this time. Peter McDonald and Rebecca Kippen, *The Impact of Long-Term Visitors on Projections of Australia's Population* Department of Immigration and Multicultural and Indigenous Affairs Research Paper, Canberra, May 2002, p. 17 http://www.immi.gov.au/research/publications/long_term_visitors.pdf, accessed 17 January 2006.
- ⁵ Australian Strategic Policy Institute, *Beyond Baghdad: ASPI's Strategic Assessment 2004*, Australian Strategic Policy Institute Report, 2004, Chapter 3: Warfare, <http://www.aspi.org.au/16960beyondbaghdad/print/chapter03.html>, accessed 13 October 2005.
- ⁶ National Intelligence Council, *Mapping the Global Future: Report on the National Intelligence Council's 2020 Project*, Government Printing Office, Pittsburg PA, December 2004, pp. 14–15.
- ⁷ Colonel Thomas X. Hammes, USMC, *The Sling and the Stone: On War in the 21st Century*, Zenith Press, St. Paul MN, 2004, pp. 207–208.
- ⁸ Latest studies estimate the final costs to the US from Operation Iraqi Freedom (OIF) at between one trillion and two trillion US dollars. Many costs are largely hidden, such as healthcare and disability benefits for returning veterans, accelerated replacement schedules of war materiel, increased wages and reenlistment bonuses, and interest accrued in financing the war. Linda Bilmes and Joseph Stiglitz, 'War's Stunning Price Tag', in *Los Angeles Times*, 17 January 2006, <http://ebird.afis.mil/ebfiles/e20060117411870.html>, accessed 20 January 2006.
- ⁹ Australian Strategic Policy Institute, *Beyond Baghdad: ASPI's Strategic Assessment 2004*, Chapter 6: Southeast Asia.

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- ¹⁰ Major Mark P. Everman, USMC, *Marine Aviation: Relevant in MOUT?*, student research paper, Marine Corps University Command and Staff College, Quantico VA, 1997, Executive Summary, pp. 1, 3, <http://www.globalsecurity.org/military/library/report/Everman.htm> accessed 18 October 2005.
- ¹¹ *ibid.*, pp 28–30.
- ¹² This study has considered the following campaigns: the battle for Stalingrad of 1942–1943; US participation in the Vietnam conflict, particularly during the Tet Offensive of 1968; Israeli Air Force attacks against the PLO in Beirut, 1982; Operation *Desert Storm*, Iraq, 1991; Operation *Restore Hope*, Mogadishu, Somalia, 1993; Soviet military operations in Grozny, Chechnya, 1995; NATO Operation *Allied Force* in the former Yugoslavia, 1999; Operation *Enduring Freedom*, Afghanistan, 2001; and Operation *Iraqi Freedom*, 2003.
- ¹³ Major Jon M. Davis, USMC, *Urban Offensive Air Support: Is the United States Military Prepared and Equipped?*, student research paper, USMC Command and Staff College, Quantico VA, 1995, Chapter 4, p. 27, <http://www.globalsecurity.org/military/library/report/1995/DJM.htm> , accessed 18 October 2005.
- ¹⁴ Lieutenant Colonel Todd G. Kemper, *Aviation Urban Operations: Are We Training Like We Fight?*, Maxwell Paper No. 33, Air University Press, Maxwell Air Force Base, Alabama, 2004, p. 23.
- ¹⁵ Davis, *Urban Offensive Air Support*, pp. 20–23.
- ¹⁶ Matthew C. Waxman, *International Law and the Politics of urban Air Operations*, RAND, Santa Monica CA, 2000, p. xi, <http://www.rand.org/publications/MR/MR1175.sum.pdf>, accessed 18 January 2006.
- ¹⁷ James H. Toner, 'Just War Criteria: A Brief Overview', Air War College Faculty Paper, April 2004, in *Department of Leadership and Ethics 2006 Reader*, Air University Press, Air War College, Maxwell Air Force Base, Alabama, 2006, p. 181.
- ¹⁸ Rick Atkinson, *Crusade: The Untold Story of the Gulf War*, Harper Collins Publishers, London, 1994, pp. 285-289.
- ¹⁹ Major Lee K. Grubbs, US Army, and Major Michael J. Forsyth, US Army, 'Is There a Deep Fight in a Counterinsurgency?', in *Military Review*, July–August 2005, p. 28.

- ²⁰ Rick Atkinson, 'The Raid That Went Wrong: How an Elite US Failed in Somalia', in *Washington Post*, 30 January 1994, in Major Roger N. Sangvic, *Battle of Mogadishu: Anatomy of a Failure*, student monograph, US Army Command and General Staff College, School of Advanced Military Studies, Fort Leavenworth KA, 1998, p. 13.
- ²¹ OODA describes the elements of a decision-making loop that can help compress the time required for a commander to observe a situation and take action. By understanding the OODA loop the commander can operate inside the 'decision cycle' of the adversary, forcing him to deal with irrelevant or outdated information. The aim is to create disorder and panic, shatter the cohesion of enemy forces, and thereby bring about the enemy's collapse. This requires not only faster decision making, but a comprehensive knowledge of the adversary and the operating environment. The theory was first espoused by Colonel John Boyd, USAF (Retd). See Robert Cobram, *Boyd. The Fighter Pilot Who Changed the Art of War*, Back Bay Books/Little, Brown and Company, New York NY, 2002, pp. 333–338.
- ²² General Vasili I. Chuikov, Marshal of the Soviet Union, *The Battle for Stalingrad*, trans. Harold Silver, Holt, Rinehart and Winston, New York NY, 1964, p. 72.
- ²³ Urban battle's propensity for damage and human suffering makes for compelling reporting. By virtue of the internet and the ever present media, sensational coverage of events can be directly conveyed to the general public, and as such is influential in guiding public opinion.
- ²⁴ US Army Field Manual (FM) 3-06.11, *Combined Arms Operations in Urban Terrain*, Department of the Army, Washington DC, 28 February 2002, p. 1-1.
- ²⁵ Major Timothy L. Saffold, USAF, *The Role of Airpower in Urban Warfare: An Airman's Perspective*, Air Command and Staff College Wright Flyer Paper No. 6, Air University Press, Maxwell Air Force Base, Alabama, December 1998, p. 7.
- ²⁶ During the Tet offensive of 1968, the North Vietnamese Army (NVA) forced meeting engagements to a range inside the circular error probable (CEP) of the fixed-wing aviation attack assets (250 feet). Major W.H. Moos, USMC, 'The Employment of Marine Aviation in Offensive Urban Combat Operations', student paper, USMC Command and Staff College, Quantico VA, May 1979, p. 20, in Davis, *Urban Offensive Air Support*, p. 42.
- ²⁷ Chuikov, *The Battle for Stalingrad*, p. 84.
- ²⁸ Saffold, *The Role of Airpower in Urban Warfare*, p. 10.

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- ²⁹ US Army Field Manual (FM) 3-06.11, *Combined Arms Operations in Urban Terrain*, p. III-3.
- ³⁰ In the Battle for Aachen in the fall of 1944, the US First Army's focus of fire support was to reduce the city to rubble and allow infantry to clear the enemy from the city core. Burleson, *Mission Analysis During Future Military Operations on Urbanized Terrain*, pp. 29–30.
- ³¹ Richard P. Hallion, *Storm Over Iraq: Air Power and the Gulf War*, Smithsonian Institution Press, Washington DC, 1992, p. 247.
- ³² In Operation *Desert Storm*, US ground forces employed infra-red identification beacons to complement visual identification symbols painted on vehicles. Hallion, *Storm Over Iraq*, pp. 222–223.
- ³³ BFT is a GPS-based system that presents icons of other participating BFT platforms (both ground and air) on a moving map display. First deployed during Operation *Enduring Freedom*, and later during *Operation Iraqi Freedom*, the system has enhanced over-the-horizon communications and helped improve situational awareness of airborne, armoured and mechanised units. BFT provides near real-time position reporting, two-way text messaging, and air traffic avoidance warnings, and facilitates more effective command and control over a widened battle space. Major Nathan K. Watanabe, US Army, *Blue Force Tracker and Army Aviation Operations in Afghanistan*, http://www.quad-a.org/chapters/Drum/blue_force_tracker_and_army_avia.htm, accessed 16 January 2006.
- ³⁴ Saffold, *The Role of Airpower in Urban Warfare*, p. 12.
- ³⁵ Jason Conroy and Ron Martz, *Heavy Metal: A Tank Company's Battle to Baghdad*, Potomac Books, Dulles VA, 2005, p. 150.
- ³⁶ Burleson, *Mission Analysis During Future Military Operations on Urbanized Terrain*, pp. 7–49.
- ³⁷ Moos, 'The Employment of Marine Aviation in Offensive Urban Combat Operations' p. 14, in Davis, *Urban Offensive Air Support*, p. 39.
- ³⁸ Mark Bowden, *Blackhawk Down*, Transworld Publishers, London, 1999, pp. 134–135, 167–168.
- ³⁹ Burleson, *Mission Analysis During Future Military Operations on Urbanized Terrain*, pp. 46–47.
- ⁴⁰ Sangvic, *Battle of Mogadishu*, pp. 15–18, 30.
- ⁴¹ 1983 US Army Research Institute Survey statistic quoted in Burleson, *Mission Analysis During Future Military Operations on Urbanized Terrain*, p. 67.
- ⁴² Sangvic, *Battle of Mogadishu*, p. 16, 19–20.

- ⁴³ G.J. Ashworth, *War and the City*, Routledge, Chapman and Hall, New York NY, 1991, p. 121, in Saffold, *The Role of Airpower in Urban Warfare*, p. 13.
- ⁴⁴ After three days of conducting probes into Najaf during Operation *Iraqi Freedom*, exhausted elements of 3ID required a 24 hour break to recover. Conroy and Martz, *Heavy Metal*: p. 186.
- ⁴⁵ Saffold, *The Role of Airpower in Urban Warfare*, p. 11.
- ⁴⁶ Conroy and Martz, *Heavy Metal*: pp. 127, 134.
- ⁴⁷ Colonel Philip S. Meilinger, USAF, *10 Propositions Regarding Air Power*, Air Force Museums History Program, Washington DC, 1995, p. 28.
- ⁴⁸ Saffold, *The Role of Airpower in Urban Warfare*, p. 20.
- ⁴⁹ Williamson Murray and Major General Robert H. Scales Jr., *The Iraq War: A Military History*, Harvard University Press, Cambridge MA, 2003, p. 245.
- ⁵⁰ Royal Australian Air Force, Australian Air Publication 1000—*Fundamentals of Australian Aerospace Power* [AAP 1000—*Fundamentals of Australian Aerospace Power*], Fourth Edition, Aerospace Centre, Canberra, 2002, p. 140.
- ⁵¹ Captain James T. Cobb, First Lieutenant Christopher A. LaCour and Sergeant First Class William H. Hight, ‘The Fight for Fallujah: TF 2-2 in FSE AAR: Indirect Fires in the Battle of Fallujah’, in *Field Artillery*, March–April 2005, pp. 26–27, <http://www.tradoc.army.mil/pao/ProfWriting/2-2AARlow.pdf>, accessed 13 February 2005.
- ⁵² Murray and Scales, *The Iraq War*, p. 181.
- ⁵³ *ibid.*, *The Iraq War*, 93.
- ⁵⁴ Post–Operation *Iraqi Freedom* studies estimated one civilian died for every 35 munitions dropped. During Operation *Enduring Freedom* it was closer to one in twelve. Quoted in Murray and Scales, *The Iraq War*, p. 179.
- ⁵⁵ Hallion, *Storm Over Iraq*, pp. 196–197.
- ⁵⁶ War correspondent Milton Viorst reported from Baghdad that Iraqi civilians were tolerant of stray bombs in Coalition air strikes, referring to them as ‘mistakes’. Quoted in Hallion, *Storm Over Iraq*, p. 199.
- ⁵⁷ Murray and Scales, *The Iraq War*, 179.
- ⁵⁸ *ibid.*, *The Iraq War*, p. 178.
- ⁵⁹ As a result the USAF merged its offensive air capabilities into a single Air Combat Command. Hallion, *Storm Over Iraq*, pp. 264–265. The RAAF has similarly has merged its strike and fighter wings into a single Air Combat Group.
- ⁶⁰ Department of Defence, Australian Defence Doctrine Publication–D.3—*Future Warfighting Concept*, Department of Defence, Canberra, 2002 [ADDP–D.3—*Future Warfighting Concept*], p. 25.

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- ⁶¹ USAF 442d Fighter Wing Instruction 11-201, Order 1.4.30 defines ‘Push-CAS’ (push-close air support) as ‘a tasking process where aircraft are turned and re-launched as quickly as possible to an orbit point close to the battle to assume continuous airborne alert’. The process has been used in Operations *Enduring Freedom* and *Iraqi Freedom* to provide ground forces with responsive close air support. See 442d Fighter Wing Instruction 11-201, 18 January 2006, <http://www.e-publishing.af.mil/pubfiles/442fw/11/442fwi11-201/442fwi11-201.pdf>, accessed 31 December 1998.
- ⁶² During each 24-hour period Coalition forces launched 1500–2000 sorties. Approximately 500 targets were pre-planned. Many targets were assigned to crews once airborne, or else strike sorties were diverted to provide close air support. Murray and Scales, *The Iraq War*, p. 170.
- ⁶³ At the Karbala Gap, 3/7Cavalry Squadron deliberately drew out Iraqi armor to present targets for precision air attack. Murray and Scales, *The Iraq War*, 245.
- ⁶⁴ Regarding Operation *Desert Storm*, Coalition Force Air Component Commander, General Charles Horner, stated ‘in the past you wanted to know where the tanks are stored. Now you want to know where the load-bearing wall is on the building where the tanks are stored. You want to know—is the overburden on the bunker 26 feet of concrete or 26 feet of earth? The data demands on modern warfare are just going out of sight, but it’s important’, in David Jeffcoat, *Air Power and Special Forces: A Symbiotic Relationship*, Air Power Development Centre Paper No. 14, Air Power Development Centre, Fairbairn, 2004, p. 21.
- ⁶⁵ Jeffcoat, *Air Power and Special Forces*, p. 29.
- ⁶⁶ Rick Atkinson, *Crusade: The Untold Story of the Gulf War*, p. 234.
- ⁶⁷ Lieutenant Colonel Eric E. Theisen, USAF, *Ground-Aided Precision Strike: Heavy Bomber Activity in Operation Enduring Freedom*, Maxwell Paper No. 31, Air University Press, Maxwell Air Force Base, Alabama, July 2003, p. 5.
- ⁶⁸ Murray and Scales, *The Iraq War*, pp. 171–172.
- ⁶⁹ AAP 1000—*Fundamentals of Australian Aerospace Power*, p. 138.

- ⁷⁰ The 2004/2005 Australian Defence Budget was \$17 billion (Australian). Patrick Walters, 'Defence accounts too rubbery for AG', in *Australian*, 12 November 2005. Australia currently spends approximately 1.9 per cent of gross national product on Defence. Greg Sheridan, 'Alliance strong, but our defence outlay weak', in *Australian*, 18 November 2005. Further breakdowns in Australian defence spending are promulgated in the Department of Finance and Administration Agency Budget Statements, Part C, Section 1, available from: http://www.finance.gov.au/publications/PortfolioBudgetStatements/PBS-04-05/part_c_section_1_04_05.html.
- ⁷¹ Barry R. Posen, 'The Struggle Against Terrorism: Grand Strategy, Strategy and Tactics', in *International Security*, vol. 26, no. 3, Winter 2001/2002, p. 46.
- ⁷² Department of Defence, 'Disarmament of Iraq: Operation Falconer', <http://www.defence.gov.au/opfalconer/default.htm>, accessed 13 February 2006.
- ⁷³ During Operation *Iraqi Freedom* in 2003 the Defence Intelligence and Geospatial Organisation encountered difficulty acquiring hi-resolution and normally commercially available satellite images of Iraq. Whilst access to archived images was satisfactory, commercial providers were slow to deliver specific requests for new material, and instead referred Defence planners to US intelligence services. Subsequent availability of satellite imagery could not be assured unless US sensors were trained on common US/Australian areas of interest. Andrew Fowler, 'Satellite hitch restricts RAAF reconnaissance', in *7.30 Report*, 17 April 2003, transcript, <http://www.abc.net.au/7.30/content/2003/s835050.htm>, accessed 21 January 2006.
- ⁷⁴ Lieutenant Colonel Ed 'Mel' Tomme, USAF and Colonel Sigfred 'Ziggy' Dahl, USAF, 'Balloons in Today's Military? An Introduction to the Near-Space Concept', in *Air and Space Power Journal*, Winter 2005, p. 46.
- ⁷⁵ Distance is critical to image resolution and receiving low-power signals. Resolution varies with the inverse square of the distance— double the distance, halve the resolution. Near-space platforms therefore offer 10-20 times the resolution of orbital satellites. Tomme and Dahl, 'Balloons in Today's Military?', p. 43.
- ⁷⁶ Balloons can be launched in minutes to hours, and require approximately one minute per 1000 feet of ascent. Tomme and Dahl, 'Balloons in Today's Military?', p. 48.

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- ⁷⁷ Global Hawk operation is essentially autonomous, using fail-safe programs. It can be reprogrammed in flight should mission changes dictate. System redundancy will greatly reduce the probability of loss and allow extended time on station while a replacement vehicle is en route. Global Positioning System (GPS) aided inertial navigation systems provide the accuracy required for both runway environment and flight operations, and will assist with timely and accurate targeting. AAP 1000—*Fundamentals of Australian Aerospace Power*, p. 199.
- ⁷⁸ Edward Trower, 'RAAF Braces For Major Challenges of Next 20 Years', in *Australian Defence Journal*, July/August 2004, p. 12.
- ⁷⁹ Synthetic aperture radar (SAR) is a computer-supported radar system that takes advantage of an aircraft's forward movement during the travel of the radar pulse to simulate a much longer antenna length (in the order of 2000 feet). This allows the use of lower electromagnetic frequencies which provide much finer resolution. A ground moving target indicator (GMTI) radar compares two snapshots to determine the position and track of multiple targets. The tracks are then spatially and temporally correlated with SAR or other sensory imagery to present a moving target display that can be fused with road or map data.
- ⁸⁰ Hallion, *Storm Over Iraq*, p. 292.
- ⁸¹ Senator The Hon Robert Hill, Australian Minister for Defence, 'New Tactical Unmanned Aerial Vehicle Capability', Ministerial Media Release 199/2005, 12 December 2005.
- ⁸² The aircraft can be landed within 50 metres of a designated point, according to manufacturer's claims. 'I-View Tactical UAV System', in *Defense Update: International Online Defense Magazine*, Issue 2, 2005, <http://www.defense-update.com/products/i/view.htm>, accessed 16 January 2006.
- ⁸³ During Operation *Enduring Freedom*, laser-guided Hellfire-C missiles were fired from a Predator UAV launched from the Indian Springs Air Force Auxiliary Airfield, near Nellis Air Force Base in Nevada, to destroy enemy vehicles and personnel in Afghanistan. The emergence of the UCAV arose as a consequence of the lag time observed between UAV surveillance activities and the deployment of strike aircraft from Italy during the NATO air campaign against the former Yugoslavia in 1999. By the time attack aircraft arrived on station many military targets were no longer available to be engaged. However, targets located by armed UAVs could be attacked immediately with onboard weapons. AAP 1000—*Fundamentals of Australian Aerospace Power*, p. 288.

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- ⁸⁵ *ibid.*
- ⁸⁶ A full explanation of the FIOP system-of-systems initiative is given in Robin Quinlan, *Family of Interoperable Operational Pictures (FIOP)*, Office of the Secretary of Defense, Washington DC, <http://www.dtic.mil/ndia/systems/Quinlan.pdf>, accessed 15 September 2005.
- ⁸⁷ The Jindalee Over-the-Horizon Radar Network (JORN) bounces high frequency signals off the earth's ionosphere to provide a wide area surveillance capability. Three sites have been established across Australia to monitor air and sea approaches to the continent. AAP 1000—*Fundamentals of Australian Aerospace Power*, p. 194.
- ⁸⁸ AAP 1000—*Fundamentals of Australian Aerospace Power*, p. 214.
- ⁸⁹ Wedgetail will provide the ADF with an enhanced surveillance capability, particularly in the broad expanse of the Australian north, and complement the Jindalee Over-the-Horizon Radar Network (JORN) of ground-based radars. It will also be able to support other ADF and coalition efforts throughout the world. The aircraft will be a derivative of the Boeing 737-700, fitted with a dorsal phased array radar, electronic warfare self-protection system, and air-to-air refueling capability. AAP 1000—*Fundamentals of Australian Aerospace Power*, p. 216.
- ⁹⁰ A radian is equal to the angle at the centre of a circle subtended by an arc of length equal to the radius. A milliradian is equal to one thousandth of a radian.
- ⁹¹ Davis, *Urban Offensive Air Support*, pp. 80–92.
- ⁹² United States Air Force Scientific Advisory Board, *Report on Air Force Operations in Urban Environments: Volume 1: Executive Summary and Annotated Brief*, United States Air Force Scientific Advisory Board, Washington DC, 1 August 2005, p. vi.
- ⁹³ Air Force Special Operations Command (AFSOC), *AFSOC Instruction 11-202, Volume 14 – AC-130U Operations*, 1 May 1997, p. 12, <http://www.fas.org/man/dod-101/sys/ac/docs11020214.pdf>, accessed 20 January 2006.
- ⁹⁴ The unit cost of the AC-130H is \$132 million. The unit cost of the more modern AC-130U (based on the C-130H airframe) is \$190 million (figures in US fiscal 2001 constant dollars). 'AC-130H/U Gunship', in *Air Force Link*, October 2005, <http://www.af.mil/factsheets/factsheet.asp?fsID=71>, accessed 20 January 2006.

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- ⁹⁵ The USAF currently operates eight AC-130H and 13 AC-130U aircraft. 'AC-130 Specifications', in *GlobalSecurity.org*, 27 April 2005, <http://www.globalsecurity.org/military/systems/aircraft/ac-130-specs.htm>, accessed 20 January 2006.
- ⁹⁶ Daniel Cotterill, 'Decision on New Targeting Pod Later this Year', in *Australian Defence Magazine*, vol. 13, no. 3, March 2005, p. 48.
- ⁹⁷ On several occasions two-ships of Lantirn-equipped F-15Es managed to destroy 16 tanks with 16 GBU-12s. Hallion, *Storm Over Iraq*, p. 203.
- ⁹⁸ Davis, *Urban Offensive Air Support*, pp. 23, 24.
- ⁹⁹ 'Small Diameter Bomb (SDB)', in *Defense Update: International Online Defense Magazine*, Issue 5, 2004, <http://www.defense-update.com/products/s/sdb.htm>, accessed 20 October 2005.
- ¹⁰⁰ 'F-35 Joint Strike Fighter', Wikipedia, 8 February 2006, http://en.wikipedia.org/wiki/F-35_Joint_Strike_Fighter, accessed 8 February 2006.
- ¹⁰¹ Theisen, *Ground-Aided Precision Strike*, p. 5.
- ¹⁰² Major Ho Yung Peng and Major Teo Cheng Hang, 'Airpower in Operation Iraqi Freedom', *Pointer: Journal of the Singapore Armed Forces*, vol. 30, no. 3, 2004, p. 3.
- ¹⁰³ Murray and Scales, *The Iraq War*, p. 276.
- ¹⁰⁴ Defense Science Board, *Report of the Defense Science Board Task Force on Military Operations in Built-Up Areas (MOBA)*, Office of the Under Secretary of Defense for Acquisition and Technology, Washington DC, 1994, pp. 32–33.
- ¹⁰⁵ Known as the Active Denial System (ADS), this weapon generates short, intense energy pulses that produce transient surges of thousands of volts. Because the microwave energy penetrates less than a millimetre into the skin, injury is very minor. Squadron Leader C.R. Coles, RAAF, *Air-delivered non-lethal weapons and the RAAF weapons inventory*, Australian Defence College Geddes Paper, Australian Defence College, Canberra, 2003, p. 76, http://www.defence.gov.au/adcd/docs/Publications/Geddes%20Papers%202003/09%20Air-delivered_Squ%20Leader%20Coles.pdf, accessed 17 January 2006. Plans are currently underway to install ADS on AC-130 gunships. Further technical information on nonlethal weapons is available at 'Non Lethal Directed Energy Weapons', in *Defense Update: International Online Defense Magazine*, Issue 1, 2005, <http://www.defense-update.com/features/du-1-05/NLW-DEW.htm>, accessed 20 October 2005.
- ¹⁰⁶ Conroy and Martz, *Heavy Metal*: p. 136.
- ¹⁰⁷ Hallion, *Storm Over Iraq*, p. 219.

- ¹⁰⁸ Pre-sortie planning may draw on archived photographs and radar predictions or commercially available satellite images to decide ingress and egress routes, tactics, and weapon trajectory profiles. Exercises involve acquiring the prescribed target either visually or using onboard sensors, a simulated weapon release, and escape tactic. Lessons learned are largely drawn from self-assessed post-flight analyses, including extensive review of cockpit systems recordings such as Pavetack or head-up display (HUD) tapes, to determine the likelihood of target impact and success of tactics. Mission success (and survival) is based on theoretical assessment.
- ¹⁰⁵ Kemper, *Aviation Urban Operations*, p. 25.
- ¹⁰⁶ James W. Crawley, 'Bombs Away at Yodaville', in *San Diego Union-Tribune*, 18 June 1999, <http://www.geocities.com/Pentagon/6453/yodaville.html>, accessed 1 February 2006.
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- ¹⁰⁸ Hammes, *The Sling and the Stone*, p. 239.
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CHAPTER 6

AIR POWER AND
TRANSNATIONAL TERRORISM:
THE POSSIBILITIES, ADVANTAGES AND
LIMITS TO USING AUSTRALIAN AIR
POWER IN THE 'WAR ON TERROR'

BY MR SAM GRAY-MURPHY

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Bringing aerospace power into this primarily civilian war will not create an Orwellian force or a military challenge to civil primacy. Aerospace power is not the enemy; it is an important part of national security, and it is under-utilised against what may prove to be the region's gravest security threat.

Raymond S. Press, *The Fight Against Transnational Crime*

INTRODUCTION

The devastating September 11 terrorist attacks on the United States of America (US) and the subsequent bombings in Bali and Jakarta are representative of what David Rapaport calls, the ‘religiously inspired, fourth wave of terrorism’.¹ This contemporary variant of terrorism is most commonly associated with the perpetrators of the aforementioned attacks, Al Qaeda and Jemaah Islamiyah (JI). Such terrorist groups pose a grave threat, both directly and indirectly, to international stability. Many have become truly global in nature with adequate resources to ‘view the whole world as their theatre of operations.’² Today’s terrorist threat is therefore rightly known as transnational terrorism.³ This paper will examine how Australian air power can contribute to the nation’s efforts to defend against transnational terrorism.

The paper briefly compares Australia’s past experience of terrorism with that of the contemporary security environment, in which transnational terrorism is a significant concern. It will examine the level of terrorist threat to Australia in the context of the broader security environment and discuss the implications of Australia’s involvement in the so-called ‘War on Terror’ for the Australian Defence Force (ADF). Finally, it will assess whether the ‘War on Terror’ demands a fundamental overhaul of Defence’s strategic priorities.

It will then focus on the scope for air and space power to contribute to Australian counter-terrorism efforts. It will briefly examine air power in relation to other elements of national power employed against terrorist adversaries, and will outline the possible roles for air power, citing various examples.

In assessing the capacity for Australian air power to contribute to protecting Australian interests from terrorist attack, the legal, normative and political concerns are discussed. The paper also

examines how the Royal Australian Air Force (RAAF), and the ADF more generally, should cope with such considerations and whether any doctrinal changes should be made.

In light of findings made, the paper assesses the adequacy of future RAAF force structures and capabilities. It will discuss any adaptations that may be necessary, to either platforms or weaponry, with particular reference to the AIR 6000 (New Air Combat Capability) and AIR 7000 (Multi-mission Unmanned Aerial Vehicle and Maritime Patrol Aircraft) projects. It also examines RAAF capabilities that have been identified as areas of concern and discusses these apparent weaknesses in relation to terrorist threats.

AUSTRALIA'S SECURITY ENVIRONMENT POST 9-11

Terrorism and Australia

Although Australia has not been immune from terrorist attacks in the past, such attacks have seldom occurred, were most often aimed at foreign interests, and were usually in response to events abroad.⁴ Thus, domestic law enforcement and intelligence agencies have generally been capable of adequately dealing with terrorism without military support. The recent attacks in Indonesia, however, represent a significant and worrying change, insofar as Australia was clearly targeted both in the Bali and Jakarta bombings. The determination and global nature of contemporary transnational terrorist groups mean they have an alarming capacity to seriously threaten Australian interests. As the Government's *Defence Update 2003* acknowledges, 'the terrorist threat to Australians and Australian interests has increased, both domestically and overseas'.⁵

The attacks by extremist, Islamist terrorist groups have thus far occurred outside Australian territory; however, this does not mean that the terrorist phenomenon is any less worrying. These

groups have demonstrated their interest in conducting attacks on Australian soil in the past, and there is a significant risk that they will attempt to do so in the future.⁶ Moreover, a nation's interests are not confined to its territorial landmass. Australia has a vast array of political, economic and commercial interests around the globe, not to mention a population inclined towards international travel. For example, the shipping and trade routes to Australia's immediate north are vital for the continued economic prosperity of Australia and the region.

The increased terrorist threat means that the ADF may be required to assist in protecting Australians and Australian interests from terrorist violence globally if civil agencies alone are not up to the task. While the ADF's primary focus has long been on protecting Australia from a conventional military attack, the grave threat posed by transnational terrorism means it is no longer appropriate to consider national security as being adequately protected by maintaining a 'fortress Australia'.⁷ If military assistance in the 'War on Terror' is required, the contemporary ADF must be prepared and ready to provide it.

Ironically, because an attack on Australian soil would prove relatively difficult to carry out (although far from impossible), due to its geographical isolation and relatively well-protected borders, terrorists are much more likely to attack Australia where it is more vulnerable, that is, overseas. The tragic verification of this hypothesis was witnessed in Bali and Jakarta. Martha Crenshaw, a leading terrorist expert, argues that 'terrorism in general is deflected rather than prevented'.⁸ For the ADF, this means that now more than ever, it may find itself called upon to protect Australian interests from terrorist attack across the globe.

How the 'War on Terror' affects Australia

The Australian Government's enduring commitment to the US-led 'War on Terror' has undoubtedly altered Australia's contemporary security environment.⁹ The proactive and uncompromising US response to terrorism and (some) states that harbour terrorist groups¹⁰ has led to a heightened operational tempo for the ADF, and it is reasonable to suppose that further military support from Australia will be forthcoming in future.¹¹ Heretofore, ADF involvement in the 'War on Terror' has primarily been in the Middle East; however, this does not suggest that the ADF will not have to assume important counter-terrorism responsibilities, both in the region and domestically. That said, ADF participation as a member of the coalitions in Afghanistan and Iraq has won much praise in the US, clearly strengthening the Australian-US alliance, which is rightly regarded by Defence as a vital 'national asset'.¹² This bolstered alliance means that the likelihood of conventional state-on-state warfare involving Australia is lower now than it has been for many years.

Conversely, the *Defence Update 2003* acknowledges that non-state transnational terrorist groups are an increasing source of concern for Australia. Although the *Defence Update 2003* itself does not suggest that ADF involvement in the US-led 'War on Terror' in the Middle East has *caused* the increased threat, many well-regarded terrorist experts hold such a view.¹³ Crenshaw argues that military responses to transnational terrorism can have the adverse effect of engendering further animosity and increased attacks.¹⁴ To be sure, prior to September 11 and Australia's subsequent military contributions in Afghanistan and Iraq, David Sadleir argued that Australia's limited involvement in the Middle East was to be credited for the relatively small number of terrorist attacks directed against it.¹⁵ This recognises the fact that ADF involvement abroad has definite implications for terrorist threat levels. Such

expeditionary military operations are not strictly essential for the immediate defence of Australia; however they are undoubtedly an operational reality that must be considered when assessing the contemporary strategic environment for the ADF.

Implications for the ADF

In the age of transnational terrorism, weapons of mass destruction (WMD) and globalisation, assessing a nation's security priorities is extremely difficult. The one reality that Defence must come to accept is that 'uncertainty is certain'.¹⁶ Peter McLennan argues that the method of trying to predict dominant future threats to security is fundamentally flawed and therefore concludes that defence structures and capabilities must be balanced, flexible and adaptable in order to deal effectively with a range of contingencies. He observes that US and Australian defence and intelligence agencies either failed to predict any of the major conflicts over the last 50 years (with the exception of the violence in the former Yugoslavia in 1990); did so too late to adapt defence force structures or capabilities appropriately; or predicted conflicts that did not eventuate.¹⁷ Although it remains important to analyse credible future challenges, by expecting the unexpected, the ADF will be much better equipped to protect Australia's interests from a wider range of threats.

It is very unwise, despite the temptation, to overstate one threat, in this case terrorism, and disregard strategic planning for what Nye calls 'low probability but high-impact contingencies' such as conventional attacks.¹⁸ Australia's region is inherently more volatile than that of North America or Europe, with major war not unthinkable to our near north.¹⁹ Terrorism, on the other hand, does not pose a threat to the survival of the Australian nation as a whole.²⁰ Risk management demands that the degree of damage each scenario may inflict on Australia be taken into account along with the likelihood of its occurrence. Although transnational terrorism

raises novel and frightening challenges for national security policymakers, planning to ‘fight the last war’ must be avoided. Therefore, Paul Dibb argues that the ADF should maintain its focus on the five long-term strategic objectives enunciated by the Defence White Paper, *Defence 2000: Our Future Defence Force*.²¹ These objectives are as follows:

- to protect Australian territory and its direct approaches,
- to foster the security of our immediate neighbourhood,
- to promote stability and cooperation in South-East Asia,
- to support strategic stability in the wider Asia Pacific region, and
- to support global security.²²

As such, if these strategic goals have not changed greatly since 2000, the ‘Defence Capability Plan’ (DCP) which was based on that same strategic assessment also remains, on the whole, appropriate.²³

Although the ADF’s heightened operational tempo, due to commitments to the US-led ‘War on Terror’, should be kept in mind when assessing Australia’s strategic priorities, these are by and large ‘operations of choice’ rather than of necessity. The government clearly sees value in contributing militarily to these operations. However, as they are ‘discretionary’ operations, Australia needs only to contribute what it can (or says it can), in order to honour its political commitments and bolster the alliance. Aldo Borgu argues that ‘the substance of the contribution [to counter-terrorism operations with coalition partners] does not matter as much as the contribution itself’.²⁴ Heretofore, the ADF has been a valuable contributor to coalition operations without discovering any major shortcomings in terms of effectiveness or competence. Therefore, the political, economic and security advantages to be gained from

contributing to US-led coalitions can be obtained without any drastic changes to ADF priorities.

This is not to suggest that the ADF should not enhance its capabilities to better support Australian counter-terrorism efforts, both at home and abroad. The Australian Federal Police are responding to the demands of the contemporary security environment by assisting increasingly with international peacekeeping operations, and they are well suited to undertaking such tasks.²⁵ Similarly, Australia should exploit ADF capabilities and expertise in order to meet the security challenges posed by transnational terrorism. However, the 'War on Terror' should not dictate force structures or capabilities. The role of the ADF has not fundamentally changed, but assuming some of the counter-terrorism burden is a logical and therefore advisable move. This is not a zero sum game; assisting civil agencies with counter-terrorism will not necessarily detract from the ADF's primary objective of protecting Australia from more conventional threats. Alan Thompson notes that terrorists are extremely proficient at reacting and adapting to counter-terrorist measures taken by a defending state.²⁶ Accordingly, the ADF should also focus on maximising its flexibility, adaptability and diversity, with personnel, platforms and weapons able to undertake a wide range of tasks, against a variety of opponents, both quickly and effectively.

AIR POWER AND COMBATING TERRORISM

Air Power in Counter-Terrorism

Air power is an influential and often decisive force. It has unique capabilities that should be exploited in order to enhance the Australian Government's counter-terrorism efforts. Air power (or military forces more generally) cannot single-handedly defeat transnational terrorism, particularly over the long term, nor

should it play a primary role in counter-terrorism efforts.²⁷ On the contrary, all elements of national power, including civil intelligence, law enforcement, diplomatic, economic and political efforts as well as the military, need to be employed collectively if Australia is to wage a successful 'War on Terror'. To date, the RAAF has made a significant contribution to the 'War on Terror' and it should continue to enhance Australian counter-terrorism efforts in future. Coalition operations in Afghanistan in 2001 and 2002, although not likely to be emulated repeatedly, demonstrated air power's decisiveness against asymmetrical forces.

Air power is commonly seen to perform two broad counter-terrorism functions, namely prevention and response. However, these two functions should be considered mutually supportive rather than disparate objectives.²⁸ For example, the US-led coalition attacked the Taliban Government of Afghanistan in response to that regime's continued failure to act against, if not for its outright support of, Al Qaeda. While this was clearly a response to the trauma that was September 11, it was also aimed at preventing future attacks by killing Al Qaeda operatives and destroying their training camps and infrastructure. Moreover, the Afghanistan campaign encompassed a psychological objective, warning other states of the consequences of harbouring transnational terrorist groups, as well as aiming to dissuade the terrorists themselves from conducting future attacks.

Roles for Air Power

Within the two broad functions of prevention and response, the four most important roles for air power in counter-terrorism are as follows:

- airlift;
- strike;
- intelligence, surveillance and reconnaissance (ISR); and
- psychological operations.

It must be noted here that there are a number of other significant airpower roles, such as achieving air superiority, defending forward operating bases, and conducting diversionary operations to focus an adversary's attention away from forces on the ground.²⁹ Furthermore, it may be necessary to re-examine what is required of air power to deal effectively with the threat of transnational terrorism in the future.³⁰

Airlift

Airlift involves the rapid deployment of forces and essential hardware to a desired location and provides the capacity to sustain and support an operation once it has begun.³¹ This capability has proven fundamental to numerous counterinsurgency campaigns and Australian air power can expect to play a significant airlift role in counter-terrorist operations due to their essentially expeditionary nature.³²

Special Forces (SF), which are one of the most effective ADF counter-terrorism tools, are dependent on airlift for prompt insertion and extraction, to and from their desired location.³³ Airlift may be used to evacuate Australian nationals, embassy staff or intelligence agents in the event of an imminent terrorist attack and more importantly, would be crucial in the wake of such an attack, to evacuate casualties and to transport medical personnel and supplies to and from the attack site, as RAAF Hercules aircraft did after the terrorist attacks in Bali.³⁴

Strike

Strike refers to an attack conducted by an air platform on a designated target in order to 'weaken an enemy's capacity and will to fight'. The speed, reach and devastating force that characterise air power place it in a position of superiority, vis-à-vis other military capabilities, in the event that a pre-emptive strike is needed to

eradicate an imminent terrorist threat.³⁵ Indeed, because an aircraft does not have a sustained physical presence, airstrikes are often less of a 'political disadvantage'.³⁶ Consider the significantly more damaging effect the deployment of ground troops has on interstate relations, compared to that of a sudden and rapid air strike against a target in a foreign land. Air platforms in the strike role place lesser number of personnel in danger, thus minimising the likelihood of friendly casualties, particularly as terrorists typically have little in the way of air defences.³⁷

The potential use of air strikes against terrorist targets is increasing in line with the improving accuracy of precision guided munitions (PGM), which minimise the likelihood of collateral damage. Air strikes were heavily utilised by the United States Air Force (USAF) throughout Operation *Enduring Freedom* in Afghanistan, and when integrated with SF troops have been credited with ultimately making the 'difference between stalemate and victory'.³⁸ The Israeli Air Force (IAF) is increasingly reliant upon air platforms for 'targeted killing operations' (i.e. assassinations of insurgents) and they are purported by IAF commanders to be extremely effective.³⁹ John Warden claims that it is essential to attack an adversary's 'senior officials, command and control systems, and communications'.⁴⁰ This may be especially effective if those replacing the killed leaders are not as efficient or influential as their predecessors; however, the long-term effects of these so-called 'decapitation' tactics are by no means conclusive.

Although the use of air strikes by Australia against terrorist operatives, infrastructure and states that support them is not inconceivable, the RAAF should not expect to use its strike capabilities because of the associated implications (to be discussed under 'Legal, Normative and Political Considerations' below) such a strike would have.

Intelligence, Surveillance and Reconnaissance

Air platforms (fitted with advanced radar technologies) and space-based satellites are effective means of conducting surveillance and reconnaissance of terrorist movements and operations. They can do so in so-called 'peacetime' operations and can also provide crucial intelligence prior to and during military operations against terrorist adversaries.⁴¹ Although human intelligence provided by the relevant Australian civil agencies is at the forefront of counter-terrorism, air and space platforms are often better able to conduct ISR missions, both in urban areas and over vast, uninhabited terrain.⁴² They are much less constrained by distances, national borders (to an extent) or geographical barriers, providing the capacity to quickly locate, observe and report on terrorist activity wherever it appears. Nevertheless, air and space-based ISR cannot replace human intelligence capabilities; it only enhances them. After all, overhead imagery can monitor terrorist movements, but it 'cannot explain why', nor can it see inside buildings.⁴³

Air and space platforms can not only observe the terrorists themselves, but can also monitor and disseminate real-time information relating to the movements of neutral civilians who may be located close to the terrorists, thereby decreasing the likelihood of collateral damage if a strike by friendly forces is undertaken. Therefore, air and space power is well placed to make a vital contribution to Australian intelligence-gathering efforts, which are critical to the success of the 'War on Terror'.

Due to the 'time-sensitive' nature of normal terrorist targets, meaning that they can mobilise quickly, attack and disappear soon afterwards, ISR platforms may need to be fitted with strike capabilities to respond in near real-time upon identifying a terrorist threat. The USAF used the Predator unmanned combat aerial vehicle (UCAV) with devastating accuracy and success during Operation *Enduring Freedom*. Its prolonged presence, highly developed sensor

systems and precision strike capabilities meant it could locate, track, and engage terrorists almost instantly.⁴⁴ Australia looks set to acquire an unmanned aerial vehicle (UAV) within the next five years through the AIR 7000 project⁴⁵ and this could be fitted with strike capabilities which would enable it to conduct such operations.

Editor's Note: Project AIR 7000 has now been rescheduled. Currently there is no move to procure armed UAVs for the ADF.

Psychological Operations

Air power may be used for psychological operations aimed either at dissuading the terrorists from conducting future attacks, discouraging local populations from supporting terrorists, or calming the fears of a defending state's population. While it is unlikely that the presence of strike aircraft, for example, will act as a long-term deterrent, it may certainly be expected to disrupt immediate terrorist plans, or at least direct them elsewhere; which from a purely nationalistic point of view is not undesirable.⁴⁶

The use of RAAF F/A-18 Hornets for a 'standing combat air patrol' in the skies above Canberra during President Bush's 2004 visit may be seen both as a psychological and tactical move. The Hornets were reportedly given the authority to engage any unauthorised aircraft flying within a 40-kilometre radius of the President. The presence of such overwhelming air superiority alone has adequate psychological impact to thwart a terrorist attack from the air. However, this is not a long-term deterrent, nor are Al Qaeda or JI likely to employ the same strategy of attack as for September 11 in the near future.

Humanitarian Assistance as Counter-Terrorism

In order to conduct an effective long-term fight against terrorism, the 'hearts and minds' of local populations must be won.⁴⁷ Humanitarian operations undertaken by the RAAF play an important psychological role in this effort. Crenshaw argues that in order to tackle transnational terrorism effectively, a 'two-tier approach' must be taken; targeting not only the terrorists themselves, but also sympathetic local populations that provide vital, but not necessarily overt, operational and financial support and which offer concealment and protection.⁴⁸ Greg Fealy also argues that Indonesia's answer to extremist Islamist terrorism 'lies within the Islamic community itself', and most notably in increasing the willingness of the community to inform on terrorist suspects and activities.⁴⁹ This is unlikely if the community has an unfavourable opinion of the West. Australian humanitarian operations, to which the RAAF currently makes a valuable contribution, encourage a more positive public perception of Australia, thereby discouraging local populations from supporting terrorist groups.⁵⁰

While humanitarian efforts are clearly distinct from other regional counter-terrorism initiatives, they are emblematic of a wider effort to promote a safe and prosperous region (in line with the 2000 Defence White Paper's strategic objectives). Although the military inevitably plays a secondary role to diplomatic, political and economic efforts, the impact on the local psyche of seeing the RAAF transporting food, conducting search and rescue missions, and helping to rebuild hospitals cannot be overstated. Australia can expect security dividends due to its significant tsunami-relief contributions in Indonesia. The support base for Islamist terrorism has decreased in the world's most populous Muslim nation (and Australia's most important neighbour) as a direct consequence of the use of 'soft power'.

Air Power: One of Many Tools

Although civil agencies will assume primary responsibility in the 'War on Terror', air power can act as an effective force multiplier in what must be a 'whole-of-nation' counter-terrorism effort. Civil agencies will not be as effective without the option of air power support, just as air power cannot operate effectively against a terrorist adversary in isolation.

The establishment of joint commands that integrate civil and ADF capabilities implies a mounting realisation that the military is an effective force multiplier in the 'War on Terror'. Although no real legal transfers of anti/counter-terrorism jurisdiction have occurred, such an integrated approach acknowledges the fact that military assistance is necessary more often in the current security environment.⁵¹ Raymond Press makes this connection in his analysis of transnational crime, stating that air and space power should be considered an 'able assistant to an overloaded system' and that 'the military does not need to take control. It just needs to help.'

Air power has proven particularly effective against terrorist adversaries when used in conjunction with SF troops. David Jeffcoat calls this a 'symbiotic relationship'. During Operation *Enduring Freedom*, devastating precision firepower was delivered against ground targets by coalition aircraft in conjunction with SF operating on the ground. Only air platforms can transport SF troops to a required location quickly and over great distances, as well as simultaneously provide close air support and conduct precision strikes against ground targets. Also, due to the comparative efficiency of SF when combined with air power, Australia can afford to contribute less in overall numbers to coalition operations without any real decline in the political or operational significance of its military contribution. However, the SF-air power collaboration cannot be used to the same extent in

‘peacetime’ counter-terrorist operations due to legal and political considerations. Nevertheless, it is an important relationship to nurture and, in selected exceptional circumstances, could be called upon to eliminate an imminent terrorist threat rapidly with precision and proportionality.

Problem of Impermanence

Impermanence is a problematic characteristic of air power when dealing with transnational terrorists, who, unlike insurgents, seldom engage in sustained armed conflict.⁵² Rather, a terrorist threat lies dormant, only to surface with devastating force at sporadic intervals. This necessitates sustained ISR operations by systems that are able, upon identification of a looming threat, to either rapidly communicate a request for an immediate military pre-emptive strike, or in the case of multi-role platforms, to conduct one itself. Strike aircraft may also be needed on standby in the area while intelligence is confirmed. The impermanence of air power makes this difficult. Nonetheless, with greater air-to-air refuelling capabilities and the advent of UAVs, impermanence will become less of an issue in future.

LEGAL, NORMATIVE AND POLITICAL CONSIDERATIONS

Legal Restraints

The use of Australian air power for counter-terrorism operations is restricted by domestic and international legal considerations, some of which are particularly ambiguous about the military’s role in dealing with contemporary transnational terrorist adversaries. This paper will not discuss the legal issues surrounding ADF counter-terrorism operations at length; however, some examples of the legal issues with which the RAAF must contend will be given.

Legal jurisdiction for counter-terrorism lies first and foremost in the hands of intelligence and law enforcement agencies within Australia, and their local counterparts abroad. The ADF, under the Defence Legislation Amendment Act 2000, can assist civil law enforcement agencies but only if explicitly requested to do so.⁵³ Nonetheless, the ADF has been increasingly involved in counter-terrorism operations. For example, the ADF assisted state and federal police with security at the Sydney Olympics and RAAF combat aircraft have been used to protect visiting dignitaries. The ADF also established the Special Operations Command in May 2003, which has significant anti-terrorism defensive capabilities and is also involved in coordinating the operations of the more offensive counter-terrorism outfits, namely, the Special Air Service (SAS) Regiment and Tactical Assault Groups (TAGs). The recently opened Joint Offshore Protection Command, integrating Defence and Customs personnel and capabilities, also assumes 'direct responsibility for counter-terrorism prevention, interdiction and response in all offshore areas of Australia'.⁵⁴

Such initiatives, clearly a fitting response to the demands of the contemporary security environment, mean that jurisdiction is becoming increasingly difficult to discern.⁵⁵ In short, identifying when the ADF is merely aiding civil authorities and when it is acting more independently in the defence of Australian interests has become complex in the age of transnational terrorism.⁵⁶ This legal ambiguity poses difficulties for Defence planners because it is unclear whether the ADF now has additional responsibilities that they need to accommodate fully, or whether it is adequate to use the extant capabilities they currently have to assist as best they can.

It is equally difficult both to identify terrorist operatives and to establish how they should be dealt with. Even though the RAAF has the capability to carry out 'targeted killing operations' against terrorist suspects, Australian law generally regards terrorists as

criminals. This raises doubts as to whether they are 'legitimate military targets', which is a necessary precondition for a military strike to comply with the Law of Armed Conflict and rules of engagement.⁵⁷

Despite air strikes having been used against insurgents and terrorists by other states, the RAAF can seldom expect to emulate such tactics. Terrorist threats to Australian interests will most likely materialise from within its neighbours' territorial boundaries and an air strike against these targets would inevitably involve intruding into a sovereign nation's airspace, which is normally not a tenable position.

However, if a neighbouring government does not have the capacity to engage a terrorist target in our immediate region, and therefore requests military assistance from Australia, a RAAF air strike would not be implausible. Indeed, Prime Minister Howard has emphatically reserved the right to conduct a pre-emptive strike if absolutely necessary.⁵⁸ Although the term 'pre-emption' has been misused in recent times, it is in fact an entirely legal, albeit difficult to distinguish, strategy of self-defence.⁵⁹ However, even in instances when pre-emptive military action may legally be taken, the political ramifications would be significant if permission from the host government is not forthcoming.

Therefore, when considering the application of Australian air power in the fight against terrorism, one must acknowledge that Australia is bound by stringent legal considerations. Nonetheless, case studies of the effective use of air power against terrorists and/or insurgents can be instructive insofar as they provide examples of what capabilities and particular weapons systems are needed if the ADF is called upon to assist in combating terrorism.

The Implications of Using Air Power

The application of military force is not always beneficial to a nation's longer-term fight against terrorism. For example, conducting an air strike against a terrorist target may be a tactical success, by eliminating an individual leader or destroying vital terrorist infrastructure; however, one must also consider the secondary and subsequent ramifications of the attack.⁶⁰ It may disperse terrorist groups and push them further underground, making it harder to monitor their movements. It may also exacerbate antagonism amongst other terrorist cells, thereby provoking a new wave of terrorist attacks.⁶¹

In addition, a pre-emptive strike performed by a RAAF platform may prove detrimental over the long term by alienating Australia from much-needed allies, thus harming Australia's trade relations and future security prospects. Trans-national terrorism is a global problem necessitating near-seamless cooperation between Australia, its allies and especially its regional neighbours. Australian intelligence agencies also require greater cooperation from their regional counterparts. The need for such cooperation is the driving force behind the large number of Memoranda of Understanding signed between Australia and other countries in the region.⁶² However, a military strike by the ADF on foreign soil without the direct approval of that sovereign state would undoubtedly affect the scope for such cooperation and would surely alienate otherwise willing allies.

Although psychological operations, strikes and even military invasions have been used to discourage states from actively aiding and abetting transnational terrorist groups, there is no conclusive evidence that these measures have dissuaded states from doing so in the longer term.⁶³ Despite US air strikes against Al Qaeda targets in response to the 1998 bombings of US embassies in East Africa, there is no evidence that Al Qaeda abandoned its agenda

although it was delayed in the short-term.⁶⁴ Moreover, even if David Ochmanek's assessment that states are now less inclined to support terrorists (particularly after witnessing what happened to the Taliban and Saddam Hussein's regime) is correct, terrorist groups decreasingly use or need state support.⁶⁵

Moreover, by applying a military-first modus operandi, one risks increasing the threat to a nation's security. Military attacks may anger local populations, enhancing public support for terrorist organisations and driving otherwise moderate individuals to the extremist cause. Provoking governments into inappropriately forceful military responses is a common terrorist tactic and may be just the effect Al Qaeda hoped to achieve by way of its September 11 attacks.⁶⁶

This is not to say that a military response should never be used. Greg Fealy notes that the Darul Islam movement in Indonesia was eventually destroyed by killing its leaders; leaving 'the movement with only a few scattered insurgents thereafter'.⁶⁷ Michele Malvesti's suggestion that air strikes against Al Qaeda targets in 1998 'did not achieve US counter-terrorism policy goal of preventing future acts of terrorism'⁶⁸ does not tell the whole story. This assessment was based on President Clinton's statement that 'Our objective was to damage [Al Qaeda's] capacity to strike at Americans and other innocent people'. President Clinton did not suggest that the air strikes would destroy the terrorist's will or intent to conduct attacks in future, nor should he have. However, his stated policy objective was achieved because Al Qaeda's *capacity* to conduct an attack was indeed damaged through the air strikes, albeit only in the short-term. This discredits the notion that military force is *never* the answer.

However, the decision to take such action should not be made hastily and must take into account both short and long term effects, whether or not these effects are in line with broad national

security interests and, most importantly, must acknowledge that military force is only a small part of an effective counter-terrorism policy.

Furthermore, the overwhelming military superiority a state has over a terrorist adversary, such as that afforded by Australian air power, does not deter or dissuade transnational terrorist attacks to the same extent that it is expected to do for more conventional adversaries, particularly over the long term. Indeed, Crenshaw argues that:

The superior power of the defending state makes it a more rather than less attractive target, because of the symbolic value of a strike by the weak against the strong. The strong are 'target-rich' while the weak are 'target-poor'.⁶⁹

Unlike the defending state, non-state terrorist groups seldom have readily identifiable combatants, infrastructure or territory on which to focus a military attack. This limits the scope for the effective use of air strikes against a terrorist adversary.

Therefore, if air power is relied upon too heavily to target only one component of the transnational terrorist threat, such as the terrorist's capacity to fight, other vital components that need to be addressed, such as the will and intent to fight, will be ignored.⁷⁰ Although it is much more difficult to assess accurately the latter two elements of a terrorist threat, such qualitative steps must be taken in order to tackle terrorism effectively.

Collateral Damage

The risk of collateral damage and its associated repercussions limit the effectiveness of air power in counter-terrorism operations. Although PGM have become increasingly accurate, they are not yet at the stage where an aircraft can strike fleeting small targets

without the risk of collateral damage.⁷¹ Particularly when targeting a terrorist adversary in an urban ‘complex warfighting environment’, air strikes risk causing unintended casualties. Inadvertently killing neutral civilians, although a much less frequent occurrence in modern warfighting, still ‘tends to make the population more hostile to government forces and any claims they make to represent a just cause’.⁷² Important moral implications aside, this is particularly problematic in the age of the ‘CNN factor’, when the extremely detrimental political costs that collateral damage inevitably incurs must be avoided.

However, as has been discussed, air power can be both accurate and effective, especially when employed in conjunction with other friendly forces, such as SF or sound civil intelligence. Moreover, the scope for air power to contribute to counter-terrorism operations will increase with the improved accuracy of PGM, and with the future development of low yield, nonlethal PGM and beam weapons, thereby decreasing the likelihood of unintended casualties.⁷³ In future, air-delivered, nonlethal devices may be used simply to identify and thus facilitate the capture of terrorist suspects by law enforcement agencies, rather than to kill them.⁷⁴

Although enemy combatants during Operation *Enduring Freedom* were more easily identified than can readily be expected for terrorist targets, it was nonetheless a fine example of the extent to which PGM have progressed the scope for air platforms to accurately strike asymmetrical forces. The only instances of PGM missing their intended targets were due to intelligence failures, rather than shortcomings in the accuracy of platform or weapon systems.⁷⁵ Nevertheless, precision is something that must be developed further, and weapons will inevitably have to be tailored to counter terrorist adversaries to ensure the viability of air power as a weapon in the ‘War on Terror’.

Effects-Based Operations

Due to the innate risks of employing air power against a terrorist threat outlined above, the RAAF can no longer think solely in terms of its military and tactical objectives. The broader effects of air power operations, taking into account direct, indirect, physical and psychological effects, are as important, if not more so, than the tactical success of the operations themselves. If the measure of a war is the proverbial quality of peace it delivers, then it is the national end state, rather than the application of military power itself, that is important in the 'War on Terror'.⁷⁶

Corum and Johnson summarise the point well,

The employment of military power and airpower in counterinsurgency [read counter-terrorism] is not an end in itself. The final political goal is always paramount, and the political repercussions of the use of military power must always be considered.⁷⁷

An Effects-Based Approach (EBA) to military strategy gives such consideration to the broader implications of employing air power. This strategy is the military component of a concept more broadly known as a National Effects-Based Approach (NEBA) to national security. Effects-Based Operations (EBO) are defined as 'coordinated sets of actions directed at shaping the behaviour of friends, foes and neutrals in peace, crisis and war'.⁷⁸ The four main elements of national power (military, diplomatic, information and economic) work more closely together at achieving prescribed national security goals and this 'synchronisation' of power is crucial for effective counter-terrorism. An EBA recognises that all actions, be they air power, military, economic or diplomatic,

have ‘cascading’ effects much more far-reaching than may be immediately apparent.

As with the ‘War on Terror’, an EBA dictates that air power is not necessarily the primary tool (nor is any other single element of national power). It is used in support of, and supported by, other civil and defence capabilities in order to advance more broadly defined national security interests. Ironically, transnational terrorist groups understand this extremely well; it is the symbolic power and the effects a terrorist attack has on its targeted audience that are important for them, not tactical ‘victories’.⁷⁹ In short, due to the multifaceted nature of combating terrorism, and the implications air power’s counter-terrorism roles can have, EBA must be the guiding doctrine for the RAAF in its involvement in Australia’s ‘War on Terror’.

CAPABILITIES AND PROCUREMENT: WHAT IS NEEDED?

Risk Management

It is impossible to predict Australia’s future security environment with any degree of certainty, nor has the ADF’s role in counter-terrorism been clearly defined. This in turn renders it difficult for the ADF to assess what is the optimum mix of capabilities needed to best meet the security challenges of the future. In short, if strategic planners cannot predict what type of adversaries Australia should expect to be fighting, how can the ADF develop its capabilities appropriately? Australia does not have the resources to plan for every conceivable contingency and thus, using a conventional risk management strategy, the ADF must prioritise its finite resources and make them as flexible, adaptable and efficient as possible.⁸⁰ Even if one could be certain that the current trend of a decreased conventional threat and an increased terrorist threat would continue for the next 15 years, which one cannot, it would

still be inadvisable to structure RAAF capabilities primarily for counter-terrorism operations.

Although there is scope for improvement, current and proposed RAAF capabilities adequately meet their counter-terrorism responsibilities.⁸¹ Alan Stephens suggests that 'the threats of jihadist revolutionaries and rogue states' should be 'the dominant considerations for today's leaders, including military commanders'.⁸² However, air power forces developed with high-end conventional threats in mind, as were current RAAF capabilities in the 'Defence of Australia' era, can be tailored to contribute effectively to lower-end operations including against terrorist targets without detracting from higher-end capabilities. On the other hand, forces developed especially to target transnational terrorist groups, would be wholly unable to defend against a conventional attack, which would inflict a great deal more damage on Australia.⁸³ Therefore, no fundamental restructuring of priorities or RAAF capabilities is appropriate. Current and proposed RAAF platforms and other weapon systems should simply be optimised to make them adequately flexible to assist other elements of national power in counter-terrorism,⁸⁴ without jeopardising their ability to fight more conventional adversaries. As Paul Dibb suggests, one should not 'confuse the crucial difference between how to structure a defence force and how it may be used'.⁸⁵

Air Combat Capability

Undoubtedly the most important addition to Australian air power capabilities is AIR 6000, now called the New Air Combat Capability Project, with the single most significant purchase likely to be the high-profile Joint Strike Fighter (JSF). Although the Howard Government is not due to make a definite decision about their purchase until 2006/7, Senator Hill has indicated that it will more than likely be the JSF.⁸⁶ However, it is not expected

to be operational in Australia until 2012 at the absolute earliest,⁸⁷ and it is possible that the terrorist threat may have diminished by then. The time lapse between planning, procurement and eventual capability lends even more weight to the argument that it is unwise to base one's air forces on the most pressing current threat.

Editor's Note: The Air Combat Capability Review established the need to acquire one squadron of F/A-18F Super Hornets as a bridging air combat capability that will remain effective until at least 2020. The Super Hornet will begin to enter service from the end of 2010. The Review also judged that 100 F-35 Joint Strike Fighters is the preferred solution to provide Australia with an effective and flexible air combat capability to 2030. Ref: Defence White Paper, 2009.

Nevertheless, the multi-role JSF would be more than capable of adapting to the requirements of counter-terrorism operations if required to do so. The advanced sensor and targeting systems on the JSF make it capable of detecting, tracking and striking potential terrorist targets such as a moving car or a single room in an office block.⁸⁸ These capabilities make the JSF equally effective as a sensor node or as the 'shooter', which renders it particularly well suited to the air power–SF relationship. Its stealth capabilities will enable the JSF to monitor a suspected target covertly, which increases the feasibility of a strike.

The JSF and its weapons can also be optimised for the requirements of counter-terrorism.⁹⁰ It will be compatible with a 250-pound small diameter bomb, reducing the impact of the weapon and, when employed with precision, making it more suitable for terrorist targets. However, in a complex warfighting environment, even a bomb of this size risks causing significant collateral damage. Thus, it is important to exploit even smaller yield weapons such

as the 20-pound Hellfire missile.⁹¹ The JSF will also be able to accommodate any newly developed nonlethal weapons, such as lasers, when these become available. Thus, it is fair to say that the JSF, which is being developed primarily with conventional warfighting in mind, will be flexible enough to meet its counter-terrorism responsibilities if called upon to do so.

ISR Capability

The AIR 7000 project primarily concerns RAAF ISR capabilities and includes the possible purchase of a UAV for 'all weather, long endurance surveillance and reconnaissance tasks' as well as a manned aircraft geared primarily for maritime surveillance to replace the ageing AP-3C Orion.⁹² While the procurement of these two platforms is premised on the need to monitor Australia's northern approaches to protect it from conventional sea and air attacks, it will also prove extremely useful in assisting law enforcement and intelligence authorities to combat terrorism. These platforms will enhance Australia's domestic situational awareness as well as that of its surrounding areas and, if intelligence identifies terrorist activity in the near region, they may be employed abroad to monitor the situation, relay information, and even carry out strikes if necessary.

Air-to-Air Refuelling

Air-to-air refuelling is an important capability to develop, to counter both conventional and terrorist threats alike, as it extends the range and persistence of air power platforms considerably. This is crucial if a potential terrorist threat is identified, requiring the sustained presence of an air platform to monitor the development of the threat, and then respond with a precision strike if required. The RAAF will be better equipped to do so in coming years with the introduction of new Airbus A330 tankers in 2009. These may be used in conjunction with the Hornets in the near term and the JSF, if and when it comes into operation.⁹³ Again this demonstrates

that air power capabilities designed with more conventional threats in mind, and in this case defending Australia 'as far from our shores as feasible',⁹⁴ can be adapted for counter-terrorism operations.

Editor's Note: The RAAF will acquire five KC-30A air-to-air refuelling aircraft that will enter service from 2010

Long-Range Airlift

Long-range or 'strategic' airlift, that is the capacity to transport a relatively large expeditionary force far from Australia, has often been identified as a key RAAF weakness.⁹⁵ However, as far as counter-terrorism is concerned, current capabilities meet the demands relatively well. For example, if a significant terrorist development were identified abroad, and particularly in our immediate region, government would only need to deploy a small number of SF troops with the emphasis being on speed and mobility rather than numbers or depth of deployment. Currently, these demands would be met adequately by the RAAF C-130 Hercules. Nevertheless, if it is determined that the RAAF needs to develop its long-range airlift capabilities to better prepare itself for high-end, larger scale operations, it must do so. This will in turn enhance the RAAF's ability to assist other elements of national power in counter-terrorism operations, such as humanitarian assistance or coalition operations further afield.

Editor's Note: Subsequent to the publication of this paper, the government has acquired the C-17 strategic airlift aircraft, thereby filling an identified gap in the RAAF (as was also identified in this paper).

CONCLUSION

This paper has argued that although the odds of a conventional attack on Australia are currently minimal, the September 11, Bali and Jakarta terrorist attacks are indicative of the increased threat to Australian security interests posed by transnational terrorism. Due to the apparent gravity of the threat, military forces are increasingly needed to assist civil agencies with counter-terrorism. The ADF must be ready and able to do so.

However, this development does not necessitate a fundamental shift in Australia's strategic priorities. The future strategic environment is inherently uncertain and it would, therefore, be detrimental to Australia's long-term security to base its defence planning too heavily on the threat of terrorism while ignoring the (far more dangerous) possibility of conventional attack. Australia should, therefore, continue its underlying strategic reliance on air power to protect Australia from any credible attack from across the sea-air-gap to its north.⁹⁶

Although air power, and the military more broadly, cannot and should not assume primary responsibility for protecting Australia from terrorist attack, the RAAF has unique resources at its disposal that should be exploited in a 'whole-of-nation' approach to counter-terrorism. This strategy necessitates seamless cooperation between the three Services as well as between the military and civil agencies. Air power is an important force multiplier, making other elements of national power more effective in their counter-terrorism efforts. Airpower is increasingly able to contribute to counter-terrorism due to technical developments in platforms, imagery and weapons technology. It can target the terrorists themselves, influence states that support them and weaken public support for transnational terrorist groups through humanitarian assistance. Tackling this

'second tier' is particularly important if Australia is to reduce the terrorist threat effectively over the long term.

However, Australian air power is limited in its capacity to assist in the fight against transnational terrorism by budgetary limitations and characteristics of air power such as impermanence, as well as by the inherent problems in fighting an asymmetrical, non-state adversary. In the Australian context, air power must also contend with domestic and international legal restraints that may not be as readily adhered to by some other states. Although the military is becoming increasingly active against terrorist adversaries, legal jurisdiction for protecting Australian interests from terrorist attack lies primarily with civil law enforcement and intelligence agencies and with their counterparts abroad. Therefore, it is difficult to discern what is required of the RAAF and more explicit guidance from the government to this end would be beneficial.

The use of air power, as with all forms of military force, has implications that are not restricted to the direct effects it has on an adversary. If not applied with restraint, air power can provoke a hostile reaction from states, local and domestic populations and will alienate Australia from otherwise willing allies. As a result, any decision to use air power against a terrorist adversary must comply with the fundamental criteria of the EBO strategy, taking into account the direct and indirect, physical and psychological effects that any given action will have.

Finally, the RAAF should not radically alter its force structure; nor has it been shown to lack any capabilities seriously in light of the recent terrorist attacks. By progressing with the current DCP, the RAAF will also be able to offer greater counter-terrorism assistance if it is so required. Nonetheless, due to the clear and ever present danger of a terrorist attack, the RAAF must do what it can to optimise its platforms, weapons and training in order to contribute more effectively to counter-terrorism initiatives.

Australian air power alone will not protect us from the scourge of transnational terrorism, nor is it a long-term solution to the terrorist threat; but it is a capable, accessible and essential counter-terrorism 'force enhancer' that should not be ignored.

NOTES

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- ² Dennis Richardson, 'Understanding the Challenge of Islamist Terrorism in Order to Counter it', in *Defender*, vol. XXI, no. 4, Summer 2004/05, p. 11.
- ³ For the purposes of this paper, terrorism shall be taken ... by threatening harm'. Royal Australian Air Force, Australian Air Publication 1000—*Fundamentals of Australian Aerospace Power* [AAP 1000—*Fundamentals of Australian Aerospace Power*], Fourth Edition, Aerospace Centre, Canberra, 2002, p.93. Transnational terrorism, which shall be the focus of this paper, involves terrorists crossing national borders to carry out attacks. Their operations also typically span many different countries. See Jonathan White, *Terrorism: An Introduction*, 2002 Update, Fourth Edition, Wadsworth/Thomson Learning, Belmont, 2003, p. 207
- ⁴ David Sadleir, 'Australia and Terrorism', in Alan Thompson (ed.), *Terrorism and the 2000 Olympics*, Australian Defence Studies Centre, Canberra, 1996, pp. 43–44.
- ⁵ Department of Defence, *Australia's National Security: A Defence Update 2003*, Department of Defence, Canberra, 2003, p. 13.
- ⁶ See Department of Foreign Affairs and Trade, White Paper, *Transnational Terrorism: The Threat to Australia, Chapter VI*, Department of Foreign Affairs and Trade, Canberra, July 2004, <http://www.dfat.gov.au/publications/terrorism/>, accessed 15 March 2005.
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- ⁸ Martha Crenshaw, 'The Counter-Terrorism/Terrorism Dynamic', in Alan Thompson (ed.), *Terrorism and the 2000 Olympics*, Australian Defence Studies Centre, Canberra, 1996, p. 126.
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- ¹⁰ It must be noted here that the US is not combating all forms of terrorism, or all states that have connections with terrorist groups, but rather is focusing on those that pose a direct threat to American interests (broadly defined).

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- 12 Department of Defence, *Australia's National Security: A Defence Update 2003*, p. 9.
- 13 Interview with Clive Williams, Visiting Defence Fellow, Strategic and Defence Studies Centre, Australian National University, Canberra, 22 March 2005.
- 14 Crenshaw, 'The Counter-Terrorism/Terrorism Dynamic', p. 127.
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- ²⁷ Rohan Gunaratna, *International Terrorism: What Kinds of Response?*, http://www.un-globalsecurity.org/pdf/Gunaratna_paper_terrorism.pdf, accessed 24 April 2005.
- ²⁸ For a discussion of this (false) distinction, see Allan Behm, 'Prevention/Response: How to Get the Mix Right', in Alan Thompson (ed.), *Terrorism and the 2000 Olympics*, Australian Defence Studies Centre, Canberra, 1996, p. 69.
- ²⁹ Mark McAlpine, *Future Roles of Air and Space Power in Combating Terrorism*, March 1997, <http://www.au.af.mil/au/awc/awcgate/acsc/97-0393.pdf>, accessed 11 March 2005, pp. 17–21.
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- ³³ David Jeffcoat, *Air Power and Special Forces: A Symbiotic Relationship*, Air Power Development Centre Paper No. 14, Air Power Development Centre, Fairbairn, 2004, p. 21.
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- ³⁸ Stephen Biddle, *Afghanistan and the Future of Warfare: Implications for Army and Defense Policy*, Strategic Studies Institute, US Army War College, Pennsylvania, November 2002, p. 44.
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- ⁴³ Corum and Johnson, *Airpower in Small Wars*, p. 434.
- ⁴⁴ George W. Bush, *President Speaks on War Effort to Citadel Cadets*, 11 December 2001, <http://www.whitehouse.gov/news/releases/2001/12/20011211-6.html>, accessed 16 March 2005.
- ⁴⁵ Department of Defence, *Defence Capability Plan 2004–2014*, public version, Defence Publishing Service, Canberra, 2003, p. 47.
- ⁴⁶ Interview conducted by author with Clive Williams, 22 March 2005.
- ⁴⁷ During the Malayan insurgency of the 1950s, Lieutenant General Sir Gerald Templer said that said that, 'The shooting side of the business is only 25 per cent of the trouble. The other 75 per cent is getting the people of this country behind us.' See Richard Stubbs, *Hearts and Minds in Guerilla Warfare: The Malayan Emergency 1948–1960*, Oxford University Press, Oxford, 1991, p. 259.
- ⁴⁸ Martha Crenshaw, *Terrorism in Context*, <http://www.psupress.org/books/errorismincontextexcerpts.html#stimulus>, accessed 24 March 2005; and interview conducted by author with Clive Williams, 22 March 2005.
- ⁴⁹ Greg Fealy, 'Terrorism in Indonesia', in Clive Williams and Brendan Taylor (eds.), *Countering Terror: New Directions Post '911'*, Canberra Papers on Strategy and Defence, No. 147, Strategic and Defence Studies Centre, Australian National University, Canberra, 2003, p. 37.

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- ⁵⁰ The RAAF was foremost in its contribution to humanitarian efforts as a part of Operation *Sumatra Assist*, phases one and two, in response to the devastating tsunami and the recent earthquake in Indonesia. See Department of Defence, <http://www.defence.gov.au/optsunamiassist/default.htm>, accessed 30 March 2005.
- ⁵¹ Senator Ellison has said that Customs is now ‘reinforced by the ADF’ for ‘situations where a military response is required’. Senator Ellison, cited in DEFENCETALK.COM, *Boost for Maritime Counter-Terrorism Protection*, 30 March 2005, http://www.defencetalk.com/news/publish/article_002288.shtml, accessed 31 March 2005.
- ⁵² Impermanence refers to the fact that aircraft cannot remain airborne over a designated area indefinitely. See AAP 1000—*Fundamentals of Australian Aerospace Power*, p. 127.
- ⁵³ Department of Defence, <http://www.defence.gov.au/terrorism/default.htm>, accessed 30 March 2005.
- ⁵⁴ DEFENCETALK.COM, *Boost for Maritime Counter-Terrorism Protection*, accessed 31 March 2005.
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- ⁵⁸ Nicolson, ‘Howard Defiant: I Would Launch Strike’.
- ⁵⁹ A pre-emptive strike in another sovereign state is not inconsistent with international law as long as there is ‘incontrovertible evidence that an enemy attack is imminent’. See Jeffrey Record, ‘The Bush Doctrine and War with Iraq’, in *Parameters*, Spring, 2003, p. 7.
- ⁶⁰ One wonders whether an air strike against an office block that killed 15 terrorist leaders as well as one neutral local civilian would be considered a success, if in 10 years time that civilian’s brother flew an aircraft into the White House.

- ⁶¹ Interview with Clive Williams, 22 March 2005.
- ⁶² In February, Australia signed its tenth Memorandum of Understanding on counter-terrorism with Brunei. See Alexander Downer, 'Australia and Brunei Sign Counter-Terrorism Pact', media statement, 15 February 2005, http://www.foreignminister.gov.au/releases/2005/fa020_05.html, accessed 4 April 2005.
- ⁶³ In the immediate aftermath of Operation *El Dorado Canyon*, Libya's involvement in terrorism declined. However, Libya is since known to have been involved in the killing of at least 189 US citizens (and many more others) through terrorist violence. Michele Malvesti, 'Bombing bin Laden: Assessing the Effectiveness of Air Strikes as a Counter-Terrorism Strategy', in *The Fletcher Forum of World Affairs*, vol. 26:1, Winter, 2002, pp. 19–21.
- ⁶⁴ Todd R. Phinney, *Air Power Versus Terrorism: Three Case Studies*, thesis presented to the School of Advanced Air and Space Studies, Air University, Maxwell Air Force Base, Alabama, June 2003, <http://66.102.7.104/search?q=cache:SFmvcMRrQygJ:https://research.maxwell.af.mil/papers/ay2003/saas/phinney.pdf+airpower+and+terrorism&hl=en&start=1>, accessed 19 April 2005, p. 41.
- ⁶⁵ David Ochmanek, *Military Operations Against Terrorist Groups Abroad: Implications for the United States Air Force*, RAND, Santa Monica, 2003, <http://www.rand.org/publications/MR/MR1738/MR1738.pdf>, accessed 18 April 2005, p. 3.
- ⁶⁶ See Matthew Lacy, 'Al Qaeda's Global Insurgency: Airpower in the Battle for Legitimacy', in *Air and Space Power Chronicles*, online journal, 16 July 2003, <http://www.airpower.maxwell.af.mil/airchronicles/cc/lacy.html>, accessed 2 May 2005; and Clive Williams, 'September 11 Revisited, One Year On', in Clive Williams and Brendan Taylor (eds.), *Countering Terror: New Directions Post '911'*, Canberra Papers on Strategy and Defence, No. 147, Strategic and Defence Studies Centre, Australian National University, Canberra, 2003, p. 11.
- ⁶⁷ Fealy, 'Terrorism in Indonesia', pp. 35–36.
- ⁶⁸ Malvesti, 'Bombing bin Laden', p. 22.
- ⁶⁹ Martha Crenshaw, <http://apsaproceedings.cup.org/Site/papers/018/018012CrenshawMa.pdf>, accessed 17 August 2004.

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- ⁷⁰ Killing terrorist targets may be a tactical military success and will give the defending state some 'breathing space'; however, this is largely unhelpful over the long term if it does not discourage others from replacing them. Aldo Borgu, interview conducted by author with Aldo Borgu, Program Director, Operations and Capability Program, Australian Strategic Policy Institute, Barton, 29 April, 2005.
- ⁷¹ However, the US is reportedly developing the 'HardSTOP' munition, which is able to penetrate multistorey buildings and destroy small areas within the building, without damaging adjoining rooms or threatening other civilians in the building. See Michael Sirak, 'US Reveals Urban Warfare Munition', in *Jane's Defence Weekly*, vol. 42, no. 14, April 2005, p. 7.
- ⁷² For a discussion of the limits to air power in urban, complex warfighting environments, see Corum and Johnson, *Airpower in Small Wars*, p. 428.
- ⁷³ In World War II, air power was used to target cities; during the Vietnam War it was used to target fielded forces and bridges; in Kosovo it was used to strike portions of buildings and vehicles within convoys; future air power counter-terrorism operations will undoubtedly be targeting individuals. See Ochmanek, *Military Operations Against Terrorist Groups Abroad*, p. 17.
- ⁷⁴ Searle, 'Making Air Power Effective Against Guerillas', p. 3.
- ⁷⁵ Interview conducted by author with Sanu Kainikara, Deputy Director of the Air Power Development Centre, Canberra, 31 March 2005.
- ⁷⁶ This is not an entirely new concept. Indeed Clausewitz once noted that 'a favourable state of peace' is the true goal of any state involved in a conflict. However, defence planners too often think primarily in terms of operational and tactical objectives. See Corum and Johnson, *Airpower in Small Wars*, p. 426.
- ⁷⁷ Corum and Johnson, *Airpower in Small Wars*, p. 426.
- ⁷⁸ Edward A. Smith, *Effects Based Operations: Applying Network Centric Warfare in Peace, Crisis and War*, US DoD Command and Control Research Program, Washington DC, 2002, p. xiv.
- ⁷⁹ Wing Commander Callum Brown, 'Causes and Effects', in *Air Force*, vol. 47, no. 5, 7 April 2005, p. 21.
- ⁸⁰ Department of Defence, *Australia's National Security: A Defence Update 2003*, p. 9.
- ⁸¹ Even the 2000 Defence White Paper notes that 'in general, the capabilities we develop in the ADF for defending Australia provide forces appropriate for these [counter-terrorism] tasks'. Department of Defence, *Defence 2000: Our Future Defence Force*, p. 49.
- ⁸² Stephens, *A Threat-Based Reassessment of Western Air Power*, p. 19.

- ⁸³ Interview conducted by author with John Harvey, Director General of New Air Combat Capabilities, Department of Defence, Canberra, 12 April 2005.
- ⁸⁴ Dibb, *The War on Terror and Air Combat Power*, p. 4.
- ⁸⁵ Dibb, 'A New Defence Policy for a New Strategic Era?', p. 67.
- ⁸⁶ Senator Hill recently said that 'we await the arrival of the Joint Strike Fighter'. Clearly, this is a positive sign for proponents of the JSF deal. Senator Robert Hill, opening address to Air Force Conference, Melbourne, 14 March 2005.
- ⁸⁷ Department of Defence, *Defence Capability Plan 2004–2014*, p. 45.
- ⁸⁸ Interview conducted by author with John Harvey, 12 April 2005.
- ⁸⁹ Interview conducted by author with John Harvey, 12 April 2005.
- ⁹⁰ Ochmanek, *Military Operations Against Terrorist Groups Abroad*, p. 26.
- ⁹¹ Department of Defence, *Defence Capability Plan 2004–2014*, p. 45.
- ⁹² Department of Defence, 'Air 5402 – Air to Air Refuelling Capability', <http://www.defence.gov.au/dmo/asd/air5402/air5402.cfm>, accessed 20 April 2005.
- ⁹³ Alan Thompson, *Australia's Strategic Defence Policy: A Drift towards Neo-Forward Defence*, Working Paper No. 29, Australian Defence Studies Centre, Canberra, November 1994, p. 2.
- ⁹⁴ See for example: Borgu, *Structuring the ADF for Australia's New Strategic Environment*, p. 8; or Canberra Bureau Report, 'Tsunami Highlights Deficiencies in Military Lift', in *Australian Defence Business Review*, vol. 24, nos 1/2, February 2005, p. 8.
- ⁹⁵ Department of Defence, *Defence 2000: Our Future Defence Force*, pp. 84–85.

CHAPTER 7

THE ROLE OF AIR POWER IN
IRREGULAR WARFARE:
AN OVERVIEW OF THE ISRAELI
EXPERIENCE

BY DR SANU KAINIKARA

INTRODUCTION

The military forces of the United States and its Western allies have built up such convincingly overwhelming capabilities that almost no adversary wants to confront them in a conventional conflict. This is the primary reason for insurgents, terrorists and other non-state actors resorting to asymmetry in an attempt to even the balance at the tactical level. Even smaller military forces often have sufficient military capabilities to deter insurgent groups from confronting them directly in a conventional conflict. The outcome of these developments has been the increased incidences of asymmetric warfare conducted by militant groups that are fighting for causes ranging from the purely political to the religious extremists propagating their own brand of intolerance. In coming to terms with this asymmetric warfare, military forces have encompassed the entire spectrum of such unconventional warfare under the generic term ‘irregular warfare’.

The United State military (Joint Pub 1-02) defines *irregular warfare* as ‘a violent struggle among state and non-state actors for legitimacy and influence over the relevant population(s). Irregular warfare favors indirect and asymmetric approaches, though it may employ the full range of military and other capabilities, in order to erode an adversary’s power, influence and will.’

It is interesting to note that irregular warfare aims to erode the power and influence of the adversary unlike conventional warfare where the aim is usually a straightforward military victory to achieve a political outcome. Most irregular wars are fundamentally aimed at creating an effect that could lead to changes in the politico-economic and social set up of a nation. This indicates few characteristics of irregular warfare that will have a direct influence not only in the way in which it is fought, but also on the kind of forces that will be required to effectively contain it. First, the non-state adversary in an irregular war will not only use lethal force but will resort to other means of coercion like taking hostages and conducting terror campaigns against neutral non-combatants in direct and blatant violation of the laws of armed conflict to intimidate and defeat the conventional force, bound by natural laws of humaneness, discrimination and proportionality of attack. This is a strategic asymmetric advantage for the irregular force. Second, the non-state adversary will force the conflict to be fought in urban areas, which will complicate the ability of the conventional forces to use superior firepower and manoeuvre, and also make it easy for the insurgent/terrorist group to disperse within the civilian population. Collateral damage and civilian casualties sometimes occur when force is applied—however accurately and with extraordinary diligence—will further assist the irregular force in moulding public opinion.

Third, the non-state forces will always attempt to prolong the combat operations because there is a common belief that a

democratic nation will be unwilling to bear the burden, in terms of resources and loss of lives, of a protracted conflict. This perceived weakness has been identified by most of the insurgent groups as a critical centre of gravity, especially in Western nations. Fourth, a political or religious insurgency cannot be fully defeated by military action alone, since it has both psychological as well as ideological aspects to it, which can only be countered through a whole-of-government approach that uses all elements of national power—diplomatic, economic, informational and sociological initiatives. Military means—the application of preponderant force, even with no attempt to limit collateral damage, civilian loss of life or the creation of thousands of refugees—at best provide only a very short-term tactical solution to the immediate physical threat from the insurgency and can never be the long-term solution. Irregular warfare is the most complex form of conflict that conventional forces have to face at the operational and tactical levels because the combat actions required are very different from a conventional force-on-force conflict and need extreme flexibility from the highest command level to the lowest execution level.

At the strategic level of conflict, however, there are similarities between achieving the end-state in a conventional war and irregular conflict. Both require a political solution for the culmination of the conflict to endure for the long term. This can only be achieved by sophisticated use of all elements of national power in combinations that are contextually determined. In both cases, after the initial offensive actions, the military adopts a secondary supporting role to ensuring the security of other agencies pursuing national security. In fact the lead status in both types of conflicts changes rapidly from the military to civilian agencies at a very early stage itself. This is the essence of a national effects-based approach (NEBA) to security. Any other model is bound to fail in securing the desired end-state.

There is an entrenched belief amongst some military thinkers that irregular warfare is the arena of surface forces alone and that air power can at best be a distant supporting arm, useful for the transportation and supply of the forces in contact with the enemy. Nothing can be further from the truth. It would be more appropriate to understand that no single Service has the capability to dominate the entire spectrum of conflict in irregular warfare. The debate between the 'boots-on-the-ground' strategists and air power zealots can continue unabated and will not reach any intelligent or significant conclusion. There can be no doubt that only the seamless joint application of force will bring the conflict to a point wherein other non-military government agencies can safely take the lead in containing and defusing the situation within a long term perspective.

This paper looks at the contribution of air power in irregular warfare within a case study of the Israeli Air Force (IAF) operations against the irregular forces of Hezbollah with emphasis on the 2006 Israeli campaign in Lebanon. The ongoing Israeli-Hezbollah conflict is one of the classic encounters between the conventional and powerful military forces of a sovereign state and a non-state militant group that is motivated both by religion and ideology and covertly supported by some states in the region.

BACKGROUND

The Hezbollah came into prominence in Southern Lebanon around 1982 when the Palestine Liberation Organisation (PLO) was expelled from there by Israeli military action. Although the PLO had been forced to leave Lebanon, it did not bring any peace to Israel's northern districts which continued to be subjected to sporadic rocket attacks by Hezbollah. Israel carried out two distinctive military campaigns against the Hezbollah, in 1993 and

then again in 1996, as reprisals for the almost nonstop irregular war of attrition that was being conducted. The two Israeli military campaigns before the 2006 conflict were Operation *Accountability* from 25 to 31 July 1993 and Operation *Grapes of Wrath*, conducted from 11 to 27 April 1996.

Although Operation *Accountability* delivered extensive damage to civilian infrastructure and created more than 300 000 Lebanese and Palestinian refugees, the effectiveness of the military action in changing the 'attitude' of the Hezbollah and that of the general populace, that was so devastatingly affected, was at best minimal. A predominant proportion of the strikes were conducted by air power and, true to the Israeli Air Force's reputation, they were resounding tactical successes. But also true to the acknowledged maxims of irregular warfare, they did not deliver a strategic victory to the Israeli Defence Force (IDF) or a long-lasting peaceful solution to the nation.

Operation *Grapes of Wrath* was also aimed at creating a situation wherein the Hezbollah would realise the futility of continuing the rocket attacks into Israel. The IAF carried out more than 1100 raids against Hezbollah targets, once again with devastating effect. However, this was a military response to a purely political problem and was doomed to fail. The rocket attacks on Israel were halted only on the termination of the conflict through political negotiations. The mutual acceptance of an unwritten understanding that, as long as Israel refrained from attacking Lebanese towns and villages, the Hezbollah would not carry out any rocket attacks brought about an uneasy peace. It must be noted that the cessation of hostilities was a political process and not the result of military action.

There was almost a decade of relative peace when there were neither significant rocket attacks by the Hezbollah nor any concerted military action by Israel. However, there was an underlying worry

within Israeli strategic thinking that their deterrent capability had been eroded by the failure of both these operations to comprehensively defeat Hezbollah. This was brought to the fore in early 2006, when Hezbollah—now a power sharing member of the Lebanese Government and no longer branded a ‘militia’—continued to taunt Israeli military for its weakness and the political leadership for their ineptness. There was no surprise in the overwhelming response that Israel mounted to what should have been considered routine Hezbollah rocket attacks. However, it has to be noted that there was a sense of *déjà vu* in many parts of the international strategic community at this reaction—the IDF was again being pushed into conflict in a situation where only political solutions have any chance of success.

The fact that an intense conflict broke out in 2006 proves the contention that irregular wars cannot be put to rest in the long term by military means alone, even if the preceding conflict was brought to a halt through political arrangements, albeit in informal terms.

THE ISRAEL-HEZBOLLAH CONFLICT 2006

The catalyst for the conflict was the capture of two Israeli soldiers by Hezbollah and their refusal to return them other than in exchange for Hezbollah fighters in Israeli jails. From a political perspective this was a noteworthy change in that the Hezbollah declared that military action would not facilitate the return of the prisoners. The conflict fell into the predictable pattern of the IDF employing its massive firepower to destroy Hezbollah infrastructure and they in turn continuing the rocket attacks on northern and central Israel. A formal ceasefire following the ratification of the United Nations Security Council Resolution 1701 by Lebanon and Israel was effected on 14 August 2006. The UN resolution called for the

cessation of all Hezbollah attacks and Israeli offensive operations, and the disarming of Hezbollah and other armed groups in Lebanon. This was similar to the UN Resolution 1559 of 2004 which also called for the disarmament of Hezbollah; had it been implemented, the entire 2006 conflict would perhaps have never taken place.

In studying the conflict, first it must be viewed as an irregular war fought at the tactical level but in which both the protagonists—the conventional military force of Israel and the irregular Hezbollah—had strategic aims. Undoubtedly Israel was determined, after more than two decades of irregular war, to deal a debilitating blow to Hezbollah and destroy their military, social, economic and political credibility, and thereby achieve a non-military aim through the use of preponderant military force. The military victory was to be simultaneously aided by a political and socio-economic campaign aimed at isolating the Hezbollah from its popular support base. For the Hezbollah, not being defeated—demonstrated by the continued rocket strikes into Israel—was itself victory! This is commensurate with the strategy of most irregular forces.

The Israeli Shift to Air Power

The Israel-Lebanon border was one of the most secure until the arrival of the PLO in Southern Lebanon around 1970. In order to contain the cross-border terrorist activity that steadily grew over a decade, Israel invaded Lebanon in 1982 and established a buffer zone south of the Litani river. This was expected to put an end to the regular rocket attacks and other acts of terrorism against northern Israel, but the IDF was embroiled in a counterinsurgency campaign that would last for the next 18 years until the Israeli withdrawal in 2000. This long, bitter and bloody experience prompted the IDF to develop a new concept of operations to counter irregular forces that was employed in 2006.

The concept was intended to limit ground forces casualties and was built around the unquestioned air supremacy that the IAF enjoys in the region. It called for building a clear asymmetry of its own through leveraging the freedom of operations that the IAF had by using air power in its fundamental offensive mode to locate, identify and rapidly strike terrorists and insurgents. In the pursuance of this concept, the IAF excelled in combining persistent surveillance, robust command and control systems and the rapid delivery of precision guided munitions from fast jets to allow time-sensitive targeting as never before witnessed. In this concept, ground forces would operate defensively at the borders and undertake only minor and rapid offensive operations when necessary, essentially to capture enemy operatives.

Without going into the details of the campaign, it is sufficient here to note that in the first two weeks of the campaign, the IAF wreaked havoc on the infrastructure in Lebanon, but was neither able to stop the rocket attacks on its territory completely nor shut down Hezbollah's media outlets. The international opinion, including that of few Arab nations, that was sympathetic to Israel at the start of the campaign began to show evidence of disquiet at the destruction of Lebanese civilian infrastructure, such as water facilities, electrical grids and hospitals. This is clear evidence that even when the civilian facilities are reluctant hosts to insurgent fighters and irrespective of the proportionality and discrimination that has been exercised in the application of lethal air power, public opinion will always be swayed by graphic media reports of non-combatant injuries and death.

At the tactical level, the air strikes achieved their individual aims, i.e. mission aims requiring the destruction or neutralisation of a particular target or a number of targets. However, these aims did not hold together to meet the strategic aims or political objectives of the campaign. Operationally the Hezbollah were only weakened,

not forced to stop their activities, and strategically they continue to exist as an independent entity, with its military, political and economic arms functioning well. However, three years after the conflict, it can be seen that the indirect effects of the military action have helped maintain a tenuous, and maybe temporary, peace between the two—a medium-term solution brought about predominantly by offensive air power in a complex irregular war. The cost to Israel was the loss of international support and, to a certain extent, the credibility of the nation as a law-abiding international citizen.

Air Power Intent and Results

The IDF elected to adopt a concept of operations heavily reliant on air power to achieve two interconnected, yet independent, objectives—first, to neutralise Hezbollah and second, to prod the Lebanese Government into accepting responsibility for the activities emanating from its sovereign territory. The IAF was therefore operating against a non-state actor and simultaneously applying coercive force against a state.

Analysing the counterinsurgency operations of IAF, the Israelis themselves have accepted that the concept of basing such a campaign on air power, and, more importantly, ignoring the need for ground operations at least simultaneously was an error. The unmistakable lesson is that air power by itself cannot win the military aspect of a counterinsurgency campaign and that the application of military force has to be joint, planned in a contextual manner to establish the components of the force that will eventually engage in combat. In all such cases a ground component is an essential part of the force from the beginning till end.

Coercing a nation to take action by the use of air power applied against civilian infrastructure firstly brings forward the question of the legality of the targeting procedure itself. Second, and particular

to this conflict, the Lebanese Parliament also had Hezbollah members and a sizeable number of pro-Syrian and pro-Hezbollah members who were successful in diminishing the Prime Minister's authority over decisions of national security. The IDF seems to have been slavish to the new concept of operations and, therefore, expended considerable air effort and time in pursuing a desired end-state that was very clearly not achievable. The failure was further compounded by the significant loss of civilian lives and the devastation of the national economy. Air power once again failed to achieve the strategic objectives, and this time even the use of ground forces would not have made any tangible difference.

Both the failures—in its application in counterinsurgency and in the coercive role—are not that of air power per se, but the failure of understanding regarding the basic tenets of the application of offensive air power that should underpin the development of any concept of operations. Imagination, bolstered by adept employment of the characteristics of flexibility, responsiveness, precision, proportionality and discrimination, is the key to the successful transformation of a concept into efficient execution. Air power applied with dogmatic adherence to strategic doctrine and concepts will always fail to deliver the necessary effect.

The other factor that emerges is that the absence of clearly laid down and stated strategic objectives will always obfuscate the tactical application of force, particularly air power because of the speed with which it is applied. The Israeli campaign could perhaps be considered one of the most confused, in terms of strategic objectives and how the decisions were conveyed to the operational and tactical levels. There was demonstrated 'weakness in strategic thinking' that quickly translated to operational confusion. Failure at the strategic level to define a militarily achievable end-state cannot be directly equated as the failure of air power to deliver stated objectives. In this instance, the tools employed to achieve

the desired end-state just happened to be incorrectly synchronised and air power cannot be held to blame, as such.

While air power per se is somewhat absolved of the blame, the concept development process that threw up one that espoused air power as the primary offensive capability to win an irregular war, with more complexities than most other such conflicts, must definitely be viewed with not only suspicion, but alacrity at the naivety of it. Lessons of history and analysis of ongoing conflicts, if they had been even cursorily glanced, would have indicated the futility of trying to contain a fully matured insurgency with air power alone. The 2006 Israeli effort to contain Hezbollah, for the medium term at least, by the use of military force reliant almost completely on air power should be seen as a clear case of strategic failure.

Two major factors can be readily gleaned from this conflict. First, air power has tremendous potential and the inherent capacity to create effects at the strategic level that will reverberate all the way down to the tactical, provided it is employed after a great deal of deliberations regarding the context of its use. It is clear that its generic use in irregular warfare does not fit that mould. The need is for air power to be seamlessly integrated into the national strategy as an effective but contextual tool. Second, the 2006 conflict presents every nation that possesses an air force the opportunity to study the pitfalls in the employment of air power against non-state and irregular forces operating at a low end of the technology spectrum. The necessity is to be able to avoid repeating the same costly mistakes that the IDF made.

IAF LOOKING TO THE FUTURE

Israel undertook yet another offensive, this time against Hamas in the Gaza strip, for three weeks in December 2008–January 2009. This operation was a clear demonstration of the steps that the IDF, and the IAF in particular, had put in place to overcome the mistakes of 2006. The IAF has made dramatic progress in its irregular warfare operations and is today perhaps the most advanced force in the world in terms of its capability to transform information gathered from myriad sources to action. It has been reported that the sensor-to-shooter cycle has been reduced to less than a minute! More than half of the 2400 aerial strikes conducted during the operation were against randomly emerging targets, such as rocket teams, ammunition transports and suspected militant movements.

The conflict, Operation *Cast Lead*, was the first IDF campaign to be managed as a fully networked operation. The actual technological innovations that made situational awareness the cornerstone of all decisions is superfluous to this paper, but suffice it to say that integration of all elements of the IDF towards achieving the operation, campaign and mission objectives was of the highest order and did not falter even once.

Another notable change was in the strategic objective of the IDF. It did not presume, even for a small period of time, that it would be able to stop the rocket attacks from Gaza, but the objective was to extract so heavy a price from Hamas for their attacks, that the irregular force would be forced into a sustainable ceasefire. Such a clear objective is not only achievable but also has the advantage of reinforcing the deterrent capability that the IAF had lost to a certain extent after the 2006 conflict. The IDF did not try to mask the disproportionate use of force and although it attempted to make the distinction between combatants and civilians, it struck

every target that was identified as supporting Hamas. The basic concept, still heavily reliant on the responsiveness, precision and lethality of air power, was altered—not to stop the rocket attacks, but to extract an unsustainably high price for every attack.

With the hindsight of three years, the IDF is also looking at the 2006 Lebanon war as more of a success than it has been considered so far. Even with the targeted killing of one of its top military officers, Hezbollah has not launched a single operation across the Israeli border since the conflict. It is believed that the sheer might of the IDF, so capably displayed during that conflict, has acted as an effective deterrent.

The effectiveness of the new concept is perhaps reflected in Hamas seeking a permanent ceasefire with Israel, while Israel is still deliberating whether to engage in negotiations at all. This indicates the ongoing effectiveness of air power in ‘containing’ non-state actors, even though they cannot be completely neutralised.

CONCLUSION

The primary takeaway from a study of the recent use of air power by Israel in irregular warfare is that, like any other form of war, it needs a cohesive concept of operations based on well-developed doctrine to succeed, irrespective of whether the force employed is joint or single Service. This is true even in conflicts wherein the adversary, normally non-state irregular forces, is operating without a coherent doctrine, strategy or even operational concept and at the low end of the technology spectrum.

It is clear that it is not the employment of air power that is at fault, but the methodology of application to achieve objectives that have been identified without clear strategic thought and holistic understanding of the capabilities of the force and that of the

adversary. The two conflicts—in Lebanon and Gaza—three years apart, but essentially conducted by Israel in similar conditions and also achieving, in operational and tactical levels, similar results had different endings at the time of cessation of hostilities. But with the passage of years, the end-results seem to be coming closer together. It is age-old wisdom that insurgencies can be neutralised only through political means, but the violence associated with the insurgency, which is normally its mainstay, can be contained and even stopped for a fairly lengthy duration by deterrence. Such deterrence is the realm of air power, in that it is capable of exacting very heavy attrition on the irregular adversary without having to break international law for any length of time. Airspace violations are unlawful, but under extreme provocation its transitory nature is looked on as a saving grace. Air power has always been and will continue to be a coveted tool in the prosecution of irregular warfare.

This paper has not been written with the aim of glorifying the achievements of air power, but as a dispassionate assessment of what it can and cannot achieve, and as a testimony to the fact that when used without proper alignment with other elements of national power and as a blunt instrument of force it is bound to fail. This is so with any element of military power or for that matter any element of national power; air power is not an exception. There is common acceptance that conventional military forces of the democratic nations will be asked to fight irregular wars in the contemporary security environment. Air power has made crucial and at times critical contributions through the ages towards containing and defeating irregular forces, insurgents, terrorists and non-state actors in a number of ways. It continues to do so today, perhaps in a larger and broader capacity than ever before. It will be calamitous for any defence force to think and act otherwise.

CHAPTER 8

CONCLUSION

BY DR SANU KAINIKARA

Air power has many strengths in modern warfare, but its utility in irregular wars is not well understood. Many of air power's traditional strengths, such as strategic strike, have limited impact in an irregular war and its ambiguous environment. In fact, employing air power rigidly within the traditional doctrine may even be counterproductive and undermine the broader effects being sought. Air power has to be applied in a contextual manner at all times, but this is more important when it is being employed in an irregular war setting. Effectiveness of air power, in all circumstances, is dependent on the understanding of the planners and commanders regarding the context in which it is being employed. Therefore, it is imperative that air commanders at all levels must have an in-depth understanding of the fundamentals of irregular war—in all its iterations of insurgency, terrorism, guerilla operations and criminal activities. To ignore these fundamentals is to risk failure in achieving the strategic end-state of the campaign.

There are a number of roles that air power can undertake in an irregular war, each with its own strengths and weaknesses in creating the necessary effect. These must be carefully studied and efforts made to mitigate the weaknesses so that air power employment is optimised. There is also a need, at the planning stage, to conduct an analysis from an operational perspective that balances the pros and cons of air power capabilities vis-à-vis their contribution to irregular wars. Ultimately the effectiveness

of air power in irregular wars will be dependent on how well it contributes to the fundamental requirements of this context. This in turn is a function of the professional mastery resident not only in the commanders but also the force as a whole.

Irregular wars are not new and have been waged in different parts of the world as part and parcel of the spectrum of conflict for a number of years. However, since the events of 11 September 2001 and the US-led conflicts in Afghanistan and Iraq, irregular wars have taken centre stage in the development of doctrine and concepts in the majority of conventional forces. Transnational terrorist activity is a microcosm of irregular wars and is perhaps the most difficult to counter effectively, especially when the perpetrators do not have a basic regard for human life—their own as well as others. However, events of the past few years strongly suggest that the threat of terrorist attacks will be an ongoing issue for some time and, therefore, needs to be considered at a greater level of importance than before in national security calculations. Conventional military forces, including air power, have been used at various times to lead or contribute to efforts to deal with these amorphous threats, admittedly not always with sufficient effect. The reason for the less than optimum effectiveness of military power in these circumstances is simple to discern; these forces have not been designed to deal with ‘terrorist threats’. Therefore, they have had to adapt to evolving conditions of irregular combat, trading their optimum conventional effectiveness for partial containment of the threat. Conventional forces have never been the optimum tools to defeat irregular threats.

This raises core questions regarding the applicability of contemporary air power capabilities to deal with such threats, more so than other elements of the military, mainly because the majority of terrorist threats emanate and are perpetuated on the ground, other than the hijacking of commercial airliners and their extreme

usage as seen in the September 2001 attacks in the USA. There are some air power roles that can be brought to bear with sufficient focus towards countering transnational terrorism but these have to be tailored correctly in order to be effective. Since air power cannot be the lead anti-terrorism tool, the optimum way forward would be to develop air power capabilities for its primary role as envisaged within the national security calculus with sufficient flexibility for it to be adapted for use against terrorist threats. In any case, terrorism is only one part of the spectrum of irregular wars and should be countered mainly by law enforcement agencies, assisted by military forces as required.

All indications are that there is an increased likelihood of military forces engaged in irregular warfare having to operate in urban areas against ill-defined, unconventional adversaries, in the future. However, at the same time, national military forces must also have the capability to defeat conventional state-on-state security threats, which may well arise if the unconventional adversaries are permitted to win skirmishes and battles and thereby expand their agenda. Air power has the capacity to achieve joint synergies at the strategic, operational and tactical levels of conflict that will contribute directly to military victories in the pursuit of national security in both conventional and irregular wars.

There is an inherent interdependence between air power capabilities and ground forces that is the foundation for the success of joint operations. Air power alone cannot win irregular wars. However, a joint approach reliant on the synergy between air power and surface forces can create and apply efficient precision strike capabilities even in the most complex battle situations, enabling the joint force to control the tempo of battle and becoming a war-winning factor. The effects of such an approach will exceed the individual contributions of the three Services and effectively 'tip the balance' in favour of conventional forces and their governments.

The articulation of specific doctrine, procedures and training capabilities is a necessary foundational requirement for ensuring the success of joint operations in the challenging arena of irregular wars.

There is no doubt that irregular wars demand a joint response from conventional military forces. However, this raises some interesting and important questions regarding the role of air power, and its extant theory and doctrine, in the new joint environment. What are the distinctive characteristics of air power that will enhance the joint military effort? What variables determine the correct balance between air and ground capabilities in a given irregular warfare scenario? How can the synergy between air power and ground assets be optimised? What does this mean for the command and control arrangements for air power assets within the joint environment? These are all complex issues deserving careful consideration at the highest levels.

This book has only scratched the surface of these complex issues and perhaps highlighted the salient characteristics of air power that should be leveraged in joint operations against irregular adversaries. More importantly, it brings up the dilemmas that come up when such operations are planned and conventional forces are thrown against adaptive, irregular adversaries operating in complex environments.

There is now a distinct need to strike a new balance in military theory and doctrine that focuses equally on the joint aspects of a campaign while continuing to address the need for independent air, land and maritime power doctrine at the philosophical level. In the joint arena there is a further need to have a separate doctrinal development to enshrine the peculiarities of irregular warfare that can then be extrapolated to traditional joint doctrine such as amphibious landings or airborne assaults. It is felt that, in the future, there will be a need to develop 'campaign specific' doctrine

that takes into account the specific considerations of the campaign across traditional Service boundaries. This approach is complicated and requires overlap between campaigns and between individual Service doctrines and will require great understanding even at junior levels.

The way forward is to develop a clearly integrated joint doctrine that can be tailored for different campaigns, underpinned by the strength of individual Service doctrines that will delineate the distinctive contribution of air, land and maritime forces to the joint campaign. The fundamental requirement is to ensure synergy of the capabilities resident in the three Services, through proper coordination while ensuring that all three Services retain their identity in an increasingly joint world. This is a sure path to victory.

Friends in High Places: Air Power in Irregular Warfare

GLOSSARY

3ID	3rd Infantry Division (United States Army)
4GW	Fourth Generation Warfare
ADF	Australian Defence Force
ALLTV	All-Light Television
AMF	Afghan Military Forces
AO	Area of Operations
AOC	Air Officer Commanding
ARH	Armed Reconnaissance Helicopter
AWR	Air Weapons Range
BDA	Battle (or Bomb) Damage Assessment
BFT	Blue Force Tracker
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CAF	Chief of Air Force
CAS	Close Air Support
CENTCOM	Central Command
CEP	Circular Error Probable / Circular Error of Probability
CIA	Central Intelligence Agency
CONUS	Continental US
CROP	Common Relevant Operating Picture
CT	Communist Terrorist
EBO	Effects-Based Operations
EO	Electro-optical

Friends in High Places: Air Power in Irregular Warfare

FAC	Forward Air Control
FAS	El Salvador Air Force (Fuerza Aerea El Salvador)
FM	Field Manual
GAPS	Ground-Aided Precision Strike
GBU	Guided Bomb Unit
GMTI	Ground Moving Target Indicator
GPS	Global Positioning System
GSAVE	Global Struggle Against Violent Extremism
GWOT	Global War On Terror
HPM	High-Powered Microwave
HUMINT	Human Intelligence
IAF	Israeli Air Force
IDF	Israeli Defence Force
IED	Improvised Explosive Device
IO	Information Operations
IR	Infra-red
IRA	Irish Republican Army
ISR	Intelligence, Surveillance and Reconnaissance
IW	Irregular Warfare / Irregular War
JDAM	Joint Direct Attack Munition
JDPI	Joint Desired Point of Impact
JI	Jemaah Islamiyah
JSF	Joint Strike Fighter
JSTARS	Joint Surveillance and Target Attack Radar System
LANTIRN	Low Altitude Navigation and Targeting Infra-red for Night
LCT	Liaison and Communication Teams
LGB	Laser-Guided Bomb

LOAC	Law of Armed Conflict
LOS	Line-Of-Sight
NATO	North Atlantic Treaty Organisation
NCW	Network-Centric Warfare
OEF	Operation <i>Enduring Freedom</i>
OIF	Operation <i>Iraqi Freedom</i>
OODA	Observe-Orient-Decide-Act
PDF	Panama Defence Force
PGM	Precision Guided Munitions
PGM	Precision-Guided Munition
PLO	Palestine Liberation Organization
POW	Prisoners of War
PSYOPS	Psychological Operations
QRF	Quick Reaction Force
RAAF	Royal Australian Air Force
ROE	Rules of Engagement
RPG	Rocket-Propelled Grenade
SAM	Surface-to-Air Missiles
SAR	Synthetic Aperture Radar
SASR	Special Air Service Regiment
SDB	Small Diameter Bomb
SEAD	Suppression of Enemy Air Defences
SEATO	South-East Asia Treaty organisation
SF	Special Forces
SNA	Somalia National Alliance
SO	Special Operations

Friends in High Places: Air Power in Irregular Warfare

SOCOMD	Special Operations Command
SOF	Special Operations Forces
SRO	Special Reconnaissance Operations
TFR	Task Force Ranger
TLAM	Tomahawk Land Attack Missile
UAV	Uninhabited [or Unmanned] Aerial Vehicle
UCAV	Uninhabited [or Unmanned] Combat Aerial Vehicle
US	United States
USAF	United States Air Force
USMC	United States Marine Corps
VC	Vietcong